

Case Number

4693 & 4694

Application

Transcripts

Small Exhibits

ETC.

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

COMMISSION HEARING

IN THE MATTER OF:

The hearing called by the Oil Conservation
 Commission on its own motion to consider
 instituting gas prorationing in the
 South Carlsbad-Morrow Gas Pool and the
 South Carlsbad-Strawn Gas Pool, Eddy
 County, New Mexico

Case No. 4693
 and
 Case No. 4694

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

Vol III

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TRANSCRIPT OF HEARING

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1 (Whereupon the hearing reconvened for the second
 2 day at City Hall, in Hobbs, New Mexico, at 8:30 A.M.,
 3 April 29th, 1972)

4 MR. PORTER: The hearing will come to order,
 5 please. Let the record show that the hearing reconvened
 6 at City Hall, in Hobbs, New Mexico, at 8:30 A.M., April
 7 20th, 1972. We are proceeding with the hearing in Cases
 8 4693 and 4694.

9 At this time the Commission will recognize Mr.
 10 Kellahin.

11 MR. KELLAHIN: If the Commission please, my name
 12 is Jason Kellahin of Kellahin and Fox, Santa Fe, New Mexico,
 13 appearing on behalf of Pennzoil-United.

14 We have one witness we would like to have sworn.

15 J. C. RANEY,
 16 was called as a witness and after being duly sworn according
 17 to law testified as follows:

18 DIRECT EXAMINATION

19 BY MR. KELLAHIN

20 Q State your name and address and occupation, please?

21 A J. C. Raney.

22 Q By whom are you employed? What is your occupation?

23 A Pennzoil-United as a petroleum engineer.

24 Q Have you testified before the New Mexico Oil
 25 Conservation Commission before?

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1 A No, I have not.

2 Q For the benefit of the Commission, would you state
 3 your education and experience as a petroleum engineer?

4 A I graduated from Texas A&M in 1962. I worked for
 5 seven and a half years with the Mobil Oil Corporation
 6 as an engineer in all phases of engineering, but
 7 primarily reservoir engineering.

8 I worked for approximately eight months for the
 9 California Oil and Gas Company as a district engineer.

10 I was then employed as a petroleum engineer,
 11 primarily in reservoir and secondary recovery engineering,
 12 for Pennzoil-United since September of 1970.

13 Q Does Pennzoil operate in the South Carlsbad-Morrow
 14 and South Carlsbad-Strawn Pools?

15 A Yes, we operate four wells, one in the Morrow and
 16 Atoka and the remaining are Morrow Wells with the
 17 exception of the Gulf Federal Number 2 which is a
 18 Strawn Well.

19 Q One well completed in the Strawn?

20 A Yes, and we are a working interest owner in another
 21 Strawn Well, the Superior Oil Company Number 1.

22 Q In connection with your work for Pennzoil, have you
 23 made a study of the South Carlsbad-Morrow and Strawn
 24 Pools?

25 A Yes.

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1 Q For developing a proration formula for those pools?

2 A Yes.

3 Q In the first place, Mr. Raney, in your opinion, is
 4 it necessary to prorate these pools at the present
 5 time?

6 A Yes.

7 Q You heard the testimony yesterday by Mr. Utz outlining
 8 his reasons for prorationing the pools, are you in
 9 agreement with his testimony?

10 A Yes, in addition to one thing and that is present
 11 waste by leaving recoverable hydrocarbons in place.

12 Q In your opinion, if the pool is not prorated, will
 13 waste occur?

14 A Yes, it will.

15 Q What kind of waste?

16 A By the dropping out of the recoverable hydrocarbons,
 17 it will form liquids in the reserve by dropping the
 18 pressure too fast and eventually some hydrocarbons
 19 will drop out and we feel from our basic technical
 20 experience that by producing at a normal rate, rather
 21 than a high rate, the hydrocarbon liquids will go
 22 ahead and be produced over a period of time rather
 23 than dropping the pressure too fast and leaving these
 24 behind.

25 Q Have you prepared certain Exhibits for presentation

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1 to the Commission at this time?

2 A Yes, I have.

3 (Marked Pennzoil-United Exhibit 1 for
 4 identification.)

5 Q (By Mr. Kellahin) Referring to what has been marked
 6 Pennzoil Exhibit Number 1 -- before we get into that,
 7 is your testimony directed toward both the pools
 8 involved here?

9 A Yes, our original testimony was prepared for both
 10 the Strawn and the Morrow Gas Pools as originally
 11 advertised.

12 Q Directing your attention to what has been marked
 13 Pennzoil Exhibit 1, would you identify that Exhibit
 14 please?

15 A This is a structure map of the Morrow formation and
 16 it's primary use will be for information to show the
 17 development limits of the Morrow Pool.

18 We are not saying that these are the limits of
 19 the pool, these were the developed limits at the time
 20 this Exhibit was prepared.

21 Q Have there been any changes to your knowledge since
 22 this Exhibit was prepared?

23 A The rig on the Grace-Carlsbad Well has been moved
 24 off, but we have no other information to determine
 25 whether or not the well has been completed.

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1 Also, down in the southeast of Section 12, there
 2 is a Phillip's Well being drilled that is not located
 3 on this map.

4 Q Do you have any comments in connection with Exhibit
 5 1?

6 A In Section 1, the Superior lease, of which we are a
 7 working interested owner, is shown in the developed
 8 limits of the Morrow Pool. We have attributed some
 9 reserves to the Morrow Pool and the casings are set
 10 through the Morrow, but these are behind this casing
 11 reserve and we do consider that there are reserves
 12 there that have not been tested as far as perforating
 13 and treating is concerned.

14 Q Referring to what has been marked Pennzoil Number 2,
 15 would you identify that Exhibit?

16 A This is a sonic log of the discovery well in the
 17 Morrow formation, the Pennzoil-United Mobil Federal
 18 Number 1, and our purpose in this Exhibit is to show
 19 the interval or formation to be discussed at this
 20 hearing.

21 Q Would you identify the Exhibit as to the interval
 22 you are going to be discussing?

23 A The top of the Morrow formation in this well is 11,242
 24 down approximately to 11,760, but we don't consider
 25 all this pay, but this is the broad interval we are

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1 concerned with in our testimony.

2 Q Now, referring to what has been marked Exhibit 3,
3 would you identify that Exhibit?

4 A This is a structure map of the Strawn line and again
5 my primary purpose in this is to show the developed
6 limits of the Strawn line.

7 We are not saying these are the limits of the
8 pool, but the developed limits.

9 One mistake I found just as the map was prepared
10 was that in Section 30, the Cities Service Spencer 1
11 is also completed in the Strawn, an attempted completion,
12 and this would be one correction on this Exhibit.

13 Q What is the location of the well?

14 A It is in the southeast quarter of Section 30 -- the
15 southwest quarter of the southeast quarter of Section
16 30.

17 Q Cities Service Merlin Number 1B?

18 A Cities Service Spencer 1A.

19 Q Okay. Are there any other changes on the map?

20 A No, this is all.

21 Q Referring to what has been marked Exhibit 4, would
22 you identify that Exhibit?

23 A This is the discovery well in the Strawn formation
24 of the Superior Oil Company Collette Number 1, in
25 which we are working interest owners.

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1 The purpose of this Exhibit is to show the
 2 interval to be considered at this hearing and it goes
 3 from 10,358 to 10,614.

4 This is our geological interpretation of the
 5 interval in the Strawn.

6 Q Were logs available on all the wells completed in
 7 the two zones?

8 A Yes. To our knowledge, they are all very similar logs
 9 and we have ones which we have been able to obtain
 10 that are of very similar interpretation, the
 11 interpretation would be very similar on all of them.

12 Q And basically that is the best information available
 13 on all of the wells in the two pools; is that correct?

14 A Yes.

15 Q Now, in connection with your work in this pool, have
 16 you reached any conclusions as to how the pools should
 17 be prorated?

18 A Yes, we have. I would like to make a statement on
 19 this. We recognize that all and any approaches to
 20 acceptable and effective proration should be reasonably
 21 unsophisticated and free of factors, subject to a
 22 wide range of interpretations.

23 Yet oversimplification may fail to protect the
 24 rights of each lease or interest owner in the recovery
 25 of hydrocarbons under each lease.

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1 Therefore, we propose that the formulas' prime
2 factor would be hydrocarbon core volume of the
3 formations subject to proration underlying each
4 proration unit.

5 This factor would be production after porosity,
6 water saturation, effective feet of pay, and the area
7 of standard proration units as determined from
8 completed wells in each of the proration units.

9 At first, it might appear difficult to obtain an
10 agreement on these parameters, yet it has been done
11 in practically all secondary recovery projects past
12 and present throughout the industry.

13 It would, of course, require core or an adequate
14 set of logs by which the hydrocarbon core volume could
15 be determined.

16 In the absence of this data, or rate of pay
17 information on the core to be used, the remainder would
18 be simply adjusting the information over or under the
19 advised production unit for the penalty or rate of
20 pay factors and the sum of this volume would be then
21 re-equated to the total purchase nominations for that
22 pool for the volume of gas that the Commission would
23 feel would be consistent with good conservation
24 practices.
25

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1 Thus the allowable could be allocated with
 2 effective core volume information on each individual
 3 well and the sum would be effective on all wells in
 4 a given pool.

5 We recognize that our proposal may contain some
 6 gray areas and certainly is subject to further
 7 refinement, however, we feel that approaching this
 8 in a cooperative spirit and a genuine desire for
 9 conservation is desired for the framework for the
 10 Morrow and Strawn Pools.

11 Q One requirement you sent out in your statement is
 12 adequate logs, is such a set of logs available in
 13 the pool?

14 A We feel they are. From the data we have seen on these
 15 two pools, these logs are available.

16 Q Now, if you will turn to what has been marked
 17 Pennzoil Exhibit Number 5, would you identify and
 18 describe this Exhibit please?

19 A This is a proposal for prorating the South Carlsbad-Strawn
 20 and South Carlsbad-Morrow Pool. The Exhibit has
 21 noted only the South Carlsbad-Strawn Pool, but we
 22 would like the proposal to be for both pools even
 23 though they are separated.

24 Q Would you discuss the proposal you have made and the
 25 manner in which it would work for these two pools?

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1 A Pennzoil-United would like to suggest the following
 2 proposal, it is based on easily determined reservoir
 3 properties under each lease acreage, the penalty and
 4 rate of take factors, and the reasonable market
 5 demand factors.

6 The proration unit allowable in each pool would
 7 be based on the following formula: Hydrocarbon core
 8 volume would be equal to the effective feet of pay
 9 underlying each proration unit as determined from the
 10 appropriate logs or cores times the porosity in the
 11 effective feet of pay times one minus the water saturation
 12 in the effective feet of pay times the area of standard
 13 proration units.

14 The proration unit allowable factor would be
 15 equal to the hydrocarbon core volume as determined
 16 above times the proration unit acreage divided by
 17 320 times the penalty or rateable take factor.

18 Then the proration unit allowable would be equal
 19 to the proration unit allocation factor divided by
 20 the total pool allocation factor times the total pool
 21 nominations.

22 The total pool nominations would be the total
 23 pool nominations by all purchasers. We feel, of
 24 course, this final figure would be set at the discretion
 25 of the Oil Conservation Commission.

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1 Q Now, in connection with the operation of your formula,
2 how would you determine the water saturation?
3 A Well, we feel that all reservoir properties being
4 discussed here would be determined by the individual
5 operators for each proration unit. These would be
6 subject to review and approval by the Oil Conservation
7 Commission.

8 In the event agreement cannot be reached in the
9 manner we suggest, we would recommend these properties
10 be determined by a technical committee of operators
11 and Oil Conservation Commission personnel.

12 Q Now, would you have a total pool allocation factor,
13 and if so, how would that be handled?

14 A Yes, sir. The total pool allocation factor would be
15 simply the sum of all the proration units allocation
16 factors within a given pool and these factors would
17 be redetermined administratively when necessary and
18 this would be another reason for determining the
19 reservoir properties of the existing pool limits by
20 a technical committee of operators and OCC people.

21 At this time the committee could set down
22 guidelines by which these properties could be determined
23 for expansion or a reduction of the proration units
24 or the pool, the total pool allocation factors.

25 Q That would then take care of future development

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1 without another hearing; is that your testimony?

2 A Yes. This is our contention, to cut down on the
 3 amounts of hearings when new wells are drilled and
 4 placed in either of these pools.

5 Q Now, in your opinion, would the adoption of this
 6 proposed formula prevent waste in the Morrow and Strawn
 7 Pools?

8 A Yes.

9 Q Under the provisions of the New Mexico Statutes as
 10 interpreted by the New Mexico Supreme Court, this
 11 Commission has been directed to make allocations of
 12 production in any given pool on the basis of the
 13 amount of recoverable gas under each producers' tract
 14 and the total amount of gas in the pool, can this be
 15 accomplished under the proposal you have made?

16 A Yes, we feel this gives the operator the opportunity
 17 to attempt to recover these reserves and we say this
 18 for several reasons.

19 There are a lot of mechanical conditions which
 20 prevent him from doing this, but in our proposed
 21 formula, this gives him an opportunity to attempt to
 22 recover his reserves.

23 Q Can the reserves be determined under your formula
 24 with any reasonable degree of accuracy?

25 A Yes, we feel the properties actually determine or

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1 dictate what gas is in place and this is what our
 2 formula is based on, the gas in place.

3 Q And that is the reserve underlying the tract?

4 A Yes.

5 Q Could you determine reserves for the entire pool by
 6 simple addition of the reserves from each tract?

7 A Yes.

8 Q In your opinion, does this proposal meet the
 9 requirements of the New Mexico Statutes?

10 A Yes, we feel it would.

11 Q Do you have anything further to add?

12 A Pennzoil-United respectively requests the New Mexico
 13 Oil Conservation Commission to give favorable
 14 consideration to this proposal.

15 Q Were Exhibits 1 through 5 prepared by you or under
 16 your supervision?

17 A Yes.

18 MR. KELLAHIN: I would like to offer Pennzoil
 19 Exhibits 1 through 5 inclusive.

20 MR. PORTER: The Exhibits will be admitted to
 21 the record without objection.

22 (Whereupon Pennzoil-United's Exhibits 1 through 5,
 23 inclusively, were admitted in evidence.)

24 MR. KELLAHIN: I have nothing further.

25 MR. PORTER: Are there any questions of this

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1 witness?

2 CROSS-EXAMINATION

3 BY MR. STEVENS

4 Q Is it your testimony that the reserves are proportionate
 5 to the hydrocarbon core volume?

6 A Yes, you take into account the porosity of the
 7 available spaces for storage of gas, then you take
 8 out the water saturation and get the hydrocarbon
 9 core volume.

10 Q Has Pennzoil made a determination of the reserves in
 11 the field?

12 A On the data we have available and as far as I can
 13 go, I have made a determination on our well and the
 14 Superior Well and one of the Grace Wells of which
 15 we feel we have an interest in.

16 Q Your previous testimony was to the effect that your
 17 method here makes it a simple addition factor to
 18 determine these reserves?

19 A Yes.

20 Q Would it be a simple process from the point where
 21 you stopped your determination?

22 A Yes.

23 Q Is there an appreciable difference in water saturation
 24 in the Strawn Field which affects the reservoir?

25 A I feel there is in our wells, the wells I have looked

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- 1 at.
- 2 Q Is it a lesser factor in the Strawn or the Morrow?
- 3 A I think water saturation is higher in the Strawn.
- 4 Q Is there greater variation in the Morrow or the Strawn.
- 5 A I don't know whether you are talking about the proration
- 6 units from the south to the north.
- 7 Q Between wells, in each field, is there a greater
- 8 variation in the Strawn or the Morrow?
- 9 A The Strawn, yes, than in the Morrow.
- 10 Q This would appreciably affect the reserves you allocate
- 11 due to the fact that the core volume might be lesser
- 12 if there was greater water saturation?
- 13 A Right. One thing we feel this will do is it will give
- 14 a good reservoir proration unit a higher take and
- 15 this is what they should have.
- 16 But if one is penalized, and we have one proration
- 17 unit which is penalized, then they need to be penalized,
- 18 but if you have a good reservoir, you ought to have
- 19 a higher allowable.
- 20 Q A lesser pay porosity would have a higher water
- 21 saturation?
- 22 A It would depend where the wells are perforated and
- 23 this goes back to the operator. He might perforate
- 24 in high water saturation and get by the thick pay
- 25 section, but if you have high water saturation, then

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- 1 it would be cut back to a reasonable number.
- 2 Q Are there any Strawn Wells producing any appreciable
- 3 amount of water if compared to the Morrow?
- 4 A I hate to say this, but ours is and we don't know
- 5 where it is coming from. This is our new well.
- 6 Q Is this in the Morrow or Strawn you are talking about?
- 7 A Strawn.
- 8 Q How about the Morrow, does it produce noticeably more
- 9 water on a per well basis than the Strawn?
- 10 A No, ours don't. We have wells in the south that are
- 11 making five gallons of water a day in the Morrow.
- 12 Q How about the other wells in the field, are there
- 13 other wells in the field that produce an appreciable
- 14 amount of water in the Morrow?
- 15 A I don't know of one, but I don't have details as to
- 16 where the water could be coming from.
- 17 Q Your method contemplates the net feet allocated to
- 18 each well be prorated over the entire proration unit,
- 19 therefore if you have a well close to the edge of the
- 20 proration unit that happens to have a thick porosity
- 21 you would allocate that amount of net feet over the
- 22 entire reservoir, is that correct?
- 23 A Yes, and maybe our interpretation of the edge of the
- 24 reservoir may not be true. This might indicate it
- 25 is not true.

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1 We are not saying either of these maps are the
 2 limits of these pools.

3 MR. STEVENS: I have nothing further.

4 CROSS-EXAMINATION

5 BY MR. NUTTER

6 Q You would not contour the net feet of pay in a
 7 similar manner to what Antweil suggested yesterday?

8 A No, sir.

9 Q You'd take the net feet of pay ^{as} ~~to~~ ^{at} determined the
 10 six-inch well bore at one specific point in the unit
 11 and apply that feet of pay throughout the 320 acres?

12 A Yes.

13 Q And regardless of whether there is error in favor of
 14 the proration unit, the ^{determination} detriment would stand?

15 A Yes, but if you do them all the same way, they would
 16 be equal.

17 Q How about your water saturation, would you take the
 18 water saturation for one given point ^{and} or apply the
 19 same water saturation throughout the 320 acres?

20 A It would be on that well for 320 acres.

21 Q Mr. Raney, I have seen three different contour maps
 22 of the Morrow formation in the last two days, and
 23 they are all different, so I wouldn't know how to
 24 determine any of these things.

25 A These structure maps, as I said, our purpose in

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1 offering our map is to determin, or just to show,
 2 the developed limits of the pool without saying that
 3 these are the limits of the pool.

4 Q Were you taking the net feet of pay at the well
 5 bore, six inches out of 320 acres, and taking the
 6 water saturation, a six-inch core out of 320 acres,
 7 and applying this formula throughout the entire 320
 8 acres when you determined the reserves?

9 A This would be one way of doing this, but as I said
 10 at the end of my discussion before, our formula may
 11 contain some gray areas which are subject to
 12 refinement, but this would be one way of doing it.

13 I am not saying this is the best way to do it,
 14 we feel this is one equitable way to do this.

15 MR. NUTTER: I have nothing further.

16 MR. PORTER: Any further questions?

17 CROSS-EXAMINATION

18 BY MR. SPANN

19 Q Mr. Raney, you are a petroleum engineer and not a
 20 geologist?

21 A Yes.

22 Q So you are not basing any of your recommendations or
 23 opinions on geological data, except as reported to
 24 you by your geologists?

25 A The log-interpretations are my work and the maps

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are the work of our geological group.

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1 Q And you are not prepared to say at this time
2 whether all of the wells in the Morrow field, as
3 included in the outer extremities of the field by
4 the Oil Conservation Commission as a result of their
5 nomenclature Hearings, all of those wells are
6 producing from the same source of supply or a
7 common reservoir?

8 A No, I am not prepared to say that -- are you referring
9 to the limits I have placed on the two maps?

10 Q Well, those limits are the limits you are familiar
11 with.

12 A No, they are the developed limits of the pool and
13 by this I mean these are developed proration units.

14 Q But you are not prepared to say and have no information
15 to support an opinion that all of these wells in this
16 so-called field are producing from the same source
17 of supply?

18 A I am not prepared to say that.

19 Q We would have to know that before we would know
20 whether this proration formula of yours should be
21 put into effect and whether the field should be
22 prorated at all; isn't that true?

23 MR. KELLAHIN: I am going to object to this
24 line of questioning. It is directed toward a lateral
25 attack on a prior Order of this Commission defining the

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1 horizontal limits of the Morrow gas pool which is
2 not a question before the Commission in this Hearing.

3 MR. PORTER: Objection sustained.

4 Q (By Mr. Spann) One of the factors, as I understand
5 it, in your proposal -- let me get back to your
6 proposal, you say it is based on reserves and the
7 property under each lease; what do you mean by that?

8 A The properties are factors included in the proposed
9 formula. These would be effective feet of pay, the
10 porosity, water saturation in the area as determined
11 by the area's proration units.

12 Q You mean by reserves under each proration unit; is
13 that right?

14 A Yes.

15 Q And we can't determine that factor until we know the
16 feet of pay under each well and so forth, is that
17 true, as determined from your log?

18 A This would be one-third, this is part of the reserve
19 determination of the original gas in place.

20 Q Does the question of whether the wells or the
21 formations under the wells, communication between
22 wells, is that a factor in determining reservoir
23 reserves, or do you do it strictly by logs?

24 A I make this assumption from the data which we were
25 given.

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Q And you apply this over the entire proration unit of 320 acres assuming there is communication between wells and between unit rights?

A Yes.

Q And if it is indicated that there is no communication then your proposal would be defective with respect to at least that factor?

A I personally have no reason to believe they are not connected, but I have done some correlation work in attempting to see why someone else produced more than others and for that reason, I assume they are all connected.

Q Did you have any geological information as to whether the wells on your Exhibit 1 which shows the Morrow formation, whether the wells in Section 2, Section 23, Section 27, are in the same pool and producing from the same reservoir, a common source of supply, as the wells in the east?

MR. KELLAHIN: If the Commission please, I will make the same objection. This is an attack on a determination of this Commission that the wells are in the same common source of supply.

MR. PORTER: We will sustain the objection.

MR. SPANN: If the Commission please, it is our position that in order to determine that correlative

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1 rights are being protected -- you have no geological
2 characteristics of this field and the wells that are in
3 it, and it is necessary to determine whether there is
4 communication between wells and if geologically there
5 is evidence that there is not, then, of course, the
6 question of whether in protecting correlative rights you
7 need to prorate, and this is important and is the reason
8 why we are suggesting this evidence should be considered.

9 MR. PORTER: Mr. Spann, the pools have been
10 outlined and the boundaries determined in the usual manner
11 and the Commission determines pool boundaries.

12 Now, there has been no testimony put into the
13 record concerning separation of certain wells from the
14 pool as it is defined and, in fact, that question is not
15 within the calling of this Hearing, it has not been
16 advertised, and there is no indication by the people who
17 requested that this case be continued and readvertised to
18 be heard before the full Commission, there was no indication
19 at that time that any kind of question would be raised as
20 to the pool boundaries, whether they were proper or not,
21 so the other interested parties naturally did not have
22 notice and so the Commission will sustain the objection
23 and request that you pursue some other line of questioning
24 in that respect.

25 Mr. Spann, the Commission has made a prior

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1 determination that these are proper boundaries of the
2 pool. The Commission has absolutely no objection to
3 anyone filing an application to be heard by this Commission
4 to show that any one or all of the wells are producing
5 from separate reservoirs, but I am simply stating that
6 that is not within the calling of this Hearing, to make
7 that determination.

8 MR. SPANN: The question of the outer boundaries
9 has already been determined and we cannot go beyond that
10 determination here?

11 MR. PORTER: The pool boundaries were established
12 as a result of a Hearing.

13 MR. SPANN: All right.

14 Q (By Mr. Spann) Mr. Raney, you have, of course, based
15 your recommendations that there be prorationing in
16 this field on the fact that the production from the
17 wells has been completed and exceeds the market demand,
18 the reasonable market demand?

19 A Those are our recommendations and they are based on
20 three things: to conserve reservoir energy and
21 natural reserves and to protect the correlative rights
22 of all interested owners in this pool.

23 Q But in order to determine whether we are protecting
24 correlative rights we have to know whether, in the
25 absence of proration, one well might drain another

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1 well or another adjoining acreage; isn't that true?

2 A Well, we feel that in general the two Exhibits which
3 we have of the Morrow and the Strawn fields show that
4 they were completed within those limits.

5 Q You didn't answer my question. You have assumed that
6 in protecting correlative rights you must prorate in
7 order to keep certain wells from draining other wells;
8 is that true?

9 A Yes.

10 Q That is the idea of it; isn't it?

11 A Yes.

12 Q So unless we know that is happening or will happen
13 in the event we do not have proration we can't really
14 respond as to whether we should have proration; can we?

15 A I think so.

16 Q If the characteristics of the field or the information
17 available is insufficient to determine whether one
18 well is draining another well we cannot determine whether
19 proration would be necessary to protect correlative
20 rights.

21 A Well, we are producing out of the same formation which
22 is the Morrow and according to our Exhibit 2, this
23 is a broad interval and this is the assumption we
24 have made that these are at some point correlative
25 and there are some wells that are correlative that

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1 are producing from the same interval.

2 Q You are assuming that because these wells have been
3 completed in the same formation, that there is
4 communication between these wells; is that correct?

5 A Yes.

6 Q And that is the basis on which you are saying we need
7 to prorate to protect correlative rights, is that
8 right?

9 A It is one-third of the reasons.

10 Q The other reasons you say we need to prorate is to
11 prevent waste?

12 A Yes.

13 Q In this field, based on the information available,
14 why is it necessary to prorate to prevent waste?

15 A I have no technical data to determine at what point
16 the waste would occur, at what pressure point, and
17 this requires someone spending some money to go out
18 and obtain a bottom hole sample and send it to
19 the lab to determine at what point the reservoir
20 pressure is likely to begin to drop out.

21 Q At this point we do not have enough information to
22 determine whether proration is necessary to prevent
23 waste?

24 A Nothing other than our technical backgrounds that
25 this will occur on the basis of chemistry, as you

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1 drop the pressure in the reservoir there has to
 2 be some change from gas to liquid.

3 Q But we haven't made tests to determine whether that
 4 is occurring yet in this field; have we?

5 A No.

6 Q Now, insofar as the Commission's authority is
 7 concerned, they can prorate production when the
 8 reasonable market demand exceeds --- I mean the
 9 production exceeds the reasonable market demand;
 10 is that right?

11 A And the testimony so far is that there are two
 12 purchasers in the field, one can take all the
 13 production from the well which it has under
 14 contract and the other within seven days, will
 15 be able to do so also; so we have a situation wherein
 16 seven days from now the market demand will take care
 17 of all the production.

18 Now, under those circumstances, there is no
 19 basis for prorationing; is there?

20 A Nothing other than just our belief that if you
 21 produce a well to an excessive capacity then you
 22 will cause reservoir damage.

23 Q Reservoir damage?

24 A Not reservoir damage, but you will leave recoverable
 25 gas in place.

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1 Q But that is under the well that is overproduced;
2 isn't it?

3 A Yes.

4 Q If you don't own that well it shouldn't be of concern
5 to you?

6 A Nothing other than an industry-wide interest in
7 conservation.

8 CROSS-EXAMINATION

9 BY MR. HUNKER:

10 Q In connection with your Pennzoil well, Mobile 12,
11 *do* to you know how much gas you have produced from that
12 well up to the first of March?

13 A I don't have the figures offhand.

14 Q We have been informed that you have produced 1,830,936
15 MCF of gas from that well during 1971 and through the
16 month of February, 1972; would that be an approximately
17 accurate figure?

18 A I have no idea of what you are talking about -- out
19 of the Morrow or the Atoka?

20 Q I am talking about the Atoka.

21 A The atoka is not under consideration.

22 Q You were talking about conservation, Mr. Raney.

23 MR. KELLAHIN: I object to the question. The
24 Atoka has no bearing on prorationing the Morrow gas pool.

25 MR. PORTER: Mr. Hunker, your questions should

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1 be directed to the Strawn formation rather than the
2 Atoka, the Strawn or the Morrow formations are under
3 consideration now and there are no other considerations.

4 MR. HUNKER: It really doesn't make any
5 difference, my question went to the matter of conservation
6 of gas under any particular pool. I am interested in this
7 fellow's theories and I wanted to know whether or not
8 Pennzoil regarded that amount of production as being
9 conservation.

10 THE WITNESS: 1,830,936.

11 MR. KELLAHIN: If the Commission please, there
12 has been no foundation laid and on the basis of what the
13 Commission could determine whether there is any damage to
14 the Atoka or not, there has been no specific testimony
15 for this Commission in regard to the Atoka and it is not
16 subject for consideration in this case and we have to
17 object to the question.

18 MR. PORTER: In this case the Commission feels
19 that the Witness should try to answer the question as
20 long as it has to do with conservation.

21 A. I can just generalize as to how much it is making.
22 It is making something less than two million cubic
23 feet a day which would be 730,000,000 a year.

24 MR. PORTER: What is the point of your question,
25 Mr. Hunker?

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1 MR. HUNKER: My point was we were informed
 2 that the well had actually produced the 1,830,000 MCF
 3 and I would like to know if this is true, would this
 4 constitute conservation in the witness' opinion?

5 A It would not be but I am sure that you are completely
 6 wrong, the well is not that good.

7 MR. HUNKER: Thank you.

8 MR. PORTER: Now, Mr. Spann, you may proceed.

9 Q (By Mr. Spann) The Morrow formation is not producing
 10 any recoverable hydro carbon liquids at this time,
 11 the wells in the Morrow formation; is this true?

12 A Yes -- they produce a small amount.

13 Q How small?

14 A Enough so it won't evaporate in the pits. Our
 15 wells are producing approximately less than a barrel
 16 a day.

17 Q There is no problem about preventing waste insofar
 18 as hydro carbon liquids is concerned and for the
 19 purposes of prorationing this Morrow formation this
 20 is just not enough hydro carbon liquid to worry about?

21 A I don't know.

22 Q Less than a barrel a day?

23 A I don't know.

24 Q You think then that it is necessary to proration
 25 this Morrow field, this pool to prevent waste in

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1 in recovering hydro carbon liquids, or don't you know?

2 A It is to prevent waste of total hydro carbons.

3 Q Gas and liquids?

4 A Yes, both.

5 MR. SPANN: No further questions.

6 MR. PORTER: Does anyone else have any
7 questions?

8 CROSS-EXAMINATION

9 BY MR. LeBLANC:

10 Q Do you intend that this formula also be adopted for
11 the Morrow?

12 A Yes, both for the Strawn and the Morrow.

13 Q So I might follow this, you are not presenting today
14 individual net feet of pay or individual porosity
15 or individual water saturation for each well, are
16 you?

17 A No, because ^{we} s would like to see this done by a
18 Committee.

19 Q Are you suggesting that a Committee take the place
20 of and be used in lieu of the Commission?

21 A No, a Committee of operators and Oil Conservation
22 Commission personnel.

23 Q Just take for instance if there is a dispute or
24 a disagreement as to net feet of pay in a well, would
25 this be determined by seventy-five percent vote or

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1 sixty-five percent, or one hundred percent; how
 2 would this be determined?

3 A This would be done also by the Committee. The
 4 Committee would set up the ground rules as to what
 5 to do.

6 Q Out of curiosity, suppose someone disagrees with
 7 the ground rules?

8 A They would be simply to determine what the Committee
 9 would work by.

10 Q Are you suggesting that the Commission would also
 11 be present and therefore also have control of the
 12 Committee?

13 A We feel we want them to contribute but not carry
 14 the whole load.

15 Q For instance, if I happen to disagree and it only
 16 takes a seventy-five percent vote, are you suggesting
 17 that the Commission will force that down my throat,
 18 or what?

19 A No.

20 Q I don't understand your proposal, that's my problem.
 21 That was not a question, so I'll go on.

22 You said something about perforation and net
 23 feet of pay, did you say perforation indicated net
 24 feet of pay?

25 A No.

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- 1 Q What was it you said?
- 2 A Effective feet of pay would be the interval that
- 3 was perforated, but the effective feet of pay would
- 4 not contain intervals above or below which are
- 5 separated by some impermeable barrier.
- 6 Q Are you suggesting that if a well is perforated
- 7 at four feet but the log indicates porosity up
- 8 and down the hole, that that well has four feet of
- 9 effective pay?
- 10 A If there is permability above and below the four
- 11 feet.
- 12 Q Could you drain it otherwise?
- 13 A I don't know.
- 14 Q Who makes the determination in your permability
- 15 barriers above and below the perforation?
- 16 A Our statement was that these problems would be
- 17 determined by the individual operators and subject
- 18 to the review and approval of the Commission.
- 19 Q Are you suggesting that the proration formula be
- 20 adopted as a result of a Hearing, but the real
- 21 manner in which the formula will be done will be
- 22 by a private meeting and not as a result of a public
- 23 hearing?
- 24 A I think -- I don't know what the Commission will rule,
- 25 but these will be -- maybe we could come back for

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1 another Hearing after the Committee makes its
2 recommendations.

3 Q But your recommendation is not to have a public
4 hearing so each operator will know what the other
5 operators are doing, but to have a private meeting?

6 A Of the Committee made up of operators and OCC
7 personnel.

8 Q How many votes will an individual operator have in
9 the Committee? Will this be based on production?
10 What factors?

11 MR. KELLAHIN: If the Commission please, I
12 object to this line of questioning. The witness has not
13 testified as to any proposed details of how this would be
14 administered. He has merely made a suggestion that it
15 could be done by the Commission if the Commission so desired
16 a technical committee. A committee could be set up and
17 the Commission would work with them.

18 He has not proposed any private meetings, meetings
19 in back rooms, as Mr. LeBlanc would seem to suggest.

20 MR. PORTER: Do you have anything further on
21 this point?

22 MR. LeBLANC: No, I will leave this point and
23 go to another point.

24 MR. PORTER: Are you withdrawing your question?

25 MR. LeBLANC: I merely want to switch to a

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1 different subject. I'm not even asking for a ruling on
2 the question.

3 MR. PORTER: You may proceed.

4 Q (By Mr. LeBlanc) Is it your intention that allowables
5 be based on gas in place under a unit?

6 A This is what our formula would be. It would be hydro
7 carbon core volume which is the storage of gas and to
8 determine the reserves you would have to go a little
9 bit further.

10 Q You would determine gas in place on each 320 acre
11 unit; is that correct?

12 A We would determine the hydro carbon core volume and
13 go ahead on oversized and undersized proration units
14 and penalty factors.

15 Q How is the gas in place under a unit related to the
16 recovery of hydro carbons?

17 A This is subject to wide controversy and we do not
18 have sufficient production pressure history on these
19 two pools to determine this. We have some history
20 but not much to determine this factor.

21 Q You mentioned secondary recovery units, are these
22 units that you referred to gas units or oil units?

23 A I have never seen a secondary gas unit.

24 Q You have never seen a secondary gas unit, are you
25 suggesting an oil formula be used in a gas pool?

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1 A In a hydro carbon reservoir.

2 Q It makes no difference whether it is oil or gas,
3 each is produced in the same manner with the same
4 effect; is that correct?

5 A No.

6 Q Have you prepared isopach information for the Morrow
7 formation, a net pay isopach?

8 A I have not.

9 Q do you believe you are able to do so?

10 A I'm not.

11 Q Are you in a position to discuss the individual
12 characteristics of the individual wells in the
13 Morrow formation today?

14 A What type of individual characteristics?

15 Q Let's just take the wells in Section 2 in the
16 Southwest Quadrant, the Corinne-Grace Guadanaco and
17 the Grace-Humble, will you give me your opinion as to
18 which are the effective pays underlying those wells?

19 A No, because I don't have the data with me.

20 Q The porosity underlying each well?

21 A I don't have any data with me.

22 Q Could you determine it?

23 A I could determine it.

24 Q Do you have information with you with reference to
25 the Antweil-Little Jewel and the Antweil-Allen in

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1 Section 31?

2 A No.

3 Q Would you give me a general description of the Strawn
4 gas pool and what type pool it is and how thick it
5 is, a general description?

6 A The thickness I figured on was two miles of
7 approximately forty to fifty effective feet of pay.

8 Q Could you give me a like description for the Morrow?

9 A The sandstone is highly sensitive to water and this
10 is my main concern, and the general quality and the
11 approximate total from top to bottom of the pay is
12 about one hundred to two hundred feet thick covering
13 the field and each individual has its own pay which
14 you can determine -- I'm not saying that some wells
15 have 150 feet of pay and some ten.

16 Q Would you say that the Strawn has identical producing
17 characteristics as the Morrow?

18 A No.

19 Q I presume you think they are different?

20 A Yes.

21 Q Yet you believe the same formula could be successfully
22 applied to each one?

23 A Because I feel both can be interpreted.

24 MR. LeBLANC: That's all.

25 MR. PORTER: Any further questions of this

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1 witness?

2 CROSS-EXAMINATION

3 BY MR. STEVENS:

4 Q Regardless of discrepancies that you might have of
 5 core volume it is your opinion that the Strawn field
 6 should be prorated on the basis of reflecting reserves
 7 and then core volume being a reasonably valid basis
 8 for such interpretation?

9 A Yes.

10 MR. STEVENS: That's all.

11 CROSS EXAMINATION

12 BY MR. RAMEY:

13 Q Mr. Raney, you have three factors, effective feet
 14 of pay, porosity, and water saturation, these could
 15 all be highly controversial.

16 For instance, if you made a pick on the Antweil
 17 well your figures may be different than Antweil's
 18 figures.

19 A If you used the same guidelines as far as porosity
 20 and the same relative location to determine porosity
 21 and water saturation you would come close. This
 22 is possibly where it could be done better by a
 23 Committee.

24 Q Let's assume that the operators and the OCC personnel
 25 got together, how long do you think it would take

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1 pool of this size for them to get together? How
 2 long does it take for an engineering committee to
 3 resolve all factors of a formula used in a secondary
 4 recovery unit?

5 A In this hydro carbon core volume I don't think it
 6 would take too long with the number of wells we
 7 have and we could determine this without trying to
 8 determine what would be best for everyone concerned.

9 Most probably about a week.

10 Q If these factors could be determined wouldn't you
 11 have the groundwork for a unit formed already?

12 A That would be one item taken care of.

13 Q So why not form a unit and then you would not have
 14 to prorate? It may be easier to form a unit than
 15 try to resolve these factors.

16 A What would be the aim of a unit?

17 Q Then it would be under one operator and your with-
 18 drawals could be set up on a uniform basis.

19 A Two out of three things we are interested in are
 20 conserving energy and conserving natural reserves,
 21 even with a unit I don't know whether you could do
 22 this or not without Commission regulation; in fact,
 23 I don't think you could.

24 MR. RAMEY: That's all the questions I have.

25 MR. PORTER: Anyone else?

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CROSS-EXAMINATION

BY MR. SPANN:

Q Listening to your testimony to the last series of questions, I get the impression that we need more information in order to determine these factors that you suggest here in your formula; isn't that true?

A Not in the formula, we have logs on each well that have been completed.

Q Well, don't you have to make some other tests or evaluations before you can determine the various factors that are in your formula?

A No, sir.

MR. SPANN: That's all.

CROSS-EXAMINATION

BY MR. LeBLANC:

Q Will you refer to Section 31 and the two wells completed in that Section, one well is completed in the northwest quarter and one well in the southeast quarter; isn't that correct?

A Yes.

Q I have an ownership map, I don't know if it is correct, but presumable it is. The name Merchant appears in the northwest -- the northeast and there is no well name. Spencer appears in the southeast

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1 along with the name of Gibson properties. I
2 assume these are separate mineral owners each in
3 his own quarter section and I don't know that to
4 be a fact, but let me make that assumption.

5 Under your proposal limiting allocations
6 based on net effective pay, and taking the west
7 quadrant, whoever owns that royalty would share in
8 the production from whatever well his acreage is
9 allocated to under the 320 acre unit because it
10 seems the 320 acre units with those two well
11 locations would run either east-west or north-south;
12 would it follow that the share of productions and
13 royalties depended on which well his acreage was
14 attached to?

15 A Proration units are set up and dedicated -- I believe
16 you are actually getting out of my line of experience.
17 I don't have any idea what you are talking about.

18 Proration units are set up and assigned to the
19 320 acres running north-south or east-west.

20 Q If one of the wells had twenty-five feet of perforation
21 and the other well had ten feet of perforation, all
22 the other factors being equal, namely porosity and
23 water saturation, would the well with twenty-five
24 feet perforation have an allowable of two and one-
25 half times the other well?

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1 A You assume that an operator is going to perforate
2 all he has at one time and this would be all he
3 was entitled to.

4 Q You would have this situation with wells only
5 1,320 feet apart?

6 MR. KELLAHIN: I object to this line of
7 questioning. It is directed toward an attempt to allocate
8 production to individual owners within proration units
9 and this is no concern of the Commission. This involves
10 private contracts and the Commission cannot pass on that
11 kind of question.

12 MR. LeBLANC: May I respond?

13 MR. PORTER: Yes.

14 MR. LeBLANC: Granted that is true, but my
15 question merely illustrates that if you base your allocation
16 formula on the feet of perforation -- if I had 160 acres
17 I would much rather my 160 acres be attached to that well
18 with twenty-five feet of perforation than the other well
19 of ten feet of perforation.

20 To me this illustrates the invalidity of using
21 feet of perforation.

22 MR. KELLAHIN: It is the duty of the Commission
23 to determine the reserves underlying each tract and each
24 tract means each proration unit. Now, the best evidence
25 that has been offered at this hearing has been offered.

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1 on behalf of Mr. Antweil and on behalf of Pennzoil. They
 2 are the only two who have offered any evidence whatever.
 3 Now for the Commission to, at this point, attempt to
 4 allocate within proration units poses an impossible task
 5 and we don't have any information on when such calculations
 6 could be made.

7 The objections Mr. LeBlanc was making would
 8 apply to any proration unit which has nothing but the
 9 acreage factor.

10 MR. PORTER: The Commission considers it a
 11 proper question, would the witness proceed to try and
 12 answer the question?

13 A The proration units are set up and it doesn't make
 14 any difference whether you are on acreage or not
 15 if the proration unit is set up and you have 320
 16 acres with ten feet of pay, it would still be based
 17 on the same thing.

18 I don't think the royalty owner, whoever he
 19 may be, is entitled to as much because the reservoir
 20 quality is not as good under there.

21 Q Let's go back to the southwest quarter of the same
 22 Section, Section 31. Assuming I am a royalty owner
 23 in the southwest quarter and there is not a well
 24 on my tract and I look to the north to a certain
 25 distance and see a well with a certain thickness,

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1 and let's assume it is twenty-five feet, and then
2 I look to the west and I see another well the same
3 distance away, and let's assume it has ten feet of
4 pay, and I have no well; are you telling me that I
5 have twenty-five feet or ten feet allowance?

6 How do I know what I have?

7 A Well, there would be no way to tell without a well.
8 I assume if there is a well in the northwest and a
9 well in the southeast there would be no other wells
10 drilled because of the 320 acre spacing.

11 Q Approximately how far apart are those two wells
12 in Section 31?

13 A Maybe 1,500 feet, I don't know.

14 Q Referring to Section 2, and the Corinne-Grace
15 Guadanaco, and the Corinne-Grace Humble, I would
16 like you to refer to Exhibit Number 4 and ask you
17 if you will agree that the allowable on the gas
18 well as shown in the Exhibit of approximately ten
19 feet of perforation and the other well as shown
20 having approximately twenty-five feet of perforation,
21 would you accept that as a reasonable statement?

22 I will be glad to let you look at Exhibit 4.

23 A I don't know whether it is true because I wasn't
24 there when you looked at the logs. I have a lot
25 of logs on the Humble-Grace and that is correct.

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1 Q How far apart are those two wells?

2 A Twenty-two to twenty-five hundred feet, I don't
3 know the exact locations.

4 Q Then my assumption of ten feet or twenty-five feet
5 was not unreasonable; was it?

6 A No, but I do know the reservoir quality under the
7 Humble-Grace is much greater than the surrounding
8 wells.

9 MR. LeBLANC: That's all.

10 MR. PORTER: Does anyone have any other questions?

11 REDIRECT EXAMINATION

12 BY MR. KELLAHIN:

13 Q Is perforation the basis of determination of
14 reservoir quality?

15 A No, it is not.

16 Q In connection with your study of the reservoir,
17 in your opinion does poor volume calculations,
18 as you have suggested, more accurately reflect
19 the reserves underlying the given tract than
20 straight acreage?

21 A Yes, sir.

22 Q And straight acreage would be included in your
23 formula, is that correct?

24 A Yes.

25 Q So if there is any variation of acreage that would

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1 be taken care of?

2 A Yes, it would.

3 Q Mr. Nutter asked you in regard to attributing net
4 feet of pay to 320 acre tracts by six inch well
5 bores, do you have any other information on which
6 you can determine reserves?

7 A No, we do not other than possibly fill and dry and
8 interpretation between wells.

9 Q As done by Mr. Williams?

10 A Yes.

11 Q So you are really not at odds with Mr. Williams'
12 approach?

13 A No, I am not.

14 Q Now, in response to Mr. Spann, I believe you said
15 you prorate to protect one well from draining
16 another, is that the sum total of correlative
17 rights, just drainage or are there other factors
18 involved in this that you are familiar with?
19 Are you familiar with the statutory definition of
20 correlative right?

21 A No, I would appreciate a quick review.

22 Q I will give you a quick review. Correlative means
23 an opportunity afforded, insofar as it is practicable
24 to do, to owners of each property in a pool to
25 produce without waste a just and equitable share of

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1 oil and gas or both, in the pool and being an
2 amount so far as to practicably determine and
3 so far as can be practicable obtained without
4 waste.

5 Now, the pools where there are more than one
6 pipeline connection, is that a factor which might
7 require prorationing to protect correlative rights?

8 MR. SPANN: I object to the form of the question.
9 We don't need Mr. Kellahin to testify as to that extent.

10 MR. PORTER: I think the objection is well
11 taken and it will be sustained.

12 Q (By Mr. Kellahin) Are there other factors other than
13 drainage which effect correlative rights, in your
14 opinion?

15 A Correlative rights are being violated when you are
16 being drained.

17 Q Yes, admittedly when you are being drained your
18 correlative rights are violated. Mr. Spann phrased
19 the question on the basis that there may not be
20 communication between the two wells, and therefore,
21 it would be impossible to violate correlative
22 rights under those circumstances.

23 A The only way that I feel it would be is if you could
24 prove there was no communication between wells.

25 Q Has that fact been established in this pool?

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1 A Yes.

2 Q Has the fact that there is communication or lack
3 of communication between wells been established in
4 this particular pool?

5 A I don't think it has been established.

6 Q In your opinion is an operator entitled to his fair
7 share of the available market?

8 A Yes.

9 Q Would that be a correlative right, in your opinion?

10 A Yes.

11 MR. KELLAHIN: No further questions.

12 MR. PORTER: Are there any further questions of
13 this witness?

14 (No response.)

15 (Witness excused.)

16 (Whereupon, a recess was taken.)

17 (Hearing continues.)

18 MR. PORTER: The Hearing will come to order.

19 At this time the Commission will recommend Mr. Spann --
20 not recommend, I don't think he needs a recommendation, we
21 will recognize Mr. Spann.

22 MR. SPANN: I would like to call Charles Miller.

23 CHARLES P. MILLER,

24 was called as a witness, and testified as follows:

25 DIRECT EXAMINATION

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1 BY MR. SPANN:

2 Q Would you state your name, your residence and your
3 profession or occupation?

4 A My name is Charles P. Miller and I reside in Hobbs,
5 and I am a Consulting Geologist and have been so
6 since 1943.

7 Q Have you previously testified before this Commission
8 and have your qualifications been accepted?

9 A Yes, sir.

10 Q As an expert in the field of geology?

11 A Yes, sir.

12 Q Mr. Miller, are you familiar with the Carlsbad, the
13 South Carlsbad Morrow and South Carlsbad Strawn
14 formations, geological formations that have been
15 testified about here?

16 A To the extent that I have done considerable work
17 in there.

18 Q Would you just generally describe what sort of
19 studies you have done in this particular field?

20 A My work is primarily sampling and analysis and
21 interpretation of logs, that's basically my work.

22 Q And have you done any consulting work for Mr. & Mrs.
23 Grace in this field?

24 A Yes, for a number of years.

25 Q Would you describe, generally, what sort of formations

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1 that particular field developed?

2 A Yes, sir. I think most of us are in agreement that
3 the Pennsylvanian section is a very badly distorted
4 and torn up section and with the Commission's
5 permission I would like to read from a text I have
6 here.

7 MR. SPANN: We have overlooked one slight
8 detail, the witness has not been sworn.

9 (Whereupon the witness was sworn.)

10 Q (By Mr. Spann) Do you recall the questions I asked
11 you, Mr. Miller.

12 A Yes.

13 Q And if I asked you those questions again would your
14 answers still be the same?

15 A The same.

16 Q Under oath?

17 A Yes, sir.

18 MR. PORTER: The Commission considers Mr. Miller
19 qualified to testify.

20 Q (By Mr. Spann) Go ahead. I asked you about the
21 Pennsylvanian formation, the characteristics of the
22 way this particular field has developed.

23 A I will try to limit my discussion, but I would like
24 to have permission from the Commission to read a
25 small section of this book I have here entitled

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1 THE PENNSYLVANIAN SYSTEM IN THE UNITED STATES.

2 This book originated with the executive
 3 committee in 1953 and was published under the
 4 authorship of Carl C. Branson. Mr. Branson is
 5 associated with the State of Oklahoma as Director
 6 of --- Geological Director at that time. Mr. Branson
 7 was chosen as the editor in chief of this book
 8 and Mr. John Adams was also on the committee.

9 There is a particular point w want to read
 10 here relative to certain conditions of the
 11 Pennsylvanian. With your permission I would
 12 like to read it.

13 MR. PORTER: How long is it?

14 THE WITNESS: A paragraph.

15 MR. PORTER: You may read it.

16 A He is speaking here of the early Pennsylvanian:
 17 In areas of continuous sedimentation geological
 18 time divisions are difficult to establish and
 19 recognize. This is certainly true in Texas and
 20 Eastern New Mexico where deposition was almost
 21 unbroken and was practically continuous throughout
 22 the time span in marginal areas and was noncontemporaneous
 23 on the basins and was one of the reasons for the
 24 Pennsylvanian boundaries, with zone fossils absent
 25 and stratigraphic continuity used. At best these

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1 methods are recognized in fact, but the establishment
2 of more precise time tools are widely used and at
3 worst they are probably precise as to the time
4 boundaries recognized over equally extensive areas
5 elsewhere.

6 In the South Carlsbad area, particularly
7 in the lower Pennsylvanian we may have a channel
8 dip situation. Therefore, in my opinion, the wells
9 as far as drainage is concerned may be somewhat
10 questionable.

11 Q Is there any evidence available that you know of
12 from which we can determine whether there is
13 drainage between wells in the Morrow formation as
14 developed in this field?

15 A Up to the present time I think we have not used any
16 method that would definitely show that.

17 Q What sort of test would be necessary in order to
18 do that in your opinion?

19 A Well, I'm not qualified here as a professional
20 engineer, although I do have a registration and I
21 am a member of that society, but I would make the
22 suggestion that if we wanted to be positive about
23 it perhaps a group of wells, maybe four or five
24 wells, could be shut in and one well that is centrally
25 located -- let those wells be shut in and have them

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1 stabilize themselves and then run a bomb pressure
2 test in the test well and then open the other wells
3 and record in the well which the bomb was placed
4 whether there is a pressure trap.

5 That's a way we can establish, I think, to
6 a reasonable degree whether there is communication
7 between the wells immediately around the test wells.

8 MR. PORTER: You are talking about bottom hole
9 pressure?

10 THE WITNESS: Yes, sir.

11 Q (By Mr. Spann) Has any such test been made
12 to your knowledge?

13 A Not to my knowledge.

14 Q Now, Mr. Miller, I will hand you -- direct your
15 attention to Grace Exhibit Number 1 in Cause 4694.
16 Would you look at that and tell me what that shows?

17 A Well, along with many of my colleagues that's
18 simply my authority to show the structure position
19 on the top of the Strawn line. The contour is
20 100 feet.

21 Q What else does it show? Does it show the location
22 of the various wells?

23 A Yes, it shows the wells and the basis upon which
24 the contour was drawn and all the data that was
25 obtained from electric logs.

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1 Q And does this confirm your description of the
2 characteristics of this particular formation?

3 A Well, Mr. Spann, I may be off limits when I answer
4 this question, but my interpretation is that it
5 shows a definite structure on the east side and
6 on the immediate west side.

7 It shows a condition separating the wells
8 in the south end of those two sections, Sections
9 2 and 11; and on the opposite side of these wells
10 in Sections 1 and 12.

11 Q And this Exhibit 1 is in the Strawn; is that
12 correct?

13 A That's right.

14 Q And do you have an opinion as to whether there is
15 communication between the two wells in Sections 2
16 and 11 and Sections 1 and 12?

17 A Nobody knows for sure the answers until we make
18 some positive tests, but my opinion at the present
19 time is that it is very doubtful as to whether there
20 is communication between Sections 2 and 11 and
21 Sections 1 and 12.

22 Q Do you believe the same common source of supply
23 supplies Sections 2 and 11 and Sections 1 and 12?

24 A That is probably true because the Morrow sand is
25 quite similar over an extensive area. Now, the

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1 question here that you asked was whether there is
 2 a separate pool or not in the Morrow?

3 Q In your opinion are those separate pools?

4 MR. KELLAHIN: I object to this line of
 5 questioning. It is attacking a prior Order which determined
 6 a common source of supply and the question would be more
 7 properly presented at another proceeding.

8 MR. SPANN: I am showing this for the purpose
 9 of just showing the geological formation and the
 10 characteristics of it which everyone else has shown here.

11 It is not a collateral attack.

12 MR. STEVENS: We would like to object to the
 13 question as it presumes the wells produced in Sections 1
 14 and 12 are produced out of the Strawn and that information
 15 has not been brought into evidence.

16 MR. SPANN: You are correct, I will withdraw
 17 my question.

18 Q (By Mr. Spann) The wells in Sections 2 and 11 are
 19 not producing in the Strawn as you said; is that
 20 true?

21 A I believe that is correct.

22 MR. SPANN: I will withdraw my question.

23 Q (By Mr. Spann) Exhibit 1 shows the structure of
 24 the Strawn formation; is that correct?

25 A Yes.

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1 Q Now, directing your attention to Grace Exhibit Number
2 2 in Case 4693, what would that show, Mr. Miller?

3 A That is my contour of the top of the Morrow section
4 and the base of the Pennsylvanian section.

5 MR. PORTER: I believe your Exhibit bears the
6 wrong Case number. That's not Case 4963, but Case 4693.

7 MR. SPANN: Mr. Chase, did you do that?

8 Q (By Mr. Spann) Directing your attention then to
9 Grace Exhibit 2 in Case 4693, would you state what
10 that is and what it shows?

11 A In many respects the structures are quite similar
12 as those shown in the Strawn. It is drawn for the
13 purpose of showing the separation in structure.

14 Q Where did you obtain the information that is on
15 that particular Exhibit?

16 A It is all based from my interpretation of electric
17 logs.

18 Q Again I will ask you the question, for the purpose
19 of showing merely the characteristics of this
20 formation. In your opinion is there communication --
21 in your opinion do the wells in Sections 2 and 11 --
22 they are producing from the Morrow; is that correct?

23 A That is correct.

24 Q As well as the wells in Section 1 and 12?

25 A With the exception of the Collette well.

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1 Q Insofar as the Morrow wells are concerned, do you
2 have an opinion as to whether the wells in Sections
3 2 and 11 are producing from the same common
4 reservoir or source of supply as the wells in
5 Sections 1 and 12?

6 MR. KELLAHIN: We renew our objection. Counsel
7 has said he is merely doing this to show reservoir
8 characteristics. We have no objection to him showing
9 the characteristics of the Morrow formation, but to
10 express whether it is a common source of supply or not,
11 that's a determination that has already been made by this
12 Commission.

13 MR. PORTER: I think the objection is quite
14 proper and will be sustained.

15 MR. SPANN: I would tender this evidence for
16 the purpose of merely showing the characteristics of the
17 field. Mr. Miller, if allowed to testify, would testify
18 that, in his opinion, the wells in Sections 2 and 11 are
19 producing from a separate source of supply, or reservoir
20 than the wells in Sections 1 and 12.

21 MR. PORTER: Mr. Spann, I believe we have ruled
22 on this earlier, the question is not before the Commission.

23 MR. SPANN: I am tendering it for the purpose I
24 stated, to show the reservoir characteristics and I didn't
25 tender it for the purpose of showing this was not in the

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1 in the reservoir. I wanted it for another purpose, a
2 limited purpose, and you objected to my even offering it
3 for that purpose, so I did tender it.

4 Q (By Mr. Spann) Mr. Miller, does your evaluation as
5 shown in Exhibit 2 show any separation in the formation
6 based on the contours?

7 A Exhibit 2 of the Morrow?

8 Q Yes.

9 Q Repeat your question.

10 Q Does it, in your opinion -- does Exhibit 2 show
11 separation in the Morrow formation in your opinion?

12 A It shows separation and structure.

13 Q Is that consistent with the type of formation we
14 have here as you have described it and as it has
15 been described by the gentlemen who wrote the book
16 you brought with you?

17 A Yes.

18 Q Now, what else does Exhibit 2 show, Mr. Miller, if
19 anything -- let me ask you this, where does the
20 separation that you mentioned and that is shown in
21 your structure occur? Could you point that out on
22 Exhibit 2?

23 A Well, it's approximately in the northwest of the
24 southeast running directly through the west half of
25 Section 36, 22 South, 26 East, and continuing through

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1 the west half of Section 13, South, 26 East and
2 into the west half of Section 12, 23 South, 26
3 East.

4 Q Now, based on the information that is available,
5 do you have an opinion at this time as to whether
6 this field should be prorated?

7 A Well, don't misunderstand me, I am a very ardent
8 supporter of proration, but I think to make
9 prorationing effective we need to know more detail
10 than we actually know at the present time about
11 this and I would make the suggestion with your
12 permission, that further tests be run to determine
13 the possible communication between wells.

14 It might be well to say at this time that
15 I think it would be very advantageous to have that
16 information.

17 Q Is it your opinion in the Morrow that we do not
18 have sufficient information at this time to
19 determine whether this particular pool should be
20 prorated?

21 A I am certainly inclined to think that we do not
22 have all the information we need to make that
23 determination.

24 Q Now, did you make your evaluations in conjunction
25 with any other geologist?

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1 A No, I hadn't seen any of those boys to talk to
2 them until yesterday. I talked to one of the boys
3 and his work was already completed and mine was
4 already completed.

5 Q You are speaking of Mr. Decker?

6 A Yes.

7 Q Were these Exhibits prepared by you or under your
8 direction?

9 A I worked out the data and prepared the drafting; I
10 prepared the whole thing.

11 MR. SPANN: I will offer Grace Exhibit Number
12 1 in Case Number 4963 and Grace Exhibit Number 2 in Case
13 Number 4964.

14 MR. PORTER: It's the other way around.

15 MR. SPANN: 4694 is Exhibit 1 and 4693 is
16 Exhibit 2.

17 MR. PORTER: Any objections?

18 (No response.)

19 MR. PORTER: They will be admitted, without
20 objection.

21 (Whereupon, Grace Exhibits 1 and 2 were
22 admitted in evidence.)

23 MR. PORTER: Does anyone have any questions of
24 Mr. Miller?

25 CROSS-EXAMINATION

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1 BY MR. STEVENS:

2 Q Mr. Miller, in the statement you read from the book,
3 this was concerned with the early Pennsylvanian?

4 A Yes.

5 MR. STEVENS: That's all.

6 CROSS-EXAMINATION

7 BY MR. STAMETS:

8 Q I notice you have no log on your Exhibit Number 2,
9 I wonder if you have information available or can
10 make it available to me as to the point that you
11 picked between these wells?

12 I noticed some of the peaks were as close as
13 eight feet together and as far away as sixty feet
14 apart on the same well.

15 A This is nothing unusual.

16 Q I feel like my pick was pretty good, everybody can
17 miss them but if I could have your picks then I
18 could go back and verify and see what happened.

19 I am particularly speaking of the one with the sixty
20 foot difference.

21 A I don't have the information with me now, but if
22 you care to go to my office where all my data is
23 I will be glad to show you where I made my pick.

24 MR. PORTER: In other words, you will supply
25 Mr. Stamets with that information?

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1 THE WITNESS: I sure will.

2 Q (By Mr. Stamets) I believe the book you referred
3 to was written in 1953, there have been quite a
4 number of Pennsylvanian wells since 1953.

5 A This book was proposed in 1953 as a special study
6 on the Pennsylvanian systems in the United States.
7 This was implemented by the executive committee on
8 January 25, 1954 and they approved the creation of
9 a special committee to review the Pennsylvanian.
10 Actually the work wouldn't have been finished
11 until probably early 1960.

12 Q Do you feel there have been a lot of wells since
13 that time in the Pennsylvanian and a lot of knowledge
14 added to the general knowledge that was known about
15 the Pennsylvanian?

16 A Well, Mr. John Henry Adams was very knowledgeable
17 and well informed and I think some of you may have
18 known him personally and would certainly accept
19 Mr. Adams' opinions.

20 MR. STAMETS: That's all the questions I have.

21 MR. PORTER: Anyone else?

22 CROSS-EXAMINATION

23 BY MR. LeBLANC:

24 Q Mr. Miller, I apologize if I repeat a question, but
25 I just flat wasn't listening and I apologize.

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1 I see a rather large map here and in the
 2 northwest corner of your Exhibit Number 1 there
 3 are nine sections, can you give me the basis of
 4 the indicated control in those nine sections?

5 A Well, you know every poet and every musician takes
 6 liberties and I suppose a geologist can take the
 7 same liberties.

8 That was primarily done as a background
 9 buildup to build up my structures.

10 Q A background buildup of the structures to the east?

11 A That's right.

12 Q You didn't build from the east to project to the west?

13 A In this particular case I worked the structures first
 14 in order to substantiate my conclusions or identify
 15 in my mind the buildup over to the well in Section 22.

16 Q I presume your dotted line means something different
 17 from the solid line?

18 A The dotted lines are questionable.

19 Q Do you have any particular five wells in mind for
 20 your bottom hold pressure tests?

21 A Not at this time. It was just an idea that I suggested
 22 that might make the information already submitted a
 23 little more positive, but it certainly would be a
 24 good addition to the information that has been
 25 submitted.

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1 Q Yesterday it was testified that the Corinne-Grace-
 2 Humble-Grace production was approximately 215,000,000
 3 feet in February, would you recommend that as one of
 4 the wells to be shut down?

5 A Well, this would have to be discussed with the
 6 pipelines before we do anything.

7 MR. LeBLANC: Thank you, sir.

8 MR. PORTER: Any other questions of this witness?

9 CROSS-EXAMINATION

10 BY MR. KELLAHIN:

11 Q We seem to have a little bit of difference in our
 12 Exhibits on well locations.

13 Referring to Section 2 and the Pennzoil-United
 14 Gulf Federal well, isn't that well in fact located
 15 further to the west near your contour line of 7,800
 16 feet?

17 MR. PORTER: Is that Section 1?

18 MR. KELLAHIN: Section 6.

19 A The information I placed on the maps was taken off
 20 the first reports that I received as to their
 21 locations.

22 Q Did you examine the logs and check the locations on
 23 the logs?

24 A No, I can't say that I did.

25 Q Do you have information available here as to the exact

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1 locations of the wells?

2 A No, those logs are all in my office.

3 Q How about the well in Section 11, the Texas Pan
4 American State, on our Exhibit that well was located
5 some distance to the east, would you agree with that
6 or do you know?

7 A I will repeat again I have taken all this information
8 from the records, the first reports.

9 Q But again, you did not check the locations on the logs?

10 A Well, that wasn't necessary because I have seen
11 erroneous descriptions on electric logs.

12 Q Assume with me for a moment that the well is located
13 as I said, would that change your contour lines
14 considerably?

15 A Everybody can see that.

16 Q Did you base your structure on the low point of the
17 structure, is that the substance of what you did?

18 A That is what I had in mind.

19 Q Do you know if any of the low wells in the pool
20 produced water?

21 A Well, that's a little bit out of my line,
22 Mr. Kellahin. I think someone else might have those
23 figures.

24 Q You don't know of any water producers?

25 A Not sufficiently to make a positive statement.

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- 1 Q In the nature of the Morrow formation there are
2 restrictive zones which are separated by shale
3 zones; is that correct?
4 A That is very characteristic of this section.
5 Q And some of the zones are vertical communications
6 and some are not; is that a fair statement?
7 A Well, it's a fair statement but I don't know if
8 I agree with you or not.
9 Q Are they or are they not, in your opinion?
10 A I doubt it seriously.
11 Q They do have vertical connections at numerous wells;
12 do they not?
13 A Will you state that question again?
14 Q These various zones are perforated so there is
15 communication between well bores on numerous wells;
16 is that correct?
17 A That is correct.
18 Q Now, the Corinne-Grace Humble Number 1 in Section 2,
19 you made a log on that; did you not?
20 A Yes.
21 Q Is it not producing from the same zone as the
22 Pennzoil-United Number 1 in Section 12?
23 A There again, Mr. Kellahin, I do not have the log
24 to compare the two. I just relied upon my memory
25 and my memory is not what it used to be.

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1 Q They are about on the same contour interval;
2 are they not?

3 A The Humble-Grace and which one?

4 Q The Pennzoil Number 1 in Section 12.

5 A Yes, that appears to be very close.

6 Q And as I understand your testimony you have no
7 knowledge of any horizontal communication in the
8 pool; is that correct?

9 A (No response.)

10 Q Of one well to the next?

11 A I don't think we have any evidence to prove it yet.

12 Q Do you know of any evidence at all to indicate
13 horizontal communication?

14 A No, I don't believe I have positive evidence to give
15 you a correct answer on that.

16 Q These wells are completed in different zones throughout
17 the pool, they are not all completed necessarily in
18 the same zone, are they?

19 A No, I believe there is a certain amount of overlap
20 on these wells.

21 Q With that situation would the pressure test you
22 recommended for determining communication be effective?

23 A Well, I'll answer you this way: If it doesn't show
24 geology it certainly shows their separation.

25 Q Vertically or horizontally you wouldn't know though,

1 would you?

2 A That's a question for speculation.

3 Q Well, the whole question of communication at this
4 stage is a question for speculation; isn't it?

5 A You are very right.

6 MR. KELLAHIN: Thank you. That's all I have.

7 MR. PORTER: Does anyone else have any questions
8 for Mr. Miller?

9 (No response.)

10 MR. PORTER: If not, the witness may be excused.

11 (Witness excused.)

12 MR. PORTER: Mr. Spann, I believe you have more
13 than one witness yet to testify, would you have them
14 all stand to be sworn at the same time, please.

15 MR. SPANN: Yes.

16 (Whereupon, three witnesses were sworn by
17 Mr. Hatch.)

18 MR. PORTER: You may proceed, Mr. Spann.
19
20
21
22
23
24
25

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

COMMISSION HEARING

IN THE MATTER OF:

The hearing called by the Oil Conservation
Commission on its own motion to consider
instituting gas prorationing in the
South Carlsbad-Morrow Gas Pool and the
South Carlsbad-Strawn Gas Pool, Eddy
County, New Mexico.

)
)
)
) Case No. 4693
) and
) Case No. 4694
)
)

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

Vol IV

p 233 - p 283

TRANSCRIPT OF HEARING

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FIRST NATIONAL BANK BLDG. EAST • ALBUQUERQUE, NEW MEXICO 87108RICHARD STEINHOLZ,

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

DIRECT EXAMINATIONBY MR. SPANN

Q Would you state your name, residence and occupation,
or profession?

A Richard Steinholtz, Jr., Lafayette, Louisiana. I
am a consulting petroleum engineer.

Q Have you previously testified before the New Mexico
Oil Conservation Commission as an expert petroleum
engineer?

A I have.

MR. SPANN: Are there any questions about the
witness' qualifications?

MR. PORTER: No, his qualifications are accepted.

Q (By Mr. Spann) In your capacity as a petroleum
engineer, have you had occasion to study or are you
familiar with the South Carlsbad-Morrow and South
Carlsbad-Strawn Gas Pools?

A I am.

Q Just briefly state what your connections are with
this field and what your knowledge of it is?

A Well, I worked on several occasions for Mr. Grace
and just recently completed the last well for him

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 and just recently completed the last well for him

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- 1 in the Strawn and the Morrow.
- 2 Q Which one is that?
- 3 A That is the City of Carlsbad -- or the Grace Carlsbad.
- 4 Q Which section is that in?
- 5 A Section 36, 22, 26.
- 6 Q When was that completed, if you recall approximately.
- 7 A About ten days ago.
- 8 Q Have you made a study of the South Carlsbad-Morrow
- 9 formation or structure?
- 10 A I have not made a study of the structure, I have
- 11 utilized the log data and studied a structural map
- 12 prepared by Mr. Miller and other geologists that
- 13 worked for Mr. Grace in this field.
- 14 I am not a geologist and therefore do not partake
- 15 in drawing structural maps, nor do I interpret
- 16 geological data.
- 17 Q You have before you Grace Exhibit Number 3; is that
- 18 correct?
- 19 A Yes.
- 20 Q For Case 4693?
- 21 A Right.
- 22 Q Did you prepare that, incidentally?
- 23 A Yes, I prepared this.
- 24 Q What does it show?
- 25 A Well, Column 1 shows the operator -- I have to apologize

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1 to Mr. Antweil because I have his name spelled as
 2 "Atwell." I have nothing to say except that I made
 3 a mistake.

4 The next column is the well name; the next
 5 column is the date of completion, information we got
 6 from the Commission records; the next column is the
 7 drill stem test interval in the Morrow Section; the
 8 next column is the final shut-in pressure on those
 9 drill stem tests; the next column is the perforated
 10 interval, not specific perforations, but the intervals
 11 perforated; the next column was the initial calculated
 12 open flow of the well; and the next column was the
 13 shut-in well head pressures that were taken and
 14 calculated on an open flow record.

15 Q And based on this information, do you have any opinion
 16 as to the reservoir characteristics of the Morrow
 17 formation and of the wells involved?

18 A First, I would like to explain what the purpose was
 19 in compiling this Exhibit.

20 If you will notice, I tried to put the wells on
 21 the Exhibit in the order in which they were completed.

22 The Pennzoil-Mobil Federal Number 1 was completed
 23 in February of 1968, unfortunately, I did not have
 24 the exact date of the drill stem test, but it is
 25 interesting to note that the final shut-in pressure

- ajj-4

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1 was 4,870 pounds per square inch.

2 I will direct your attention down to one of
3 the most recent completions in the Morrow which was
4 the Grace Humble Grace Number 1, where they shut-in
5 bottom hole pressure of 4,465.

6 It is interesting to note that this particular
7 well is in the lower nonproductive section of the
8 Morrow and the bottom hole pressure is 4,854 pounds
9 which indicates the Morrow, at least by bottom hole
10 pressure data, does not particularly show any
11 communication between wells.

12 For example, the Pennzoil-Gulf Federal Number 1
13 had a shut-in bottom hole pressure at two intervals
14 of 4,827 and 4,809 two years later than the Mobil
15 Federal Number 1 which had been producing for some
16 time prior to that completion.

17 So, it would indicate from bottom hole pressure
18 data that there is not very much communication
19 between wells at this time.

20 Q Does this Exhibit show anything else?

21 A Yes, it shows the fact that the Humble Grace Humble
22 Number 1 and the Granada apparently must be in a
23 different source of supply because the pressures are
24 considerably different.

25 There is approximately 300 pounds difference in

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1 bottom hole pressures.

2 The shut-in well head pressure on the log data
3 also indicates that these are not completed in the
4 same section as the other wells.

5 Again, going back to the Humble Grace Number 1,
6 when you get back there to the general Morrow, if
7 you want to call it that, we do get bottom hole
8 pressure which is similar to the other bottom hole
9 pressure in the other wells completed in the Morrow.

10 Q Assuming that the purpose of prorationing is to
11 prevent waste and protect correlative rights, is
12 there sufficient information available to determine
13 whether this field should be prorated in your opinion?

14 A In my opinion, I don't think there is enough evidence
15 to show sufficient communication and interference
16 between wells to justify proration.

17 Q Did you make your evaluations or studies independently
18 from Mr. Miller and Mr. Decker?

19 A I did, except that I looked at their structural
20 interpretation and it helped me to determine what
21 the general characteristics of the field were.

22 MR. SPANN: I believe that's all.

23 MR. PORTER: Any questions?
24
25

CROSS-EXAMINATION

BY MR. STAMETS

Q I think it has been previously pointed out some of these wells have a number of zones present, assuming that you have two offset wells, both of them open in the same zone, and each of them open in some isolated zones, if you took a series of shut-in pressures on these wells, would the fact that they have some isolated zones present in them effect the pressure that you would get from such tests?

A They might have some effect, however, Mr. Stamets, if you will notice, there are intervals there -- for example, in the City of Carlsbad Well, there is an interval of drill stem test started in the middle of the Section and it had a very low bottom hole pressure while the interval above that had for example, from 11,580 to 11,641, had a shut-in pressure of 4,700 pounds; from 11,636, which overlapped to 11,706, it had a shut-in pressure of 4,121.

This illustrates the fact that your pressures are going to be predominantly determined by the better zones in your well.

Q These were all final shut-in pressures after a series of flows.

Do you know if these were all stabilized pressures?

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1 A I did not see the drill stem test charts on all of
 2 the wells, however, the closed in test charts that
 3 I did see indicated that these were fairly stable
 4 pressures.

5 MR. STAMETS: That's all the questions I have.

6 MR. PORTER: Are there any further questions?

7 CROSS-EXAMINATION

8 BY MR. KELLAHIN.

9 Q Using the drill stem test pressure, those can be
 10 affected by mechanical conditions; can't they?

11 A This is true, but they are relative and they are not
 12 as accurate as if you would run a subsurface test.

13 Q It would have an effect on it at the time of the
 14 final shut-in?

15 A Well, it would if the well was not stabilized. If the
 16 well had been stabilized and it is indicated in the
 17 drill stem test records that I had available to
 18 examine and they did show stabilized pressure.

19 Q But all the pressures you have here you don't know
 20 whether they were stabilized or not?

21 A No, not all of them.

22 Q How would you account for the difference in pressures
 23 between the Pennzoil and the Mobil Federal Number 1
 24 when when the virgin pressures were 4870 for the
 25 Grace Humble Number 1 and 4486 for the Pennzoil Well

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1 for approximately the same zone?

2 A They are not the same zone in my opinion.

3 Q Where is the same zone in the hole?

4 A The same zone in that particular hole you are talking
 5 about, the Grace Well Number 1?

6 Q Yes.

7 A The same zone in that particular hole was completely
 8 dense and was not tested.

9 Q So you're testing different zones when you compare
 10 the two zones?

11 A I am saying they are not the same zone, therefore
 12 they are not connected.

13 Q And when were these shut-in bottom hole pressures
 14 taken?

15 A I would assume they were taken at the time the wells
 16 were drilled.

17 Q The well head pressure, I mean?

18 A These well head pressures came from the initial
 19 calculated open flow tests turned into the Commission.

20 I didn't pay too much attention to the date, but
 21 I am sure they were very shortly after the wells were
 22 completed.

23 Q Did you take into consideration any production from
 24 the pools in making your determination?

25 A No, I did this deliberately, Mr. Kellahin, I wanted

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1 to try and see what initial conditions existed in
 2 the well as they were drilled and therefore, I tried
 3 to avoid any.

4 In the first place, you know bottom hole pressures
 5 were taken after the wells were completed, so I
 6 attempted to avoid any effect production would have
 7 had knowing, for example, that the Federal Well had
 8 produced considerable gas at the time the other wells
 9 were drilled and had very similar initial pressure.

10 Q But you found rather widely varying pressures in these
 11 different zones?

12 A No, I think, if we found any widely varied pressures,
 13 it was actually in the Humble Grace and Humble Grace
 14 Number 1.

15 Q Those are the widely varying pressures that you are
 16 referring to?

17 A Yes, those two pressures certainly indicate they are
 18 not related to the other wells in the field.

19 MR. KELLAHIN: I have nothing further.

20 MR. PORTER: Are there any other questions?

21 CROSS-EXAMINATION

22 BY MR. LeBLANC

23 Q Referring to the Grace City of Carlsbad Well, apparently
 24 that well must have been drill stem tested at four
 25 different intervals?

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1 A That is correct.

2 Q Would you tell me what was recovered on each drill
 3 stem test?

4 A I believe on the top one -- may I have those logs,
 5 please, George?

6 On the drill stem test at 11,493 to 11,556,
 7 the recovery was 372 feet of mud, 8945 feet of water.

8 On the drill stem test from 11,580 to 11,641,
 9 the gas-in was fifteen minutes and the flow was 911
 10 MCF on a quarter-inch choke.

11 On the interval from 11,636 to 11,704, the gas-in
 12 forty-five minutes and 180,000 cubic feet per day
 13 recovered with twenty-one feet of water cushion.

14 On the interval 11764 to 11860, 789 MCF per day
 15 on a quarter-inch choke.

16 Q Would you give me the same information in relation
 17 to the Humble Grace Number 1?

18 A Okay. The drill stem test at 11631 to 11653, the
 19 gas surface in eleven minutes and flowed 650 MCF per
 20 day, recovered thirty feet of mud.

21 On the drill stem test 11682 to 11704, gas
 22 surface one minute and a half and flowed fourteen
 23 million two hundred thousand cubic feet per day with
 24 a half-inch choke.

25 Then there was another one that flowed five

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1 million six hundred thousand on a quarter-inch choke
2 with ten feet of water.

3 On the drill stem test at 11757 to 11482, the
4 gas surface nine and a half minutes and flowed 240
5 MCF per day and on a rate increase 450 per day on a
6 half-inch choke.

7 MR. PORTER: Are there any further questions
8 from this witness?

9 REDIRECT EXAMINATION

10 BY MR. SPANN

11 Q You mentioned that you felt we had insufficient
12 information available at this time to determine whether
13 there should be prorationing, what additional
14 information do you feel is necessary to make a
15 reasonable and valid determination of this?

16 A In my opinion, you would need more bottom hole pressure
17 data and production data before you could determine
18 the equitable distribution of allowables.

19 Q Do you think that any formula that has been proposed
20 here, and you have been sitting here during the entire
21 hearing?

22 A I heard all the testimony.

23 Q Do you feel any of the formulas proposed would in
24 any way reasonably assure us that the various
25 operators would be able to produce their fair share.

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1 of the reserves under their respective wells?

2 A I don't believe any one formula proposed would do
 3 this and I don't think the information that has been
 4 proposed to be used is complete enough and adequate
 5 enough to assure equity between wells.

6 Q Was Exhibit Number 3 prepared by you?

7 A That is correct.

8 MR. SPANN: I offer it in evidence.

9 MR. PORTER: Without objection, Exhibit Number 3
 10 will be admitted in evidence.

11 (Whereupon Grace Exhibit Number 3 was admitted
 12 in evidence.)

13 MR. PORTER: Are there any further questions of
 14 this witness?

15 (No response.)

16 MR. PORTER: If there are no further questions
 17 of this witness, he may be excused.

18 (Witness excused.)

19 R. W. DECKER,

20 was called as a witness and having already been duly sworn
 21 testified as follows:

22
 23
 24
 25

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DIRECT EXAMINATION

2 BY MR. SPANN

3 Q Would you state your name and residence?

4 A My name is R. W. Decker and I live in Roswell, New
5 Mexico, and am a consulting geologist.6 Q Have you previously testified before the New Mexico
7 Oil Conservation Commission as a professional geologist
8 and have you had your qualifications accepted as an
9 expert.

10 A No, sir.

11 Q Then will you state briefly your educational background
12 and experience as a geologist?13 A I graduated from the University of Michigan in 1948
14 with a degree in geology.15 I went to work for Texaco and worked for Texaco
16 for twenty years.17 The first five years, I was doing service work
18 in the Four Corners Area, before I moved to Midland
19 and worked there in the West Texas area.20 In 1961, I moved to Roswell, New Mexico, and was
21 still with Texaco and I have been associated with
22 southeastern New Mexico geology since that time.23 MR. SPANN: At this time, I will tender the
24 witness' qualifications.

25 MR. PORTER: The witness' qualifications are

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1 acceptable.

2 Q (By Mr. Spann) Have you had occasion to make a study
 3 as a geologist of the South Carlsbad field that is
 4 involved here?

5 A Yes.

6 Q When did you make that study?

7 A During the last couple of weeks.

8 Q At whose request?

9 A Mr. and Mrs. Grace.

10 Q What sort of study or evaluation did you make?

11 A Primarily I studied the Morrow Section and drew up
 12 a contour map and also a structure contour map of
 13 the Strawn.

14 However, the Morrow was my main concern.

15 Q Directing your attention to Grace Exhibit Number 4,
 16 will you explain what that is and what it shows?

17 A It shows the structural features over the main portion
 18 of the field with a low on the west side and then
 19 my interpretation shows a dip or a rising to the west
 20 which I consider to be an original dip and separation
 21 down the west side of the main structure.

22 Q And the information which is on this Exhibit, where
 23 did you obtain that?

24 In other words, is it the general type of
 25 information you had available to you from which you

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1 prepared this Exhibit and your evaluations?

2 A The data was all contained on electric logs and I
 3 had scout information available along with stem tests
 4 and proration information and so forth.

5 Q And do you have an opinion as to whether there is
 6 communication between the wells on each side of
 7 this dip as you call it, in this formation?

8 A I think there is very poor communication throughout
 9 the Morrow with the thin sand and it is poorly
 10 connected.

11 There is one main sand shown on my cross section
 12 which I think is correlative and probably produces
 13 throughout the main part of the field, however all
 14 the other sands seem to show poor communication, they
 15 are thinner sands in the main field and there is no
 16 communication to the west across the low areas.

17 Q I will direct your attention to what has been marked
 18 as Grace Exhibit 5 in Case 4693; do you have that?

19 A No, but I think I remember it.

20 Q Well, look at this (indicating). What does that
 21 Exhibit show?

22 A The main thing shown on this is --

23 Q What is it; explain what the Exhibit is?

24 A This is a cross section shown on the map on the south
 25 end extending from west to east.

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1 The Humble Grace, the Pennzoil Number 1, the
2 Gulf Federal Number 1, the Pennzoil Number 2, the
3 Gulf Federal Number 2, the Antweil Number 1,
4 Missouri New Mexico Land are shown on this cross
5 section.

6 It is set up on a level minus eight thousand and
7 shows the low as shown on the map in the Pennzoil
8 Number 1 Gulf Federal.

9 It also shows a thick sand in the Humble Grace
10 separated by twenty feet of shale which should be
11 adequate to prevent vertical migration eastward to
12 the Number 1 Gulf Federal.

13 The upper hasn't continued across and I feel
14 the sand perhaps continues throughout the whole area.

15 However, at this time in the Humble Grace Well,
16 the lower sand is not present in the Number 1 Gulf
17 Federal to the east.

18 This lower sand is present only in the Grace
19 Number 1. Therefore, these two wells are definitely
20 different pays than the rest of the field.

21 Q Does the Exhibit show anything else with respect to
22 these wells and their characteristics?
23
24
25

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1 A The primary point of the cross section is the
2 fact that this does -- the pay does not extend
3 eastward, also it does not extend southward.

4 Q Do you have an opinion as to whether -- what are
5 the characteristics of the area of the field insofar
6 as communication between -- insofar as whether the
7 wells are producing from the same reservoir or
8 source, common source of supply?

9 A My opinion is the field -- it has numerous thin
10 pays as well as this main pay and the communication
11 them in the lower Morrow is very poor?

12 Q Are there separate reservoirs, according to your
13 evaluation?

14 A Yes, sir.

15 MR. LELLAHIN: We object and ask the answer
16 be stricken.

17 MR. SPANN: I am merely trying to show the
18 reservoir arterie figures.

19 MR. PORTER: The Commission will sustain
20 the objection and the answer must be stricken from the
21 records.

22 MR. SPANN: Well, for the purpose of the
23 record I would tender that this witness for the purpose
24 of establishing that there are separate reservoirs or
25 common sources of supply in the field, and particularly

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1 that the wells in Sections 2 and 11 are producing
 2 from separate reservoirs or sources of supplies from
 3 the wells in Sections 1 and 12.

4 Q (By Mr. Spann) Do you feel we have enough information
 5 available to determine if this field should be prorated
 6 at the present time -- production should be prorated?

7 A No, sir.

8 Q Why is that?

9 A I think we need more pressure data, very few wells
 10 in the field have actually produced for very long
 11 and we don't even have the lateral extent of the
 12 Morrow field; we just don't have any information.

13 Q And you have been here during the prior hearing and
 14 heard the testimony concerning the various formulas
 15 that have been proposed here for proration?

16 A Yes, sir.

17 Q Do you feel any of these, if adopted, and the field
 18 is prorated, would assure reasonably that the various
 19 operators would be able to recover their fair share
 20 of the reserves under their respective prorationing
 21 units?

22 A Well, I'm not a reservoir engineer, but it doesn't
 23 seem, with the information we have available, that
 24 we can do that, no.

25 Q You did prepare your Exhibit and evaluation independently

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1 and separately from consulting from either Mr. Miller
 2 or Mr. Steinholtz?

3 A Yes.

4 Q Were these Exhibits, the Grace Exhibits 4 and 5,
 5 prepared by you?

6 A Yes.

7 MR. SPANN: I will offer these Exhibits.

8 MR. PORTER: Without objection, Grace Exhibits
 9 4 and 5 will be admitted.

10 (Whereupon, Grace Exhibits 4 and 5 were
 11 admitted in evidence.)

12 MR. SPANN: That's all.

13 MR. PORTER: Does anyone have any questions of
 14 this witness?

15 CROSS-EXAMINATION

16 BY MR. LeBLANC:

17 Q Your recommendation was we need more pressure tests
 18 in the field; is that correct?

19 A We need more pressure test data.

20 Q What pressure test data would you recommend?

21 A I'm not an engineer and I really don't know.

22 Q Then why do you recommend more pressure test data?

23 A I know we need more information, that's more of my
 24 answer, that we don't have the information, not
 25 necessarily pressure.

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1 Q I thought you said we needed more pressure data,
2 I apologize.

3 MR. PORTER: Does anyone else have any questions?

4 (No response.)

5 MR. PORTER: If not the witness will be excused.

6 (Witness excused.)
7

8 CORINNE GRACE,

9 was called as a witness and having been already duly sworn,
10 testified as follows:

11 MR. PORTER: Let the record show that Mrs. Grace
12 has already been sworn.

13 DIRECT EXAMINATION

14 BY MR. SPANN:

15 Q Would you state your name for the record?

16 A Corinne Grace.

17 Q Where do you live, Mrs. Grace?

18 A Houston, Texas.

19 Q And are you married?

20 A Yes.

21 Q Who is your husband?

22 A Michael Grace.

23 Q And, are you, Mrs. Grace, interested in or do you have

24 investments in, the South Carlsbad fields?

25 A Yes.

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Q Will you state briefly what they are?

A In 1968 my husband acquired some and I acquired some in 1966.

I see here we acquired Section 36 from the State of New Mexico, and in 1968 I acquired a lease from the State of New Mexico that was in Section 2 and Section 11, the same lease overlapped.

In, I believe, 1970, I acquired a lease from the City of Carlsbad in Section 25.

Do you want to know about the farmouts or just the purchases?

Q I want to know the leases and the interests you have acquired; farmouts too.

A Okay. I will start with the north half of Section 11 which involved State Lease L-1582. I paid \$226.62 an acre to the State of New Mexico. I had the same lease in the south half of Section 2 and also in the east quarter of Section 2.

My husband acquired, his name is on the same lease, and he acquired his for the same price. My husband acquired Section 36 from the State of New Mexico, in 1966, and the south half of Section 25, the east quarter, approximately 130 acres in the east quarter of Section 25, he acquired this in August of 1970, from the City of Carlsbad.

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1 In the northeast quarter of Section 25, my
 2 husband and I together, have a farmout from Atlantic-
 3 Richfield.

4 In the southwest quarter of Section 24 we have
 5 a farmout from Atlantic-Richfield. In Section 25
 6 we have a farmout with Forced Pooling and we hold
 7 the north half and have drilled a well and it is
 8 now in the process of being completed.

9 In the southeast quarter of Section 24, we
 10 have a farmout and in the north half of Section
 11 24 we have a farmout.

12 In the farmout that we have in the north half
 13 of Section 24, we are spotting a well. I guess that's
 14 it for the moment.

15 Q In round figures could you tell me what investments
 16 you have in leases in this particular field or the
 17 immediate area of the field?

18 MR. KELLAHIN: I object to the question. The
 19 amount of Mrs. Grace's investments seem to be irrelevant.
 20 Her acreage holdings are relevant, but the amount of her
 21 investments are irrelevant and I object to the question.

22 MR. SPANN: Well, I think the Commission can
 23 consider this factor in determining whether this field
 24 should be prorated or not. I think it is fair to show
 25 what any operator, lease operator, has invested in this or

1 in any other hearing.

2 THE WITNESS: I'd say we have approximately
3 \$250,000.00 -- wait a minute, wait a minute.

4 MR. PORTER: The Commission fails to see where
5 this information is material to the question before the
6 Commission here, so we are going to sustain the objection.

7 Q (By Mr. Spann) Can you state how much acreage you
8 have in round figures in this particular area of
9 this field?

10 A Including whatever sources we got it from?

11 Q Right.

12 A I'd say we have four and one-half sections at 640
13 acres in each.

14 Q Now, how many wells have you drilled up to the present
15 date and give me their locations.

16 A Six. We have drilled one in the north half of Section
17 11; we have drilled one in the south half of Section 2,
18 the Humble-Grace; one in the north half of Section 2,
19 the Guadanaco; one in the south half of Section 36;
20 and one in the south half of Section 25; and one in
21 the north half of Section 25.

22 Q Which of these wells are under production?

23 A At the present moment we have three, with a well soon
24 to be connected, the fourth one, then hopefully there
25 will be a fifth one.

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- 1 Q Which ones are in production?
- 2 A The two in Section 2 and the City of Carlsbad in the
- 3 south half of Section 25. We plan to connect the
- 4 one in the north half of Section 11 this week.
- 5 Q So you have received no pay as yet or pay out from
- 6 either the well in the north half of Section 2 or
- 7 the well in the north half of Section 11?
- 8 A We have seen one check.
- 9 Q From which one?
- 10 A This included the north half of Section 2 and we
- 11 had a few days selling in the south half of Section
- 12 25, the City of Carlsbad.
- 13 Q But you do know what the capacity of the wells, or
- 14 the capability of the wells are at this point?
- 15 A I think so.
- 16 Q Now, would you state what other interests there are in
- 17 these wells that you drilled. In other words, who
- 18 are interest owners other than yourself and in which
- 19 wells?
- 20 A In the north half of Section 11, Amaco will come back
- 21 in for three-quarters working interest after the pay
- 22 out and their percentage -- I mean the State gives us
- 23 this because it is forced pooling and I think it is
- 24 around twenty-five percent.
- 25 In the south half of Section 2, Pennzoil has

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1 approximately sixty some acres and they will come
 2 back in for a full working interest after the pay
 3 out plus the State gave us about twenty-five
 4 percent.

5 Humble Oil Company will receive an override
 6 for their approximately ninety-six acres that they
 7 bought and the City of Carlsbad will receive three-
 8 sixteenths override on their ninety-six acres.

9 The remaining acreage is State land that I bought
 10 from the State of New Mexico, and they will receive
 11 a one-eighth override.

12 Back down to the well in Section 11, the State
 13 of New Mexico will receive a one-eighth override,
 14 and the State will receive this one-eighth override
 15 on the whole well because Amaco's land is State
 16 also.

17 Then in the north half of Section 2, my
 18 husband has a quarter section and Amaco was force
 19 pooled, so after the well has earned back approximately
 20 125 percent of costs, Amaco will come back in for a
 21 half working interest.

22 And I see where this is a Federal lease, so the
 23 Federal Government will, I guess, receive a one-
 24 sixteenth override, and there are State leases on
 25 the east half of the well and they will receive their

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1 one-eighth override. The State of New Mexico will
 2 receive a one-eighth override on their half of the
 3 well.

4 Then in Section 36, it is totally State
 5 acreage so the State of New Mexico will receive a
 6 one-eighth override on that.

7 In the south half of Section 25, the Humble-
 8 Grace Cities Service Oil Company owns approximately
 9 13.5 percent of the highway and I understand they
 10 bought those leases from individuals who live there
 11 and I think they have a very good override on this
 12 acreage.

13 The City of Carlsbad receives a three-sixteenth
 14 override on their lease which is approximately 130
 15 acres in the southwest quarter of the State Lease.

16 So the State will receive a one-eighth override
 17 on half of the allowable gas and the Gulf Oil Company
 18 receives their override because they fund out to us.

19 In the north half of Section 25, the northeast
 20 quarter, Atlantic Richfield has a lease that, as I
 21 understand it, a Mr. Peevers, a resident of the City
 22 of Carlsbad, sold the minerals to other people there,
 23 so they will receive an override and Pennzoil owns
 24 most of the northwest quarter and then there are a
 25 lot of houses and all those people receive overrides

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1 from their land.

2 Q Now, we have testimony here concerning two of your
 3 wells, which have been drilled on unorthodox locations
 4 resulting in penalty factors being included in the
 5 Order approving the locations, would you explain what
 6 happened in regard to that?

7 A In regard to the penalties?

8 Q Yes, how does that work, as you understand it?

9 A The way I understood it is the Order read that the
 10 Humble-Grace would produce 39 percent less than the
 11 well's capacity.

12 Q Thirty-nine percent less than the allowable?

13 A I don't think it said the allowable because there
 14 wasn't any allowable when this Order was rendered.

15 Q But if they proration production there will be an
 16 allowable; will there not?

17 A Well, I guess so, I was going by the way the Order
 18 read.

19 Q In any event, do you understand which of these two
 20 wells are the ones that have this penalty factor?

21 A The Humble-Grace in the south half of Section 2 has
 22 a 39 percent penalty and the Quadanaco in the north
 23 half of Section 2 has a forty-nine percent penalty.

24 Q Now, does the City of Carlsbad have an interest in
 25 either one of those wells?

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1 A Yes, in the Humble-Grace in the south half of
 2 Section 2, the City of Carlsbad owns ninety-six
 3 acres that they sold to Humble, therefore receiving
 4 a three-eighths override on it.

5 Q So if there is prorationing of this field and a cut
 6 in the allowable it would affect the income of the
 7 State as well as the City of Carlsbad; is that
 8 correct?

9 A Oh, yes.

10 Q Have you made or formed a determination as to what
 11 sort of loss it would mean to the City of Carlsbad
 12 in the event of prorationing?

13 MR. KELLAHIN: I object to this line of questioning.
 14 It relates to an Order heretofore entered by the Commission
 15 in which the Commission approved the unorthodox well location
 16 and supplied the penalty factor.

17 MR. PORTER: Mr. Hatch?

18 MR. HATCH: I was going to make the same objection.

19 MR. PORTER: The Commission will sustain the
 20 objection. We feel this has nothing to do with the
 21 question before the Commission as to whether the pool should
 22 be prorated or what formula should be used.

23 Q (By Mr. Spann) Now, can you tell me approximately what
 24 the costs have been in drilling and completing the
 25 Corinne-Grace Guadanaco Number 1 in the north half

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1 of Section 2?

2 A The drilling and completion total was \$404,702.85.

3 Q How about the Corinne-Grace-Humble-Grace?

4 MR. PORTER: Mr. Spann, would you explain please
5 the bearing these questions have on whether the pool should
6 be prorated or what formula should be used?

7 MR. SPANN: I think it goes to the question of
8 whether the field should be prorated at all. In view of
9 the evidence introduced here and the way I construe the
10 evidence, it fails to show that there should be prorationing.

11 MR. PORTER: Mr. Spann, the Commission will make
12 that determination from the record, but what part does the
13 cost of or the ownership of the land play in whether the
14 pool should be prorated, or who owns the royalties or the
15 overrides?

16 MR. SPANN: Well, it shows that through
17 prorationing these people will be unable to recover their
18 costs as rapidly as they would otherwise and I think that
19 is something the Commission should have in mind when they
20 determine whether the evidence justifies prorationing.

21 We tried to show that particular wells are in
22 separate pools and you have not permitted us to do that,
23 so we are trying to bring to your attention for consideration
24 now the purpose of the --

25 MR. HATCH: That should be a separate Hearing and

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1 the time for appeal has passed.

2 MR. LeBLANC: If you need a formal objection to the
 3 line of questioning operators' costs, these are irrelevant
 4 in the determination of whether or not prorationing is
 5 necessary or what formula is necessary.

6 One operator may drill a well for \$200,000.00
 7 and another operator for \$400,000.00 and the costs are
 8 irrelevant in determining whether or not prorationing is
 9 necessary.

10 MR. PORTER: The commission will sustain the
 11 objection.

12 Q (By Mr. Spann) Mrs. Grace, there has been mentioned
 13 here the extension of the limits of this pool by a
 14 series of nomenclature hearings similar to what we
 15 heard yesterday before this Hearing began.

16 Did you receive notice of any such Hearings
 17 with respect to --

18 MR. KELLAHIN: I object.

19 MR. SPANN: Let me finish my question.

20 THE WITNESS: No, I didn't, no.

21 MR. KELLAHIN: I object --

22 Q (By Mr. Spann) Did you receive notice of any nomen-
 23 clature Hearing before the Commission in which any
 24 of the wells which you described as having been
 25 drilled by you were to be considered by this Commission?

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1 A No, I never received any notice.

2 MR. KELLAHIN: If the Commission please, let me
3 make my objection, please. I object to the question for
4 the reason that it calls for a legal conclusion as to the
5 proper method of giving notice by the Commission, notification
6 was given, I presume; and there is nothing showing it was
7 not.

8 Whether Mrs. Grace had actual knowledge or not,
9 she certainly had constructive knowledge.

10 THE WITNESS: I was told one week ago that
11 I was not on their mailing list.

12 MR. SPANN: Just a moment, let him make his
13 objection.

14 MR. KELLAHIN: Mailing lists have nothing to
15 do with legal notice by the County where the land is
16 situated and the capital of the State of New Mexico. That
17 is all the notice that was required and the notice was given.

18 MR. PORTER: We are going to sustain this
19 objection also. The commission complies with the legal
20 requirements of a public Hearing and advertisement in the
21 paper at the State Capital and one in the County where the
22 property is located.

23 Now, the Commission has for many years rendered
24 the service of mailing copies of dockets to anyone who
25 desired to be placed on the mailing list. This is an

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1 additional service the Commission affords but it is not
2 a legal requirement.

3 MR. SPANN: Just for the record I would like to
4 state that this witness, if permitted to testify, would
5 state that she had no actual notice or information concerning
6 any of the nomenclature Hearings and I am entitled to make
7 that tender of proof.

8 MR. PORTER: You have so stated.

9 MR. SPANN: Yes, I believe that's all I have of
10 this witness.

11 MR. PORTER: Does anyone have any questions of
12 the witness?

13 CROSS-EXAMINATION

14 BY MR. LeBLANC:

15 Q Mrs. Grace, you stated the State would receive a
16 one-eighth override, for clarification did you mean
17 over and above the royalty provided in the lease
18 or did you mean that to include the royalty provided?

19 A Which lease?

20 Q Whichever State Lease you happen to have.

21 A We have leases like everyone else has and as I recall
22 they actually get a one-eighth override on the land
23 that you have under lease from them.

24 Q Did you understand that they would get one-eighth
25 of production?

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1 A Isn't that the way the lease read?

2 Q Thank you very much.

3 MR. PORTER: Does anyone else have any questions
4 of Mrs. Grace?

5 (No response.)

6 MR. PORTER: If not, the witness may be
7 excused.

8 (Witness excused.)

9 MR. PORTER: We will take a short recess.

10 (Whereupon, a recess was taken.)

11 (Hearing continues.)

12 MR. PORTER: The Hearing will come to order.

13 MR. SPANN: Mr. Grace advises me that he has
14 requested certain additional evaluations from several
15 companies of the field, particularly in an effort to
16 establish that there are different reservoirs and different
17 sources of supply for different wells.

18 Since you have ruled that that evidence is not
19 admissible anyway, then, of course, I want to make the point
20 that we would have such information available and we request
21 a continuance so that we may have an opportunity to put
22 that evidence in.

23 MR. PORTER: Mr. Spann, I earlier stated that I
24 didn't believe that under the advertisement of this case,
25 that kind of evidence would be admissible. I will now

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1 reiterate my ruling at this time, I see no purpose for
 2 that evidence.

3 MR. SPANN: I believe telegrams were received
 4 from other people and I would like these people identified.
 5 So, if you will just read their names into the record.

6 Mr. Porter, Mr. Hatch, would you advise us of any
 7 written communications that you have whether they be in the
 8 form of letters or telegrams.

9 MR. HATCH: We have a telegram addressed to the
 10 Oil Conservation Commission of the State of New Mexico
 11 from a geologist assigned to the Grace-Carlsbad project.

12 Still in Denver at convention, unable to leave
 13 here. Facts appear to be inadequate for our research. Will
 14 you please supply more information immediately for our
 15 project. Singed -- it looks like Tetra-Tech.

16 MR. GRACE: It's a firm in Pasadena.

17 MR. HATCH: S. O. Patterson of Tetra-Tech.

18 MR. PORTER: Are there any other telegrams?

19 MR. HATCH: There is a telegram addressed to
 20 the New Mexico Oil Conservation Commission, Hobbs, New
 21 Mexico, regarding the hearing of April 19, 1972 in Case 4693,
 22 South Carlsbad Morrow Gas Pool; and Case 4694, the South
 23 Carlsbad Strawn Gas Pool, Eddy County, New Mexico. Reference
 24 is made to our letter dated February 28, 1972, in reference
 25 to Case 4668. Union supporting land allocation methods

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1 based on 100 percent acreage. In our opinion such a
 2 formula is fair and equitable and protects the correlative
 3 rights. We further believe this administrative burden is
 4 maintained within reasonable limits by such a formula.
 5 Union Oil Company of California, E. W. -- it is rather
 6 difficult to read this telegram -- Coans, District Manager.

7 MR. PORTER: Do you have anything else?

8 MR. HATCH: Here is a letter addressed to the
 9 New Mexico Oil and Conservation Commission dated April 18,
 10 1972, Santa Fe, New Mexico. Mobil Oil Corporation having
 11 working interests and royalty interests in the South Carlsbad
 12 Morrow Gas Pool and the South Carlsbad Strawn Gas Pool,
 13 recommend that the total allowable natural gas production
 14 from each of the aforementioned gas pools be fixed to the
 15 amount equal to the amount of market demand and to the
 16 capacity of the gas transportation facilities, subject to
 17 provisions as follows:

18 1. Monthly nominations of the gas market demand
 19 for each pool submitted by each gas purchaser be limited
 20 to a total equal to the sum of the products obtained by
 21 multiplying: (operating deliverability) times (rateable
 22 take factor) times (allocated acreage divided by three-
 23 hundred 20) times (the number of days per month) times
 24 (the purchaser's connected interest in the well, in
 25 split connections) for each well in the pool.

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1 2. The allowables to be assigned to each
2 marginal well should be equal to the average monthly
3 production of said well during each of the preceding
4 gas proration periods.

5 3. The well pool allowable remaining after
6 deducting the total allowable assigned to a marginal
7 well shall be allocated to each non-marginal well in an
8 amount equal to production by multiplying: (rateable take
9 factor) times (allocated acreage divided by three-hundred
10 twenty) for each well.

11 Mobil feels that the above stated provisions are
12 necessary to the proposed gas proration of the subject
13 pools to protect correlative rights and to afford each
14 operator the opportunity to produce a just and equitable
15 share of gas in the subject pools, and further necessary
16 to prevent waste. Signed: Ira B. Stitt, Division
17 Operations Engineer.

18 Attached to the letter is a definition reading:
19 Operating Deliverability. It is defined as measured volume
20 of gas produced during a twenty-four hour period such
21 period being preceded by a twenty-four hour stabilization
22 flow period at the rate of at least eighty percent of the
23 operating flow rate. The operating deliverability shall
24 be determined at producing pressure temperatures which
25 normally exist from day to day in the installed equipment.

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1 Operating deliverability shall be determined annually or
 2 at lesser intervals at the operator's option.

3 That is all the communication I have.

4 MR. PORTER: Does anyone have anything further
 5 to offer in either one of these cases?

6 MR. KELLAHIN: I would like to suggest that
 7 rather than making any oral closing statements we be
 8 permitted to file written statements to be served copies
 9 by counsels representing whatever parties are represented
 10 here within some reasonable time.

11 MR. PORTER: Is there any objection to that
 12 proposal?

13 MR. SPANN: I have none. I would like to file
 14 a Motion and I think a written Motion and Statement would
 15 be in order. I would be glad to comply with that within
 16 a reasonable time.

17 MR. PORTER: Would you suggest as a time limit
 18 fifteen days?

19 MR. KELLAHIN: That would be ample.

20 MR. PORTER: Are there any objections to the
 21 fifteen day limit on submitting written arguments?

22 (No response)

23 MR. PORTER: The Commission will allow fifteen
 24 days from today for the filing of those closing arguments.

25 MR. STEVENS: Was the motion for a continuance

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1 denied?

2 MR. PORTER: Yes.

3 MR. STEVENS: I would like to point out, and it
4 has been pointed out previously, this case was scheduled
5 for March 1st. On February 24th, 1972, the Commission sent
6 to all producers and purchasers in the South Carlsbad Pools
7 a letter stating that the case would be readvertised for
8 April 19th.

9 It was further stated that this would allow
10 ample time for all interested parties to be prepared for
11 a Hearing and that no further delay should be necessary.

12 By the two advertisements and by the memo to
13 all producers, we feel ample notice was given to any party
14 interested in the field to be fully prepared to discuss
15 all the issues in this case.

16 MR. SPANN: I thought counsel were going to make
17 their statements fifteen days from now?

18 MR. STEVENS: This related to your Motion.

19 MR. PORTER: The motion for a continuance, Mr.
20 Stevens, has been denied.

21 Does anybody have anything further to offer in
22 this case?

23 MR. CLAY: My name is Terry Clay from Superior
24 Oil Company. I have a statement of support relative to
25 the South Carlsbad Strawn pool prorationing.

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1 As an operator of one well in the South Carlsbad
2 Strawn, namely the Collett well, and having interests in
3 three additional Strawn wells in the South Carlsbad pool,
4 namely the Antweil-Little Jewel, the Antweil-Allen, and
5 the Cities Service Spencer A wells, Superior Oil Company
6 supports the core volume method of determining prorationing
7 and in establishing rateable takes.

8 We believe, based on our studies, this approach
9 to be a just and equitable method to determine the
10 purchaser's take and consequently provide protection for
11 royalty owners.

12 Thank you very much.

13 MR. PORTER: Any one else?

14 MR. SKINNER: Mr. Jack Skinner, I'm a
15 Councilman in the City of Carlsbad and I have a letter to
16 the Commission from the Mayor that I would like to read
17 into the record.

18 MR. PORTER: Read the letter.

19 MR. SKINNER: It is dated April 19, 1972, to
20 the New Mexico Oil Conservation Commission. Gentlemen,
21 there are nineteen producing wells in close proximity to
22 the City of Carlsbad. Of these, two wells are situated in
23 Carlsbad and the City of Carlsbad has a direct interest
24 in them. Of the remaining seventeen wells, at least a
25 dozen are on private land owned by citizens of the City

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1 of Carlsbad. One or two of those have revenues similar
2 to the City's wells, and bring \$500,000.00 in expenditures
3 in the City. There is no doubt that a cut in the allowables
4 could prevent additional City lands from being drilled and
5 take away from the City one-eighth overrides on the same.

6 It is also clear that this would discourage exploration
7 which would cost the City an additional two million dollars
8 plus the additional loss of the one-eighth override income
9 in exploration fees.

10 This would have a definite effect on the City
11 of Carlsbad in present and future economic situations.

12 MR. PORTER: The Commission will accept the
13 letter, however, in view of my prior rulings here I doubt
14 if the Commission will give this type of information
15 servious consideration.

16 Does anyone else have any statements to make?

17 (No response.)

18 MR. PORTER: If not, the case will be taken
19 under advisement.

20 The Hearing is adjourned.

21 (Whereupon, the Hearing in Cases 4693 and 4694
22 was adjourned at 12:15 o'clock P.M., Thursday, April 20, 1972.
23
24
25

1 STATE OF NEW MEXICO)
) ss
 2 COUNTY OF BERNALILLO)

3 I, RICHARD E. McCORMICK, a Certified Shorthand Reporter,
 4 in and for the County of Bernalillo, State of New Mexico do
 5 hereby certify that the foregoing and attached Transcript of
 6 Hearing before the New Mexico Oil Conservation Commission was
 7 reported by me; and that the same is a true and correct record
 8 of the said proceedings to the best of my knowledge, skill and
 9 ability.

10
 11 *Richard E. McCormick*
 12 CERTIFIED SHORTHAND REPORTER
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SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS
 200 SINNIS BLDG. • P.O. BOX 1062 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO 87103
 FIRST NATIONAL BANK BLDG. EAST • ALBUQUERQUE, NEW MEXICO 87106

EXHIBIT (Continued)

	ADMITTED	OFFERED
1 Antweil Exhibit #6 - Table of Porosity Thickness		
2 Determination	154	139
3 Antweil Exhibit #7 - Table	154	141
4 Antweil Exhibit #8 - Contour Map		
5	154	144
6 Antweil Exhibit #9a - Calculation of Reserves		
7	154	146
8 Antweil Exhibit #9b - Calculation of Reserves		
9	154	146
10 Antweil Exhibit #10 - Allocation Allowables		
11	154	150
12 Pennzoil-United Exhibit #1 - Structure Map		
13	177	168
14 Pennzoil-United Exhibit #2 - Sonic Log		
15	177	169
16 Pennzoil-United Exhibit #3 - Structure Map		
17	177	170
18 Pennzoil-United Exhibit #4 - Discovery Well		
19	177	170
20 Pennzoil-United Exhibit #5 - Proration Proposal		
21	177	173
22 Grace Exhibit #1 - Structure Position		
23	224	217
24		
25		

dearney-meier

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS
 209 SIMMS BLDG., P.O. BOX 1092, PHONE 243-6691, ALBUQUERQUE, NEW MEXICO 87103
 FIRST NATIONAL BANK BLDG. EAST, ALBUQUERQUE, NEW MEXICO 87108

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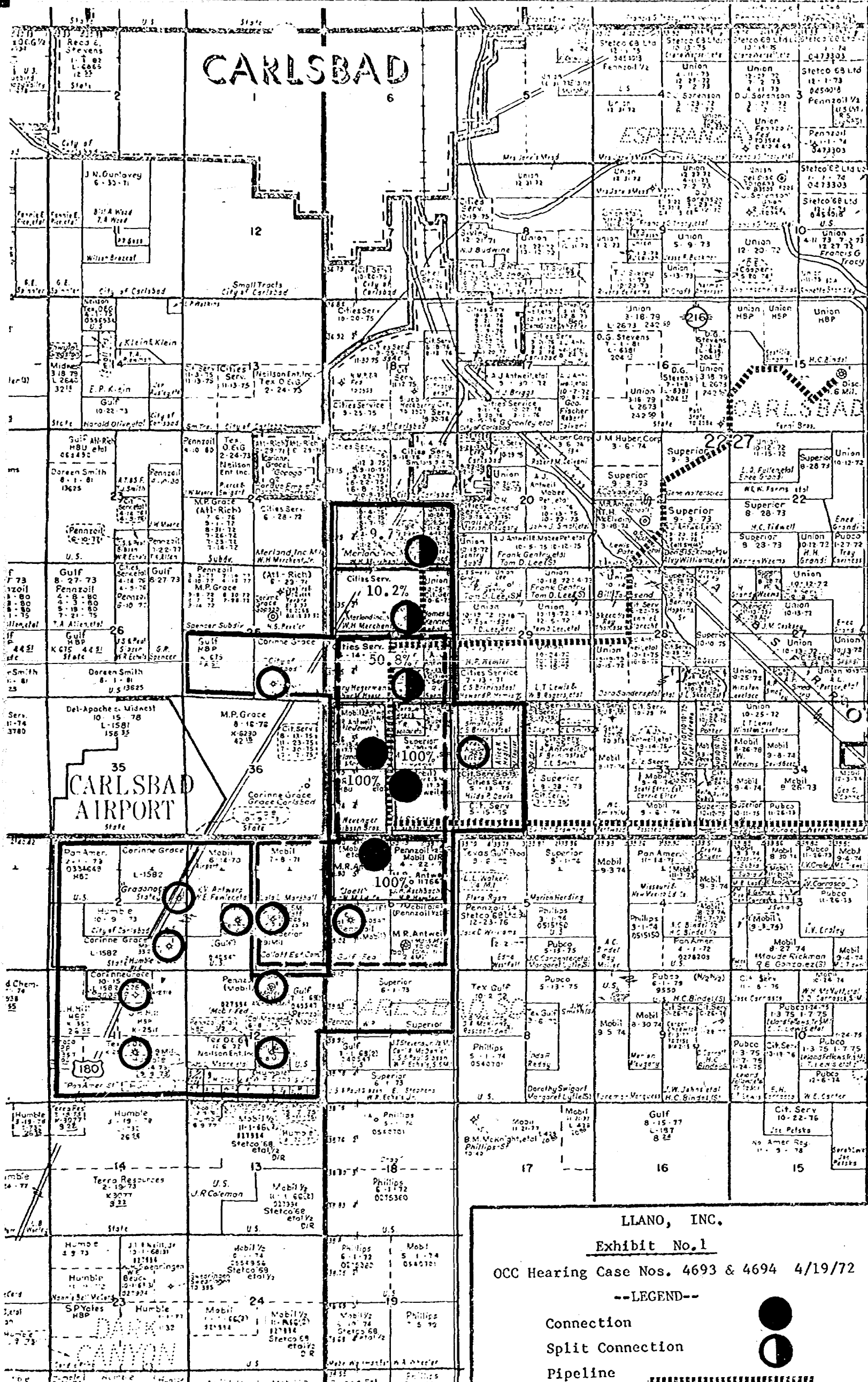
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NEW SIMMS BLDG. A. O. BOX 1092, PHONE 233-0891, ALBUQUERQUE, NEW MEXICO 87109
FISHT NATIONAL BLDG. E. EAST, ALBUQUERQUE, NEW MEXICO 87104



LLANO, INC.

Exhibit No.1

OCC Hearing Case Nos. 4693 & 4694 4/19/72

--LEGEND--

Connection

Split Connection

Pipeline

LLANO, INC.

EXHIBIT NO. 2

OCC Hearing Case Nos. 4693 & 4694

April 19, 1972

SUMMARY - SOUTH CARLSBAD FIELD

I. Size and Capacity of System.

- A. Size - 8"
- B. Capacity - 30,000 MCFPD at a line pressure of 900 psi without compression.
- C. Beginning September 1, 1972 - Capacity out of South Carlsbad will increase to 50,000 MCFPD at a line pressure of 900 psi without compression.

II. Connections

- A. Present
 - 1. Antweil No. 1 Joell C-6-23-27
 - 2. Antweil No. 1 Little Jewel F-31-22-27
 - 3. Antweil No. 1 Allen J-31-22-27
 - 4. Cities Ser. No. 1 Spencer O-30-22-27
- B. Additional (Pipeline is under construction)
 - 1. Cities Service No. 1-A
Merland O-19-22-27
 - 2. Cities Service No. 1-B
Merland G-30-22-27

NOTE: Llano has a split connection with Transwestern Pipeline Co. at the three Cities Service wells. The percentages of Llano's take are shown on Exhibit No. 1.

III. Estimated Deliverabilities

	<u>WELL</u>	<u>LOCATION</u>	<u>AOF-MCFPD</u>	<u>CAL. DEL. MCFPD</u>	<u>FEB. DAILY PROD.</u>
A. Strawn					
1.	Antweil-Allen	J-31-22-27	20,500	20,000	3,600
2.	Antweil-Little Jewel	F-31-22-27	27,750	21,000	3,400
3.	Antweil-Joell	C-6-23-27	11,100	10,500	3,400
B. Morrow					
1.	Antweil-Allen	J-31-22-27	3,490	3,200	1,700
2.	Antweil-Little Jewel	F-31-22-27	15,750	15,000	1,200
3.	Cities Ser.-Spencer	O-30-22-27	20,157	18,000	3,300
4.	Cities Ser.-Merland "A"	O-19-22-27	3,292	3,000	2,300
5.	Cities Ser.-Merland "B"	G-30-22-27	4,400	4,050	2,900

NOTE: Calculated Deliverability at 850 psi furnished by one or more operators.

IV. Maximum Contracted Obligation

- A. 25,000 MCFPD

V. Destination of Gas

- A. For use as fuel in New Mexico.

BEFORE THE	
OIL CONSERVATION COMMISSION	
Santa Fe, New Mexico	
Case No. <u>4693</u>	Exhibit No. <u>2</u>
Subm. <u>Llano</u>	
Hearing Room	

SOUTH CARLSBAD - STRAWN GAS POOL

Case No. 4694

Date: April 19, 1972

Purpose: Consider limiting gas production from subject pool to reasonable market demand factor, or capacity of gas transmission facilities. Also, consider methods for allocating the allowable production among the gas wells in this pool.

General: Pennzoil United, Inc. considers the initiation of gas proration in the subject pool very appropriate. Our objectives in this matter are to promote the conservation of reservoir energy and natural resources and to protect the correlative rights of all interest owners in the pool.

Proposal: Pennzoil United, Inc. would like to suggest the following proposal: This proposal is based on easily determined reservoir properties under each lease, acreage, penalty or ratable take factor (if applicable), and a reasonable market demand factor, or capacity of the gas transmission facilities. Proration unit allowable in the pool would be based on the following formulas:

$$H.P.V. = h \times \phi (1 - S_w) A$$

$$P. U. \text{ Allocation Factor} = H.P.V. \times \frac{P.U. \text{ Ac.}}{320 \text{ Ac.}} \times P.F.$$

$$P. U. \text{ Allowable} = \frac{P.U. \text{ Allocation Factor}}{\text{Total Pool Allocation Factor}} \times \text{Total Pool Nomination}$$

Nomenclature:

- H.P.V. - Hydrocarbon pore volume in each proration unit.
- h - Effective feet of pay underlying each proration unit as determined from appropriate well logs or cores.
- ϕ - Porosity in effective feet of pay.
- S_w - Water saturation in effective feet of pay.
- A - Area of standard proration unit.
- P. U. - Proration unit.
- P. U. Allocation Factor - The allocation factor for the proration unit.
- P. U. Ac. - The acreage in each proration unit.
- P. F. - The penalty factor, or ratable take factor (if applicable) applied to individual proration units.

BEFORE THE	
OIL CONSERVATION COMMISSION	
Santa Fe, New Mexico	
Case No. 4694	Exhibit No. 5
Submitted by Pennzoil	
Hearing Date Apr 19, 1972	

P. U. Allowable - Individual proration unit allowable.

Total Pool Allocation Factor - The sum of allocation factors for all proration units.

Total Pool Nomination - Total pool nomination by all purchasers. Of course the final figure would be at the discretion of the Oil Conservation Commission.

The reservoir properties used in determining the hydrocarbon pore volume would be determined by individual operators for each of his proration units, subject to review and approval by personnel of the Oil Conservation Commission. In the event an agreement cannot be reached in this manner, we suggest these properties be determined by a Technical Committee of the operators and the Oil Conservation Commission.

The total pool allocation factor could be redetermined administratively when necessary.

The classification of wells as to marginal and non-marginal would be left to the discretion of the Oil Conservation Commission.

Pennzoil United, Inc. is of the opinion, the adoption of these or similar rules for The South Carlsbad - Strawn Pool will prevent waste of reservoir hydrocarbons, conserve reservoir energy and protect the correlative rights of every one concerned.

Therefore, Pennzoil United, Inc. respectfully requests The New Mexico Oil Conservation Commission to give favorable consideration to this proposal.

Transwestern

Ex 1 + 2

Complete

EXHIBIT II

SUMMATION OF TRANSWESTERN DATA
NEW MEXICO OIL CONSERVATION COMMISSION HEARING
CASES NOS. 4693 AND 4694
REGARDING THE SOUTH CARLSBAD FIELD AREA

1. Transwestern is presently connected to seventeen (17) wells in this area of which thirteen (13) are completed in the Morrow zone, three (3) are completed in the Strawn zone, and one (1) well is completed in the Atoka zone.
2. Transwestern had additional dedicated acreage in this area and if wells are successfully drilled thereon, will connect to them as soon as possible.
3. Transwestern is currently purchasing approximately 41,000 Mcf per day from this area.
4. The Transwestern gathering system has a present capacity of approximately 90,000 Mcf per day from this area.
5. If additional gas volumes are made available, Transwestern will purchase all volumes made available, and if additional supply exceeds 90,000 Mcf per day Transwestern will expand its facilities to take all gas made available.
6. The Transwestern gathering system pressure in this area is approximately 870 psig.
7. The gas purchased by Transwestern in this area is delivered through our system to our customer in California and CONSERVED THROUGH N a plant prior to delivery to Transwestern.

BEFORE THE
Santa Fe, New Mexico
Case No. 4693
Exhibit No. 2
Submitted by _____
Hearing Date _____

SOUTH CARLSBAD POOL
Eddy County, New Mexico
MORROW GAS WELLS
(Data from N.M.O.C.C. Records)

BEFORE THE
OIL CONSERVATION COMM.
Santa Fe, New Mexico
No. 4693 Exhibit No. 6
Filed by Cities Service
Date 4/19/72

Antweil

<u>Well</u>	<u>Location</u>	<u>Test Date</u>	<u>CAOF</u>
Little Jewel	F-31-22S-27E	4-20-71 11-15-71	13.420 15.769
Allen	J-31-22S-27E	11-13-71	3.494
MM Land Co.	O-6-23S-27E	5-8-70	2.439

Corinne Grace

Gradonoco	H-2-23S-26E	12-1-71	7.543
Humble-Grace	P-2-23S-26E	7-28-71	33.239
City of Carlsbad	O-25-22S-26E	3-2-71	10.599

Cities Service Oil Company

Strackbein-A	E-32-22S-27E	12-18-70 1-11-72	5.250 13.326
Spencer-A	O-30-22S-27E	6-25-71 11-30-71	19.250 20.157
Merland-A	O-29-22S-27E	10-1-71 1-6-72 1-29-72	2.664 7.600 3.492
Merland-B	G-30-22S-27E	12-20-71	3.800

Pennzoil

Echols	J-12-23S-26E	2-24-71 6-17-71	3.856 3.637
Mobil 12	B-12-23S-26E	1-20-69	3.290
Gulf Fed-1	K-1-23S-26E	6-30-70	12.721
Gulf Fed-2	L-6-23S-27E	2-7-72	1.765

Texas Oil and Gas

Pan Am State	J-11-23S-26E	10-3-70 3-8-72	1.973 .502
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SOUTHEAST NEW MEXICO
MORROW GAS WELLS
STIMULATION RESULTS

WELL	POOL	PROD. DEPTH	DST PROD. MCF/D	INIT. PROD. MCF/D	STIMULATION	PROD. AFTER STIM. MCF/D	REMARKS
A	Eddy County Wildcat	8,450'	732	400	Az 10,000 gals 7½% + add.	1,100	CAOF 1,375 MCF/D
B	Eddy County Wildcat	10,350'	3,117	1,600	Az 1,000 gals 15% + add.	1,002	CAOF 1,150 MCF/D
C	Eddy County Wildcat	9,940'	1,790 ✓	2,200	Frac 10,000 gals gelled 5% Acid + 10,000# Sd.	3,300	CAOF 5,700 MCF/D
D	South Carlsbad	11,450'	4,700	TSTM	(1) Az 1500 gals 15% w/15% Isop. Alcoh. (2) Az 1500 gals 15% w/15% Isop. Alcoh. + Ball Sealers	1,090 3,455	CAOF 5250 MCF/D. After 45 days, Production CAOF 13,326 MCF/D.
E	South Artesia	9,475'	8,500	1,120	Frac 38,000 gals B.W. + 35,000# Sd.	1,120	CAOF 1,818 MCF/D
F	Boyd	9,150'	2,740	880	Frac 3,500 gals B.W. + 1500# Sd.	2,184	CAOF 7,700 MCF/D
G	South Carlsbad	11,450'	7,800 ✓	TSTM	Az 3000 gals 15% w/15% Isop. Alcoh. + Ball Sealers	9,200	CAOF 19,250 MCF/D. After 30 days, Production CAOF 20,150 MCF/D.
H	South Artesia	8,850'	3,750 ✓	2,750	Frac 13,000 gals B.W. + 18,000# Sd.	4,800	After 90 days prod., well tested at 9,800 MCF/D.
I	West Atoka	8,840	None	800	Sh 1100 gals Az. Frac 10,000 gals B.W. + 8,000# Sd.	2,300	CAOF 6,300 MCF/D
J	South Carlsbad	11,570'	TSTM ✓	100	Az 6500 gals 15% w/15% Isop. Alcoh.	1,209	CAOF 2,439 MCF/D
K	South Carlsbad	11,400'	5,338	TSTM	Az 5000 gals 15% & 5% w/15% Isop. Alcoh.	3,864	6 mos. after treatment, CAOF 3,800 MCF/D.
L	Millman	10,890'	2,300	1,300	Frac 7500 gals B.W. + 22,500# Sd.	2,400	CAOF 6,400 MCF/D
M	Atoka	9,060'	3,000 ✓	-	Sh 1100 gals 15% Az, Frac 30,000 gals B.W. + 85,000# Sd.	5,234 ✓	CAOF 30,000 MCF/D
N	South Carlsbad	11,500'	None	TSTM	(1) Az 5000 gals 25% & 5% w/25% I.A. (2) Sh 2000 B.W. + 20,000 gals 7½% w/25% I.A.	1,275 2,027	CAOF 7,600 MCF/D. After 30 days Production CAOF 3,500 MCF/D.

Classified

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

ORDER NO. AG-37-4

SUPPLEMENTAL GAS PRORATION ORDER FOR THE MONTH OF APRIL, 1972

This cause came on for public hearing by the Commission's examiner, Daniel S. Nutter, at Santa Fe, New Mexico, on March 15, 1972, at 9 a.m., pursuant to legal notice for the purpose of setting the allowable production of gas from the following fifteen gas pools in Lea, Eddy, Chaves, and Roosevelt Counties, New Mexico, for the month of April, 1972.

Atoka-Pennsylvanian, Bagley-Lower Pennsylvanian, Bagley-Upper Pennsylvanian, Blinebry, Bluit-San Andres, Buffalo Valley-Pennsylvanian, Crosby-Devonian, Eumont, Indian Basin-Morrow, Indian Basin-Upper Pennsylvanian, Jalmat, Justis, Monument McKee-Ellenburger, Todd-Lower San Andres, and Tubb.

NOW, on this 17th day of March, 1972, the Commission, a quorum being present, having considered the supplemental nominations of purchasers, the capacity of producing wells, and the recommendations of the Examiner, and being otherwise fully advised in the premises,

FINDS:

(1) That the total nomination of purchasers of gas produced from the above-listed fifteen gas pools for the month of April, 1972, is 22,547,616 Mcf. The individual pool nominations are as follows:

Atoka-Pennsylvanian	562,000 Mcf
Bagley-Lower Pennsylvanian	5,000 Mcf
Bagley-Upper Pennsylvanian	10,000 Mcf
Blinebry	1,683,512 Mcf
Bluit-San Andres	37,000 Mcf
Buffalo Valley-Pennsylvanian	616,000 Mcf
Crosby-Devonian	219,000 Mcf
Eumont	5,006,606 Mcf
Indian Basin-Morrow	613,960 Mcf
Indian Basin-Upper Pennsylvanian	6,695,456 Mcf
Jalmat	4,878,572 Mcf
Justis	231,000 Mcf
Monument McKee-Ellenburger	227,400 Mcf
Todd-Lower San Andres	52,000 Mcf
Tubb	1,710,110 Mcf

(2) That the potential producing capacity of all gas wells in the fifteen gas pools listed above is in excess of the nominations of purchasers of gas, and in order to prevent waste and protect correlative rights, the production of gas from the above-listed fifteen gas pools should be limited, allocated, and distributed during the month of April, 1972.

(3) That all the producing gas wells, together with the expected completed or re-completed wells in the fifteen gas pools listed above, can produce a total of 22,547,616 Mcf without causing waste during the month of April, 1972, and an allocation based upon such production would be reasonable and would protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That for the month of April, 1972, the allowable production to be assigned the fifteen allocated gas pools in Lea, Eddy, Chaves, and Roosevelt Counties, New Mexico, is as follows:

Atoka-Pennsylvanian	562,000 Mcf
Bagley-Lower Pennsylvanian	5,000 Mcf
Bagley-Upper Pennsylvanian	10,000 Mcf
Blinebry	1,683,512 Mcf
Bluit-San Andres	37,000 Mcf
Buffalo Valley-Pennsylvanian	616,000 Mcf
Crosby-Devonian	219,000 Mcf
Eumont	5,006,606 Mcf
Indian Basin-Morrow	613,960 Mcf
Indian Basin-Upper Pennsylvanian	6,695,456 Mcf
Jalmat	4,878,572 Mcf
Justis	231,000 Mcf
Monument McKee-Ellenburger	227,400 Mcf

~~Todd-Lower San Andres~~
Tubb

~~-52,000 Mcf-~~
4,710,110 Mcf

(2) That the allocation heretofore set for the month of April, 1972, in the fifteen allocated pools in Lea, Eddy, Chavez, and Roosevelt Counties, New Mexico, shall be in accordance with the Commission Rules, Regulations, and Orders.

(3) That a proration schedule, duly prepared by the Commission and thereafter adopted for the month of April, 1972, is hereto attached and made a part hereof; it distributes and allocates the allowable production among the gas wells in the fifteen gas pools listed above for the period stated, in accordance with the Commission Rules, Regulations, and Orders.

The foregoing order shall remain effective until further order of the Commission.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

BRUCE KING, Chairman

ALEX J. ARMIJO, Member

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

BEFORE THE	
OIL CONSERVATION COMMISSION	
Santa Fe, New Mexico	
Case No. <u>4623</u>	Exhibit No. <u>9</u>
Submitted by <u>Alfred Serrano</u>	
Hearing Date <u>4/19/72</u>	

SEAL

esr/

Grace

1-5

SOUTH CARLESON FIELD

OPERATOR	WELL	DATE COMP.	OST INTERVAL	FSIP PSIG	PERF INTERVAL	INITIAL IPCAOF	SIWHP
Pennzoil	Mobil Fed #1	2-18-68	11434-465	4870	11453-532	3,310	3919
Superior	Collins St #1	12-16-68			Strawn		
M.R. Atwell	Mo. N.M. Ld #1	5-3-70	11500-666	4516	11556-76	2439	2948
Pennzoil	Gulf Fed #1	6-30-70	11626-55	4827			
			11666-50	4809	11647-83	12,721	3616
Texas G20	Pan Am St #1	10-1-70	11600-725	4949	11615-782	2,957	3429
M.R. Atwell	Allen #1	10-3-70	11430-74	4796	11440-63	3,468	3844
Cities Service	Stackbeam #1	12-17-70	11399-500	4663	11400-80	4,900	3907
Pennzoil	Echols #1	2-19-71	11503-26	4699	11499-716	3,856	3762
Grace	City of Carlsbad	3-2-71	11493-550	4863			
			11530-641	4700			
			11636-706	4121			
			11764-850	4723	11515-22	10,599	3138
M.R. Atwell	Little Jewel #1	4-20-71	11435-75	4757	11441-65	13,420	3778
Cities Service	Spencer "A" #1	6-11-71	11385-485	4515	11400-60	19,250	3812
Grace	Humble Grace #1	6-20-71	11631-653	4465			
			11682-704	4486			
			11757-542	4854	11680-90	33,239	3475
Cities Service	Merland "E" #1	7-24-71	11335-435	4785	11340-484	4,400	4741
Cities Service	Merland "A" #1	10-5-71			11318-654	2,663	3186
Grace	Panagra #1	1-15-72			Dense		
Grace	Erardono 20 #1	1-15-72	11693-240	1291			
			11608-642	3738			
			11643-692	4437	11655-85	7,543	3308
Pennzoil	Gulf Fed #2	2-8-72	11777-475	4712	11397-593	1,765	3423

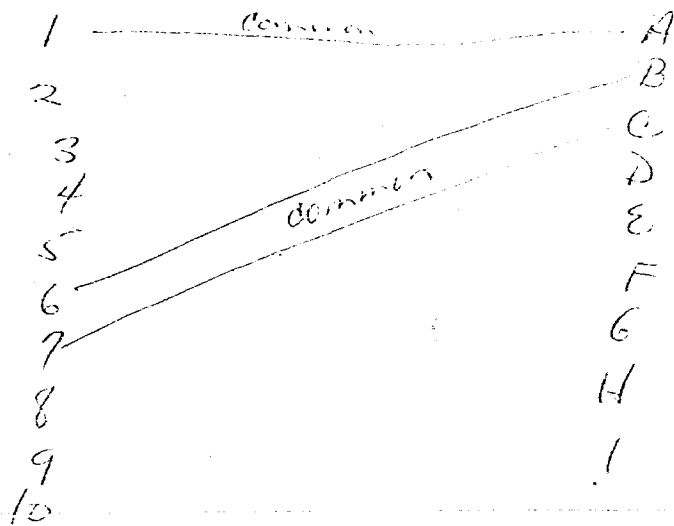
BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

Case No. 4693 Exhibit No. 3
Submitted by Grace
Hearing Date _____

OCC Exhibits

4693

4694



SOUTH CALSBRAD-STRAWN - RATABLE EXAMPLE

Acreage Factor		January		Ratable Share of Prod.	Del. at 850 Pw	February		Ratable Share of Prod.	Del. at 850 Pw
		Pur. A	Pur. B			Pur. A	Pur. B		
1.00	Antweil-Allan	1-J-31-22-27	97,747	95,378	620,000-1	103,202	100,468	579,970	
1.00	Antweil-Joel	1-C- 6-23-27	95,292	95,378	325,500-1	98,826	100,468	304,342	
1.00	Antweil-Little								
1.00	Jewel	1-F-31-22-27	93,096	95,378	651,100-1	99,376	100,468	608,778	
1.00	Cities Service-								
1.00	Spencer "A"	1-0-30-22-27	N.A.		N.A. Not Conn N.A.				
1.82	Pennzoil-Gulf								
1.00	Fed.	2-L- 6-23-27	N.A.		N.A. Not Conn N.A.				
1.00	Superior-								
1.00	Collatt Est.	1-J- 1-23-26	61,824		52,626	301,404	354,030	2,145,252	
5.82	COLUMN TOTALS		286,135						
	TOTAL ALL PURCHASERS		347,959	347,958	2,294,100	354,030	2,145,252		

All volumes in Mcfm

EXHIBIT

BEFORE THE
OIL COMMISSION COMMISSION
San Antonio, New Mexico

Case No. 4694 Exhibit No. 1

Submitted by OGC

Hearing Date 4/18/72

284,278 / 29 = 1323

M

697,500-1

52,626

M

652,162

52,626

301,404

= 10393

1815 net

SOUTH CARLSBAD-MORROW

Wells Completed to 2-72

Well	Location	A.O.F.	Acreage Factor	Del. at 850# Pw	SIP	Transporter	Connection Date
1. Morris Antweil-Allan	1 J-31-22-27	3490-1	1.00	3200	3350-48	Llano	9-30-71
2. Morris Antweil-Little Jewell Com	1 F-31-22-27	15750-1	1.00	15000	3780-48	Llano	9-30-71
3. Morris Antweil-Missouri N. Mex.	1 0-6-23-27	2439	1.00	2200	2960-48	Transwestern	10-12-70
4. Cities Service-Merland "A" Com	1 0-19-22-27	3292-24	1.00	3000	2865-24	Transwestern	11-11-71
5. Cities Service-Merland "B" Com	1 G-30-22-27	4400-1	1.00	4050	(4741-BH) 4389-24	Transwestern	11-10-71
6. Cities Service-Striekbein "A" Cities Service-Spencer "A"	1 E-32-22-27	13326-3 1/2	1.00	10600	4389-24	Transwestern	9-24-71
	1 0-30-22-27	20157	1.00	19400	3735-72	Llano 50.88 Transwestern 49.28	11-11-71
8. Corinne Grace-City of Carlsbad	1 0-25-22-26	10559-1	1.00	10100	3138-1	Transwestern	2-25-72
9. Corinne Grace-Humble Grace	1 P-2-23-26	33239-1	.61	30000	3479-72	Transwestern	2-3-72
10. Corinne Grace-Gradonoco	1 H-2-23-26	7543-1	.51	7000	3308-72	Transwestern	2-4-72
11. Pennzoil-Gulf Fed.	1 K-1-23-26	12721-1	1.00	10100	3616-72	Transwestern	7-6-70
12. Pennzoil-Echols Com	1 J-12-23-26	3637-1	1.00	3600	3240-72	Transwestern	5-10-71
13. Pennzoil-Mobil "12" Fed.	1 B-12-23-26	3310-3	1.00	3200	3880-184	Transwestern	9-10-69
14. Pennzoil-Gulf Fed.	2 L-6-23-27		1.00			Transwestern	N.C.
15. Texas O & G-Pan Am St. Com	1 J-11-23-26	2957-1	1.00	2800	3429	Transwestern	1-10-72

97423

124,250

3806 Av.

CASE

EXHIBIT

9

86650

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

Case No. 4693 Exhibit No. 9

Submitted by OLC

Hearing Date

SOUTH CARLSBAD-MORROW - RATABLE EXAMPLE

230, 35
3540/1245425

Acres
Factor

January		Ratable Share of Prod.	Del. at 850 Pw	February		Ratable Share of Prod.	Del. at 850 Pw
Pur. A	Pur. B			Pur. A	Pur. B		

1.002 Antweil-Allan	1-J-31-22-27	47,777-31	74,222	99,200	49,343-29	102,651	92,800
1.000 Antweil-Little							
Jewel Com	1-F-31-22-27	38,792-31	M	38,792	33,531-21	M	33,531
1.00 Antweil-Missouri	1-O-6-22-27	-0-	M	-0-	-0-	M	-0-
1.00 Cities Serv.-							
Merland "A" Com	1-O-19-22-27	49,238-20.1	74,222	93,000	65,232-27.9	102,651	87,000
1.00 Cities Serv.-							
Merland "B" Com	1-G-30-22-27	98,271-30.7	74,222	125,550	83,530-28.3	102,651	117,450
1.00 Cities Serv.-							
Striekbein "A"	1-E-32-22-27	75,564-26.1	74,222	328,600	61,446-27.3	102,651	307,400
1.00 Cities Serv.-							
Spencer "A"	1-O-30-22-27	130,371-27.4	4900-3	74,222	601,400	794,872-27.3	340-102,651
1.00 Corrine Grace-							
City of Carls.	1-O-25-22-26	29,05	29,05	341,100-4.7	32-0	117,697	292,900
.61 Corrine Grace-							
Humble Grace	1-P-2-23-26			9214,696-25.4	7952	58,295	870,000
.51 Corrine Grace-				10138,974-24.5	5345	46,932	203,000
Gradonoco	1-H-2-23-26						
1.00 Pennzoil-Gulf							
Fed	1-K-1-23-26	9,604-19.9	M	9604	13,194-13.8	M	13,194
1.00 Pennzoil Echols							
Com	1-J-12-23-26	60,684-29.6	74,222	111600	1247,118-28.8	102,651	394,400
1.00 Pennzoil-Mobil							
"12" Fed	1-B-12-23-26	52,684-30.6	74,222	99200	145,124-24.4	102,651	92,800
1.00 Pennzoil-Gulf & 2-L-6-23-27							
1.00 Tex. O & G-Pan							
Am. St. Com	1-J-11-23-26	11,590-15.8	M	11590	5,889-21.2	M	5,889

COLUMN TOTALS	488,073	91,469	579,540	1,518,536	811,175	82,874	894,095	2,602,964
TOTAL ALL PURCHASERS								

All volumes in mcfm

Handwritten notes and calculations including "1000", "3199", and "3198.6/EXHIBIT".

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 4693 Exhibit No. 10
Submitted by 4693
Hearing Date

Handwritten calculations and notes at the bottom left, including "50000", "25000", and "3199".

SOUTH CARLSBAD-STRAWN

Wells Completed to 2-72

Well	Location	A.O.F.	Acreage Factor	Del. at 850# Pw	SIP	Transporter	Connection Date
1. Morris Antweil-Joel	1 C-6-23-27	11100-1	1.00	10,500	3715-48	Llano	10-6-71
2. Morris Antweil-Allan	1 J-31-22-27	20500-1	1.00	20,000	3875-48	Llano	10-4-71
3. Morris Antweil-Little	1 F-31-22-27	27750-1	1.00	21,000	3955-48	Llano	10-4-71
4. Cities Service-Spencer "A"	1 O-30-22-27	23012	.82 R-1	22,500	3421	Transwestern	N.S.
5. Pennzoil-Gulf Fed. Superior-Collatt Estate	2 L-6-23-27	23012	1.00	22,500	3421	Transwestern	3-25-70
6. Com	1 J-1-23-26	23012	1.00	22,500	3421	Transwestern	3-25-70
				74,000	3741.5 Av.		

CASE H
EXHIBIT 4614

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Case No. 4694 Exhibit No. H
Submitted by: OCC
Hearing Date: _____

WELL DATA

OPERATOR	LEASE NAME	WELL NO. AND UNIT	S-T-R	ELEV.	TD	TOP STRAWN LINE	TOP MORROW MARKER	COMPLETION DATA (REMARKS)
Morris R. Antweil (dual-MS)	Allen 1980 FSL-1980 FEL	1-J	31-22-27	3204 KB	11,825	10,188 -6,984	11,258 -8,054	10-3-70
Morris R. Antweil (dual-MS)	Little Jewell Com 1980 FNL-1900 FWL	1-F	31-22-27	3206 KB	11,820	10,260 -7,054	11,250 -8,044	4-20-71
Morris R. Antweil	Missouri N.M. Land Co. 990 FSL-1980 FEL	1-O	6-23-27	3215 KB	11,660	10,407 -7,192	11,370 -8,155	5-8-70
Morris R. Antweil (Stn.)	Joell 660 FNL-1980 FWL	1-C	6-23-27	3211 KB	10,830	10,247 -7,036	---	2-2-71
Cities Service Oil Co.	Merland A Com 1400 FEL-660 FSL	1-O	19-22-27	3180 KB	11,750	10,251 -7,071	11,171 -7,991	10-4-71
Cities Service Oil Co.	Merland B Com 1980 FNL-1980 FEL	1-G	30-22-27	3188 KB	11,760	10,184 -6,996	11,203 -8,015	7-24-71
Cities Service Oil Co.	Strackbein A 1980 FNL-660 FEL	1-E	32-22-27	3181 KB	11,841	10,363 -7,182	11,296 -8,115	12-17-70
Cities Service Oil Co. (dual-MS)	Spencer A 660 FSL-1980 FEL	1-O	30-22-27	3200 KB	11,820	10,310 -7,110	11,255 -8,055	6-29-71
Corinne Grace	City of Carlsbad 660 FSL-1980 FEL	1-O	25-22-26	3227 KB	11,970	10,302 -7,075	11,372 -8,145	3-2-71
Corinne Grace	Gradunaco Com 2500 FNL-330 FEL	1-H	2-23-26	3263 KB	11,965	10,468 -7,205	11,421 -8,158	9-1-71
Corinne Grace	Humble Grace Com 990 FSL-660 FEL	1-P	2-23-26	3269 KB	12,011	10,463 -7,194	11,419 -8,150	6-20-71

BEFORE THE
OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

Exhibit No. 1

Case No. 4693

BEFORE THE
OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

Exhibit No. B

Case No. 4694

WELL DATA

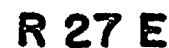
OPERATOR	LEASE NAME	WELL NO. AND UNIT	S-T-R	ELEV.	TD	TOP STRAWN TIME	TOP MORROW MARKER	COMPLETION DATA (REMARKS)
Corinne Grace	Copogo 1980 FNL-1980 FEL	1-G	25-22-26		12,990			WO Comp. ut.
Corinne Grace	Copogo 1980 FNL-1980 FEL	2-G	24-22-26					TD 2250 WORT
Corinne Grace	Grace Carlsbad 1980 FSL-660 FEL	1-I	36-22-26					TD 11,875-Logging
Corinne Grace	Panagra 990 FNL-1980 FEL	1-B	11-23-26		12,710			Shut-in

WELL DATA									
OPERATOR	LEASE NAME	WELL NO. AND UNIT	S-T-R	ELEV.	TD	TOP STRAWN LIME	TOP MORROW MARKER	COMPLETION DATA (REMARKS)	
Pennzoil United, Inc. Disc. (Dual-M-A)	Mobil 12 Fed. 660 FNL-1980 FEL	1-B	12-23-26	3257 KB	11,850	10,340 -7,083	11,283 -8,026	1-8-69	
Pennzoil United, Inc.	Echols Com 1980 FSL-1980 FEL	1-J	12-23-26	3252 KB	11,925		11,300 -8,048	2-20-71	
Pennzoil United, Inc.	Gulf Fed. 1980 FSL-1980 FWL	1-K	1-23-26	3256 KB	12,068	10,518 -7,262	11,463 -8,207	6-24-70	
Pennzoil United, Inc. (Dual-M-S)	Gulf Fed. 1980 FSL-990 FWL	2-L	6-23-27	3232 KB	11,833	10,290 -7,058	11,277 -8,045	1-29-72	
Texas Oil & Gas Corp.	Pan Am State Com 1959 FSL-1980 FEL	1-J	11-23-26	3307 KB	12,140	10,552 -7,245	11,481 -8,174	10-1-70	
Superior Oil Co. (Strawn)	Collatt Estate Com 1980 FSL-1980 FEL	1-J	1-23-26	3245 KB	11,950	10,366 -7,121	11,343 -8,098	11-27-69	
Phillips Petroleum Co.	Drag A 660 FNL-1980 FWL	1-C	18-23-27					Drig. below 5000'	
Union Oil Co. of Calif.	T. Lee 660 FNL-1980 FWL	1-C	29-22-27					Drig. loc.	

Case No. 4693

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N.M. OIL CONSERVATION COMMISSION

April, 1972



WELL COMPLETION - MORROW

OPERATOR	LEASE NAME	WELL NO. AND UNIT	S-T-R	PERFORATIONS - MORROW
1. Antweil, Morris R.	Allen	1-J	31-22-27	2 shots @ 11, 440, 443, 452, 459, 463
2. Antweil, Morris R.	Little Jewell Com.	1-F	31-22-27	2 shots @ 11, 441, 445, 448, 455, 462, 465
3. Antweil, Morris R.	Missouri New Mex. Land Co.	1-O	6-23-27	1 shot @ 11, 556, 557, 564, 565, 566, 567, 568, 571, 572, 574, 575
4. Cities Service Oil Co.	Merland A Com.	1-O	19-22-27	1 shot @ 11, 318, 320, 332, 366, 367, 379, 381, 383, 397, 399, 11, 448, 454, 460, 476, 562, 563, 591, 595, 11, 653, 654
5. Cities Service Oil Co.	Merland B Com.	1-G	30-22-27	1 shot @ 11, 340, 343, 345, 348, 388, 390, 392, 396, 397, 11, 401, 403, 405, 407, 412, 420, 429, 431, 433, 441, 445, 463, 465, 477, 479, 482, 484
6. Cities Service Oil Co.	Strackbein A	1-E	32-22-27	1 shot @ 11, 400, 403, 406, 411, 457, 459, 461, 466, 475, 477, 480, 11, 763, 765, 767, 769, 773
7. Cities Service Oil Co.	Spencer A	1-O	30-22-27	1 shot @ 11, 401, 404, 406, 446, 448, 450, 454, 463, 465, 468, 470
8. Grace, Corinne	City of Carlsbad	1-O	25-22-26	2 SPF 11, 566-572
9. Grace, Corinne	Gratonoco Com.	1-H	2-23-26	2 SPF 11, 656-686
10. Grace, Corinne	Humble Grace Com.	1-P	2-23-26	1 SPF 11, 680-690
11. Pennzoil United, Inc.	Echols Com.	1-J	12-23-26	2 SPF 11, 499-519, 11, 523-533, 11, 591-597, 11, 703-716
12. Pennzoil United, Inc.	Gulf Federal	1-K	1-23-25	1 shot @ 11, 647, 652, 654, 656, 658, 660, 662, 664, 669, 670, 671, 672, 673, 675, 677, 679, 681, 683
13. Pennzoil United, Inc.	Gulf Federal	2-L	6-23-27	2 SPF 11, 397-400, 11, 454-455, 462-477, 498-499, 11, 537-39

BEFORE THE OIL CONSERVATION COMMISSION

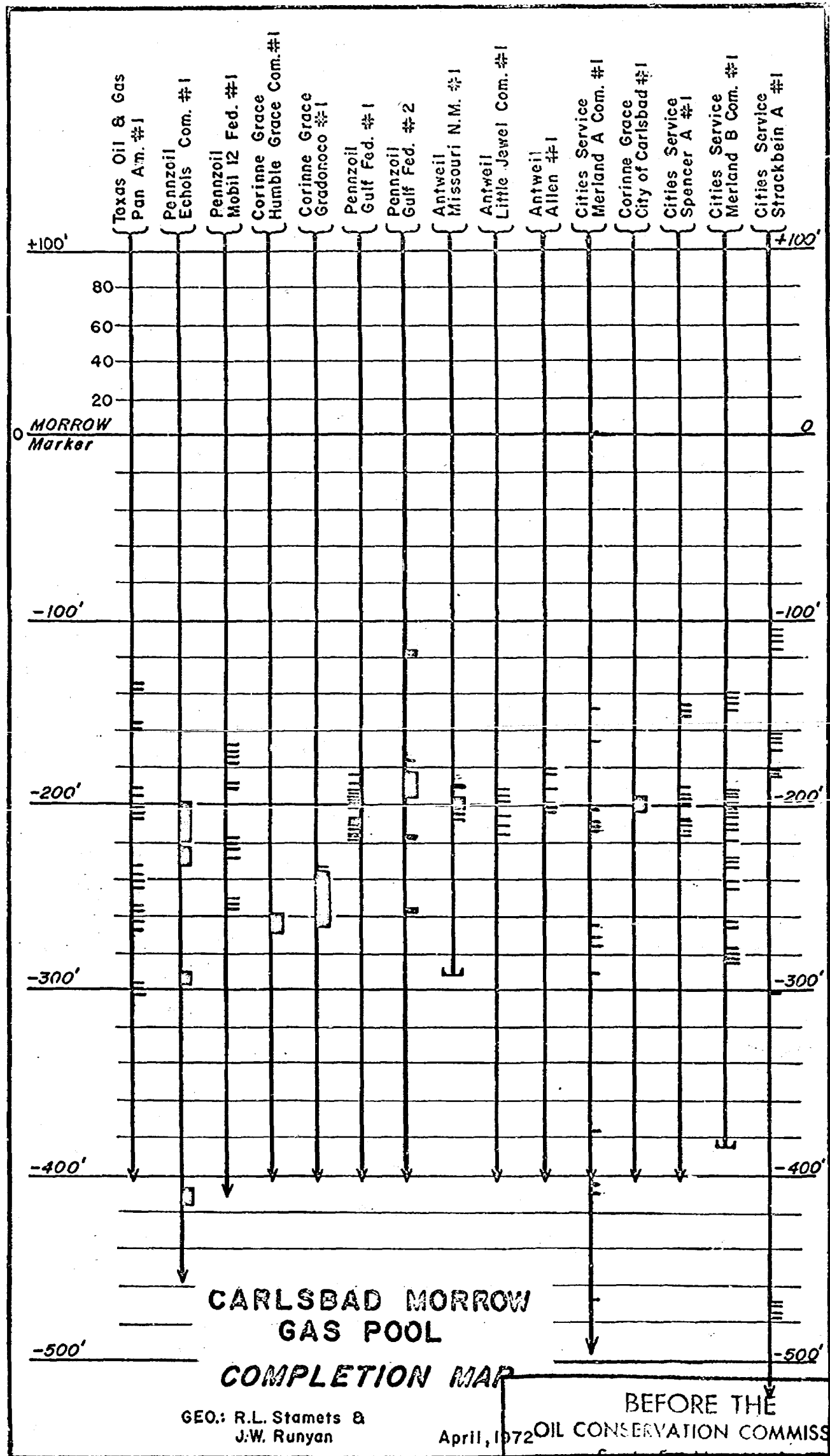
Santa Fe, New Mexico

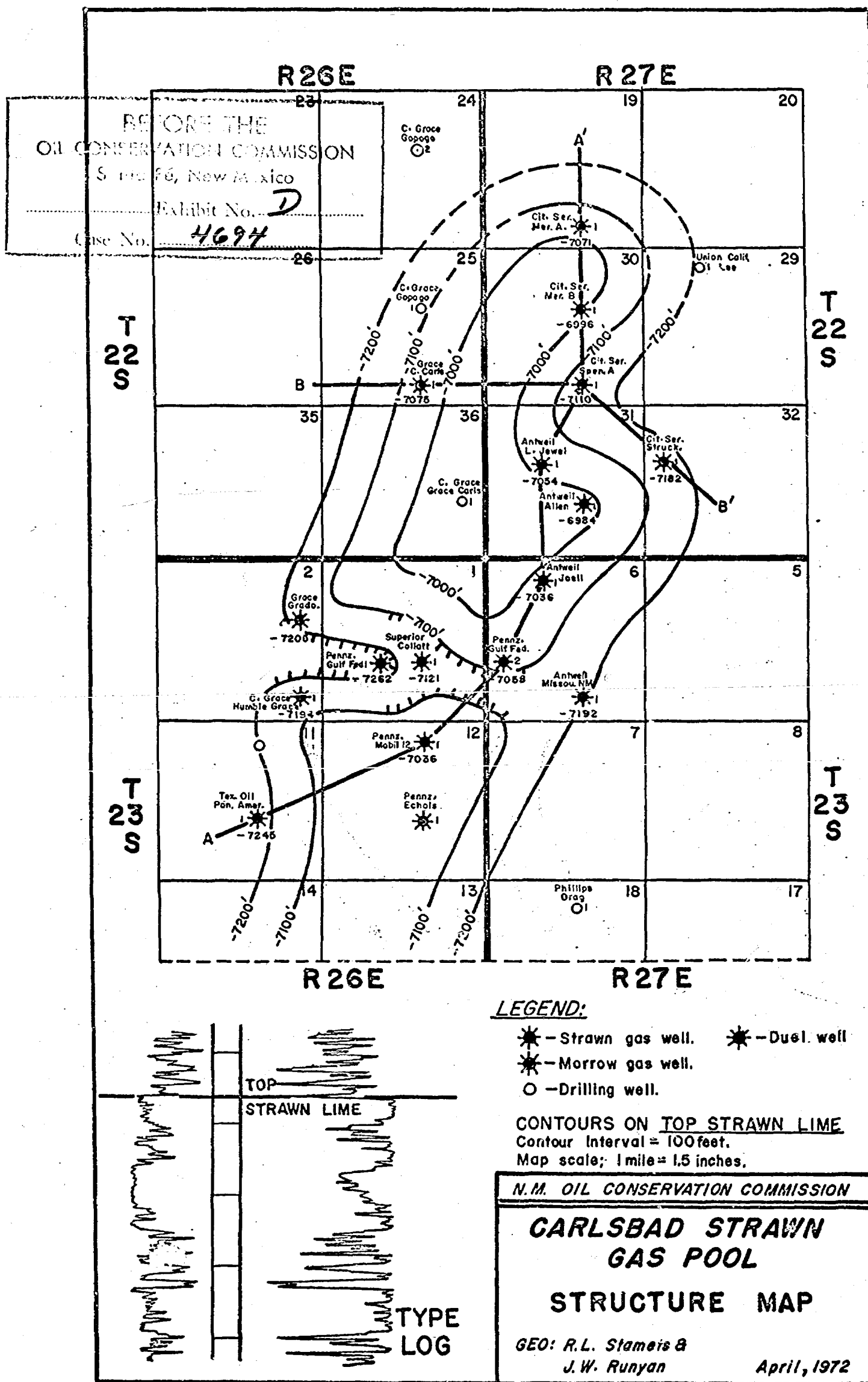
Exhibit No. 3

Case No. 4693

WELL COMPLETION - MORROW

OPERATOR	LEASE NAME	WELL NO. AND UNIT	S-T-R	PERFORATIONS - MORROW
14. Pennzoil United, Inc.	Mobil 12 Federal	1-B	12-23-26	1 shot @ 11,458, 455, 457, 463, 473, 475, 503, 505, 508, 513, 535, 537, 539
15. Texas Oil & Gas Corp.	Pan Am State Comm.	1-J	11-23-26	1 shot @ 11,615, 618, 635, 638, 639, 672, 676, 681, 684, 687, 713, 716, 723, 734, 739, 743, 746, 747, 776, 779, 780, 781

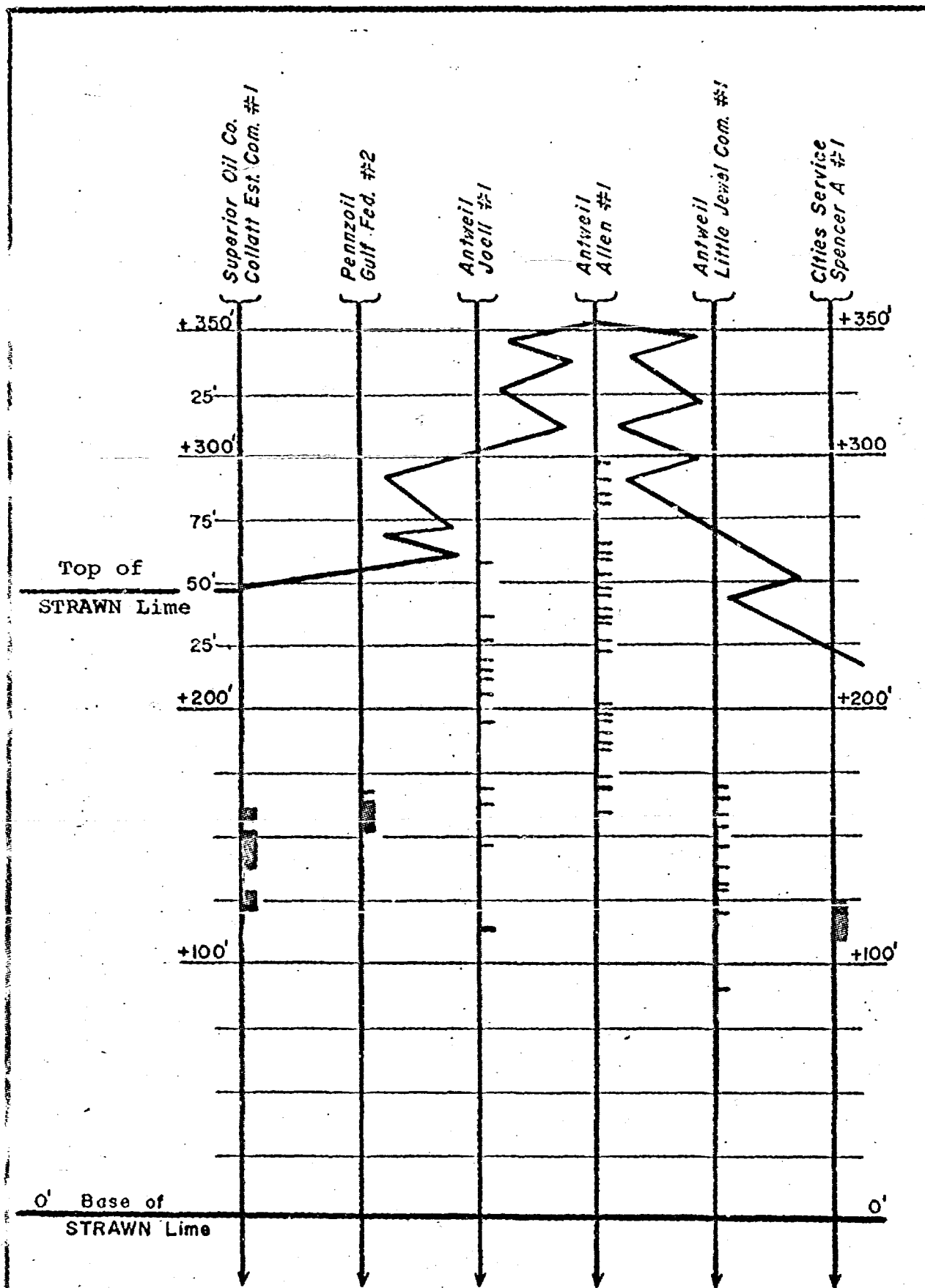




WELL COMPLETION-- STRAWN

OPERATOR	LEASE NAME	WELL NO. AND UNIT	S-T-R	PERFORATIONS - STRAWN
1. Antweil, Morris R.	Allen	1-J	31-22-27	1 shot @ 10,238, 245, 252, 256, 272, 274, 277, 281, 289, 292, 297, 300, 303, 309, 311, 333, 337, 340, 344, 347, 352, 362, 366, 368, 375
2. Antweil, Morris R.	Joell	1-C	6-23-27	1 shot @ 10,291, 311, 322, 329, 333, 337, 342, 353, 379, 386, 403, 433, 435
3. Antweil, Morris R.	Little Jewell Com.	1-F	31-22-27	1 shot @ 10,362, 366, 371, 375, 382, 391, 400, 403, 410, 440
4. Cities Service Oil Co.	Spencer A	1-O	30-22-27	1 shot @ 10,413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429
5. Pennzeil United, Inc.	Gulf Federal	2-L	6-23-27	2 shots @ 10,375 & 2 PF 10,378-392
6. Superior Oil Co.	Collatt Estate Com.	1-J	1-23-26	2 SPF 10,453-457, 462-76, 485-93

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
DCC Exhibit No. 8
Case No. 4694



BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Exhibit No. **F**
Case No. **4694**

N.M. OIL CONSERVATION COMMISSION

**CARLSBAD STRAWN
GAS POOL
COMPLETION MAP**

GEO: R.L. Stamets &
J.W. Runyon

April, 1972

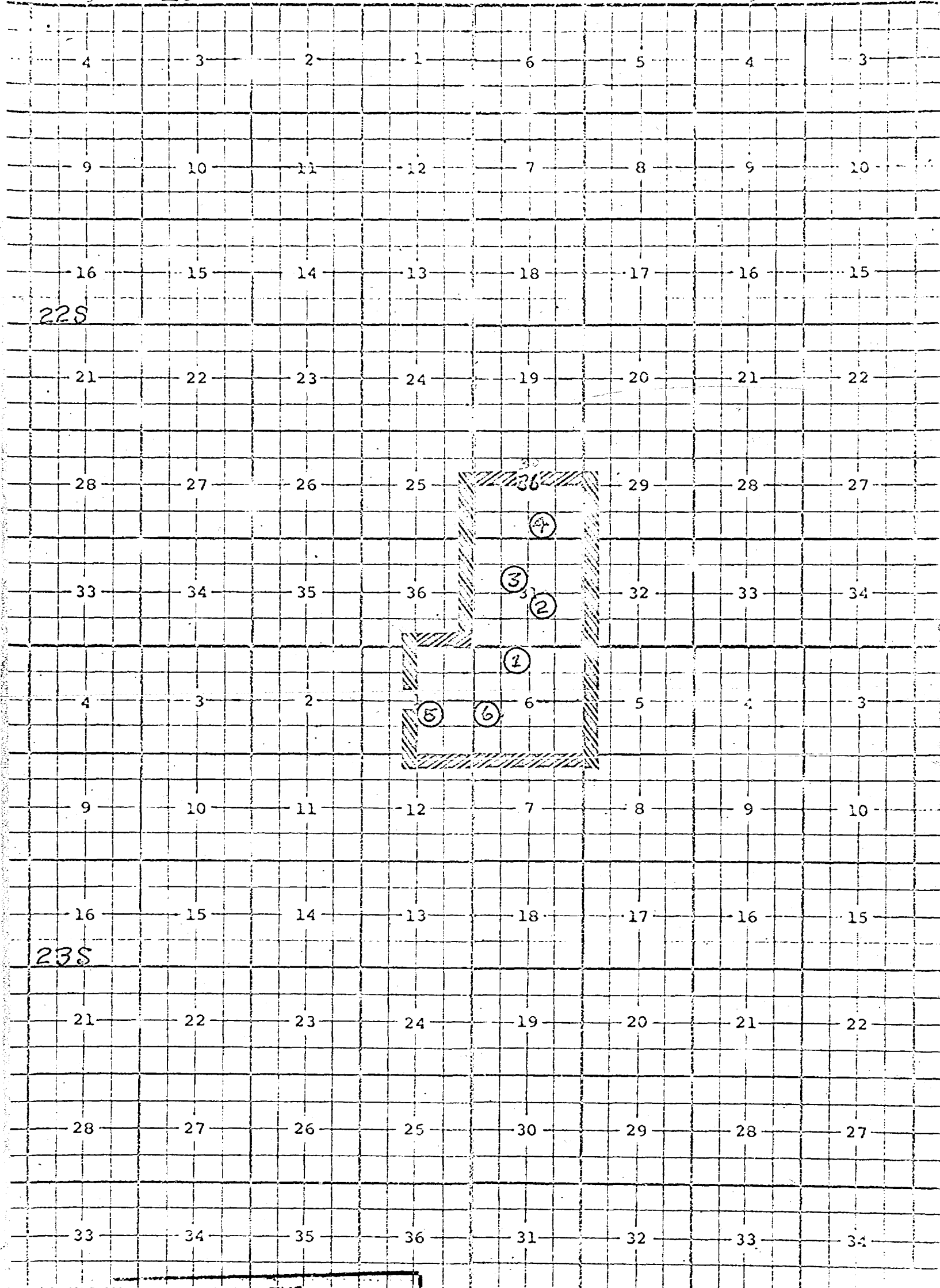
Range

26E

NMPM

Range

27E



BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

Case No. 4694 Exhibit No. G

Submitted by OCC

Hearing Date _____

So. CARLSBAD - STRAWN
CASE 4694
Exhibit G

Range

26E

NMPM

Range

27E

22S

23S

San CARLSBAD-MORROW
CASE 4683
Exhibit 8