

BEFORE THE  
OIL CONSERVATION COMMISSION  
SANTA FE, NEW MEXICO

IN THE MATTER OF:

CASE 1499

TRANSCRIPT OF HEARING

NOVEMBER 13, 1958

DEARNLEY - MEIER & ASSOCIATES  
GENERAL LAW REPORTERS  
ALBUQUERQUE, NEW MEXICO  
Phone CHapel 3-6691

BEFORE THE  
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CASE 1499: Application of Sinclair Oil & Gas Company :  
for a hearing de novo before the Oil Con- :  
serva- tion Commission of New Mexico on its :  
application for a non-standard gas prora- :  
tion unit. Applicant, in the above-styled :  
cause, seeks an order authorizing a 240- :  
acre non-standard gas proration unit in the: :  
Tubb Gas Pool comprising the SW/4 and the :  
S/2 SE/4 Section 26, Township 21 South, :  
Range 37 East, Lea County, New Mexico, said :  
unit to be dedicated to applicant's J. R. :  
Cone "A" Well No. 1 located 660 feet from :  
the south and West lines of said Section :  
26. :  
: :  
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BEFORE:

- Mr. A. L. Porter
- Mr. Edwin L. Mechem
- Mr. Murray Morgan

T R A N S C R I P T    O F    P R O C E E D I N G S

MR. PORTER: The Commission will take up next Case 1499.

MR. PAYNE: Case 1499. Application of Sinclair Oil &  
Gas Company for a hearing de novo before the Oil Conserva-  
tion Commission of New Mexico on its application for a non-standard gas pro-  
ration unit.

MR. MCGOWAN: James McGowan, on behalf of Sinclair Oil  
& Gas Company. If the Commission please, at the trial examiner  
hearing in this case, they were consolidated. However, they do in-

volve different Pools and slightly different acreages, and I believe that one of the reasons that it was not as clearly presented before as possibly it should have been is the consolidation. We will, however, be able to shorten the second one a great deal by incorporating the testimony of the first hearing in it. I would like to hear them separately. These are de novo hearings, and with that I have three witnesses that I would like sworn in at this time.

(Witnesses sworn)

MR. PORTER: Are there other appearances to be made in this case, Case 1499? Anyone else desire to make an appearance in this case? You may proceed.

C. S. TINKLER,

called as a witness, having been first duly sworn on oath, testified as follows:

DIRECT EXAMINATION

BY MR. MCGOWAN:

Q Will you state your full name, by whom you are employed, and in what capacity?

A C. S. Tinkler. I am superintendent of exploration for the Midland Division, which includes part of New Mexico; possibly the east half.

Q Now, you are superintendent of exploration for the Midland Division. Do you have under your jurisdiction, among other things, the problem of forming units and getting the royalty interest owners together when it is necessary to form units for gas at-

tribution or any other purposes?

A Yes, sir.

Q You are familiar, then, with the units under question?

A Yes, sir.

Q Do you have an exhibit that you wish to refer to in your testimony?

A Yes, sir. Exhibit No. 1. I believe each one of the parties have copies of that. And the acreage colored in yellow on the Exhibit which covers Section 26, Township 21 South, Range 37 East is the acreage in which Sinclair has a working interest. And in this connection on the S/2 of Section 26 we show the working interest and royalty interest ownership. In -- the existing Tubb gas units are colored -- outlined in red while the proposed Tubb gas unit is outlined in green.

Q Now, as I understand it, Mr. Tinkler, the W/2 of the SW, the SE of the SW, and the SW of the SE of the said Section 26 is now assigned to the Cone "A" No. 1 Well which is located in the center of SE of the SW, is that right?

A That's right.

Q And this application is seeking to add to that unit, the NE of the NW, and the SE of the SE?

A Yes, sir.

Q Now, what do all these names represent on this Exhibit?

A Well, these are the parties that we had contacted in order to form a hundred and sixty acre gas unit, and in that connec-

tion, while we were contacting the royalty owners in order that we wouldn't have to go back to them, we secured pooling agreements which would provide for at least 240-acre pooling, and there are twenty-seven, I believe, royalty owners in the whole tract. That's all 240 acres, and of that amount, I would say that we commenced in about June '56 attempting to have them execute pooling agreements, and actually we probably got about 75 percent of them executed in about four or five months, and the other 25 percent, it took us a little over a year. And --

Q Now then, at the present time, then, you do have a unitization agreement from all royalty owners and between Sinclair Gulf Oil Corporation and J. R. Cone, the operating interest, to form this 240-acre unit?

A That's correct.

Q Now then, if this application is denied, and the NE of the SE and the SE of the SE is not attributed to the J. R. Cone "A" No. 1 Well, it would appear that there are several other things that you might possibly do, one of which would be maybe to rearrange this unit and attribute some of the acreage to the Olson Well located in the N/2 of the SE of section 26. Would you comment to the Commission on the possibility or probabilities of that?

A Well, in that connection, that would entail contact -- recontacting the majority of the royalty owners, and, as I stated before, it took us about a year and a half to get them all signed on this one, so it would be time-consuming, and money would be ex-

pended, and we would not be sure of a success then. We might get 30 percent of them signed, and the last 20 percent would never execute the agreements.

Q That also would then involve trying to reach an agreement between Gulf, Sinclair, Mr. Cone and Olson concerning not only the unit but ownership in and participation in the well?

A That is right.

Q Have you made any investigation as to the possibility of that?

A We have contacted Olson Oil Company in connection with their No. 1 Cone Well, which is shown as the north -- the 80 acres dedicated. That Well is shown as the N/2 of the SE/4 of Section 26, and as of this date, we have been unsuccessful in negotiating any type of a unit.

Q Well then, it would be your opinion, from your testimony, I gather, that to attempt to do that might be impossible as well as improbable and certainly would take a long period of time?

A That's right.

Q Now, it would appear also that you could drill additional wells to develop this acreage, could you not?

A Yes, sir, but in that connection, if we drilled a new well, it would cost us approximately seventy-five thousand dollars, and that being additional expenditures when we have wells at the present time that are capable of draining that acreage.

Q That would just be money spent, then, for no added re-

covery of gas?

A That's right.

Q Would that same answer be true in connection with attempting to recomplete and thus dually complete any of these wells on this land?

A Yes, sir, and in that connection you run the risk of losing the hole, and we have oil wells now that are producing, and in addition to that your dual completion with the Drinkard oil zone would also probably run around twenty-five thousand dollars.

Q Again, it means expenditure of money and time, and even the possibility of loss of another hole with recovery of no additional oil?

A Yes, sir.

Q Other than that, the only alternative left would be to leave this acreage undeveloped?

A That's right. In that case, Sinclair, Gulf, Cone and royalty owners could be drained by the existing wells in the area.

MR. MCGOWAN: I believe that's all I have.

MR. PORTER: Any questions of the witness? Mr. Utz.

CROSS EXAMINATION

BY MR. UTZ:

Q I didn't get your name.

A T-i-n-k-l-e-r.

Q Mr. Tinkler, when Sinclair was going about unitizing this 240 acres, were you not aware of the spacing provisions of R-586?

A Yes, sir, we were, but the way we felt about it, we had to contact these royalty owners for 160 acres, and we -- at the same time we did get them to agree to at least unitize an additional 80, and we weren't trying to be presumptuous in that respect, but the fact that we got them to go for 240 would keep us from having to go back and be out money and time again.

MR. UTZ: That's all I have.

MR. MCGOWAN: One further question, Mr. Tinkler.

REDIRECT EXAMINATION

BY MR. MCGOWAN:

Q In doing that, you also were aware that the Commission had theretofore granted unorthodox units in this pool of acreage equal to or greater than 240, were you not?

A Yes, sir, we were.

QUESTIONS BY MR. COOLEY:

Q Mr. Tinkler, under your present authorization from all interested parties, would it be possible to dedicate the SW/4 of Section 26 to your well --

A The SW/4 --

Q -- and form a standard unit?

A No, sir, not under the present, it would not. We would have to recontact; I believe there is twenty that we would have to recontact.

Q Well, what 160-acre unit are you authorized to --

A Well, it is outlined in red. It is the W/2 SW SE of

the SE, and SW of the SE, and in addition 200 of the NE to the SW and the SE of the SE.

MR. COOLEY: Thank you.

MR. PORTER: Anyone else have a question?

QUESTIONS BY MR. STAMETS:

Q Mr. Tinkler, in the event that this application were denied, and you maintained your 160-acre unit, would the additional recovery from 80 acres be enough to pay out the drilling of additional wells?

A Well, in that connection I feel that I am not qualified to answer that. We will have another witness.

MR. STAMETS: That's all I have.

MR. PORTER: Any further questions? The witness may be excused. This Exhibit was prepared by you and under your supervision?

A Yes, sir.

MR. PORTER: Without objection, the Exhibit will be admitted. The witness will be excused.

(Witness excused)

H. A. MERRILL,

called as a witness, having been first duly sworn on oath, testified as follows:

DIRECT EXAMINATION

BY MR. MCGOWAN:

Q Will you state your name, by whom you are employed, in

what capacity, please?

A H. A. Merrill, district geologist for Sinclair Oil in Roswell.

Q And the area, the subject of this application, is under your jurisdiction?

A Yes, it is.

Q And you are familiar with it?

A Yes, sir.

Q Now, you have previously testified as an expert geologist before this Commission, have you not?

A Yes, sir, I have.

MR. MCGOWAN: Are his qualifications acceptable to the Commission?

MR. PORTER: They are.

Q Now, Mr. Merrill, do you have an opinion concerning this Tubb gas reservoir, with particular attention to the area surrounding Section 26 as to whether or not it is an uninterrupted interconnected gas reservoir?

A All geological work we have done in this area indicates no particular structure barrier or any formational change which would prove very damaging.

Q You have prepared a structure map of this Tubb gas pool, then?

A Yes, sir, I have.

Q And that is what you are asking the Reporter to mark as

Exhibit No. 2?

A That is right.

Q Now, do you feel that this Pool is sufficiently developed so that you have information that allows you to accurately contour the Tubb gas zone?

A We have a well penetrating the formation on nearly every 40-acre tract in this area.

Q That is not necessarily producing from that 40-acres, but does penetrate it?

A That is right.

Q You do have logs on most every 40-acre in the Pool?

A Yes.

Q You feel that gives you sufficient information to pinpoint your contours?

A Yes.

Q On the board there are two cross sections, one marked "AA" prime and one "BB" prime which we ask the Reporter to mark as Exhibits No. 3 and 4. Will you point out to the Commission how those Exhibits strengthen your conviction that this is an uninterrupted, interconnected reservoir?

A This is a west to east cross section based on logs in the proposed gas unit.

Q That follows the line marked "AA" on the Exhibit 2, the contour map?

A Yes, it is identified as "AA" prime.

Q And goes right through the well that we seek to attribute this acreage to?

A It goes through our 1 "A" Cone.

Q And also includes one or more wells offsetting it in the east and west direction, is that right?

A That is right.

Q Now, that's -- do the logs indicate any interruption whatsoever in this formation?

A The Tubb formation is readily identified and all logs in this section. Curves at approximate depth of 6100 feet.

Q Now then, of the 240 acres that we seek to attribute to this well, that goes -- that cross section goes right through the middle of 150 of it, is that correct?

A That's correct.

Q And shows no interruption?

A That is right.

Q Will you refer to cross section "BB" Prime, that is the one that is so marked in on the contour map, Exhibit No. 2?

A This cross section is also a west to east cross section through the northern part of the proposed gas unit. It is labeled "BB" Prime on the structural plat. It shows, in effect, the same presence of the Tubb formation across the north part of the unit with no particular structural barrier or any formation change to prevent drainage.

Q Then, between the two cross sections, you have gone

through wells in the center of each of the 40's we seek to attribute to this well?

A That is right.

Q And they each showed no interruption?

A Right.

Q Then, from a geological standpoint, Mr. Merrill, is there any reason, in your opinion, why the drainage area of this well would be restricted?

A None whatsoever.

MR. MCGOWAN: I believe that's all I have.

MR. PORTER: Any questions of Mr. Merrill?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Merrill, I wonder if you could tell me what formation the E. C. Hill No. 1 Well in the SE of the SW 26 is presently completed in?

A That is a Blinebry Oil Well.

Q Could you tell me what formation the Sinclair Cone No. 2 "A" is presently completed in?

A That is a dual completion, Blinebry gas and Drinkard oil.

Q I see. This E. C. Hill No. 1 which is presently a Blinebry oil well was drilled beyond the Blinebry originally, was it?

A Yes, that went through the Tubb and Drinkard formations.

Q Has it been plugged back to the Blinebry now or what?

A Yes, it is plugged back.

Q With cement or what? Do you know?

A I am not familiar with that. It is plugged back to 5740 feet.

MR. NUTTER: That's all, thank you.

MR. PORTER: Mr. Utz.

QUESTIONS BY MR. UTZ:

Q Mr. Merrill, the S. E. Cone No. 1 Well, as shown on your Exhibit No. 1, what formation is that completed in?

A Which well do you refer to?

Q The S. E. Cone.

A Is that in the NE of the SW/4?

Q That's in the NE SW.

A That is the Gulf No. 1 Cone, I believe. It is a Drinkard Well.

Q Drinkard Well. Thank you.

MR. PORTER: Any further questions of Mr. Merrill?

QUESTIONS BY MR. COOLEY:

Q Mr. Merrill, the studies you have made and the testimony which you have given here in no way indicates what the drainage rate is of the proposed unit well, does it?

A No, it shows the presence of the formation uninterrupted throughout the area.

Q But would have no bearing on whether it would drain 160,

or more than 160, or less than 160?

A No, it doesn't.

MR. COOLEY: Thank you.

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

REDIRECT EXAMINATION

BY MR. MCGOWAN:

Q Mr. Merrill, Exhibits Nos. 3 and 4 were prepared by you and/or under your supervision, were they not?

A Yes, sir.

MR. MCGOWAN: I offer Exhibits 3 and 4 in evidence.

MR. PORTER: Without objection, the Exhibits will be received.

R. R. MARMOR,

called as a witness, having been first duly sworn on oath, testified as follows:

DIRECT EXAMINATION

BY MR. MCGOWAN:

Q Will you state your name, address and by whom you are employed, please?

A R. R. Marmor. I am employed by Sinclair Oil & Gas Company, and I am assistant division engineer for the Midland division, which handles Southeast New Mexico and West Texas.

Q Now, as part of your duty, you also oversee and supervise the reservoir engineering section of the Midland division, do you not?

A Yes, sir.

Q I believe you have never testified before this Commission before, have you, Mr. Marmor?

A That's right.

Q Will you very briefly give the Commission your education and experience background?

A Yes, sir. I obtained an engineering degree in petroleum engineering from the University of Oklahoma in 1951. Upon graduation, I joined Sinclair, and I have been with Sinclair since.

Q You have been practicing your profession since?

A Yes, sir.

MR. MCGOWAN: Are his qualifications acceptable?

MR. PORTER: They are.

Q Mr. Marmor, you are familiar with this application, the acreage covered thereby?

A Yes, sir.

Q Now, Mr. Marmor, you stated that you oversee and supervise the reservoir engineering section. Is one of their functions to study the mechanics and performance of reservoirs to determine possible drainage areas?

A That is correct.

Q Will you briefly advise the Commission of your ideas and reasons, therefore, concerning the drainage of gas from an uninterrupted interconnected gas reservoir?

A As long as a reservoir has continuity and transmissibility

of fluid, a single well could drain a whole reservoir.

Q In other words, then, there is actually no limit to the size area that one well might drain in any gas reservoir, so long as it is continuous and is interconnected with permeability?

A That is correct.

Q Would you go so far, then, as to say that given sufficient time, one well will drain the entire Tubb reservoir?

A Given sufficient time, it could be done.

Q Now, is that belief or opinion pretty well accepted in the industry, Mr. Marmor?

A I believe so.

Q Is that belief, was that taught you in school, for instance?

A Yes, sir.

Q You have available to you various authorities which advocate such a belief and opinion?

A It is part of the basic engineering background that you must get to study in engineering.

Q Now, if you were taught that in school, you came out of school to see if that is so, did you not?

A That is correct.

Q Has your work in gas reservoirs and study of gas reservoirs performance convinced you that that is correct?

A Yes, sir; as long as you have transmissibility of fluid, as long as you have continuity of the reservoir, there is

no doubt in my mind that you can deplete a gas reservoir, given sufficient time.

Q So then, the size of a gas unit is actually a matter of time and economics, rather than reservoir drainage?

A That is correct.

Q Well, then, I assume that you are of the opinion that this Cone "A" 1 Well will drain far in excess of 240 acres?

A Yes, definitely.

Q Now, have you studied this reservoir to see if there was any reason why, in this particular area, this particular reservoir, the drainage theory you just discussed is not true?

A I don't see any reason why it shouldn't.

Q There is no information, then, available to you on the reservoir that indicates any question about it?

A No, sir.

Q Do you have anything further you would like to discuss or present in connection with the drainage of this pattern of this well?

A Yes, I have an Exhibit prepared which shows the pressure behavior of a gas well while producing. We have taken -- in this particular case, we have taken the J. R. Cone "A" Well No. 1 for the Tubb, and we see in case 1 that the pressure drop from the furthest point in the present proration unit to the well bore will be 275 pounds. The pressure drop from the farthest point in the requested proration unit will be 281 pounds. That means that to

move from the furthest point, and in the requested proration unit, to the furthest point in the present proration unit, will require only 6 pounds of pressure to move the allowable of a 240-acre well.

Q Is what you are saying, then, in effect, that it would only take a six-pound greater pressure drop to drain 240 acres by this well than it is now taking to drain 160 acres?

A That is what it shows.

Q So, then, the further you go from the well bore, the less pressure drop you have per acre assigned to it, for drainage purposes?

A That is correct. For example, in this particular case, it would be, approximately 86 percent of the pressure drop would occur within 50 feet of your well bore. Then, from there on out, your pressure drop is very small.

Q Now, does this mean, then, that on a 160-acre unit, giving this well a 160-acre allowable, so that it is in theory, at least, draining a circular area equal to 160, there is 244 pounds difference between the pressure at the bottom hole and at the edge of the 160-acre circle?

A Well, assuming the periphery of a 160-acre circle, the pressure -- well, let me back out a little bit. The pressure drop from the periphery of a 240-acre circle to the well bore will be 249 psi; from the periphery of a 160-acre circle, it would be 244. Therefore, from the periphery of 240 acres to a periphery of 160-acre circle, it would be six-pound pressure drop to move the allow-

able of a 240-acre well.

Q Now, just exactly how does that further support or illustrate the theory of draining?

A It indicates that away from the well bore you require very small pressure drops to move the gas that you are required to produce. Now, your major drop always occurs within just a near distance of the well bore.

Q Now, I would assume, then, Mr. Marmor, that you recommend to your company that they attempt to form this unit because you were of the opinion that the well would recover all the gas that Sinclair had a right to recover out of the Tubb Pool, is that correct?

A That is correct.

Q Now, in making that recommendation, you realized it would have to be approved by the Commission, did you not?

A That is correct.

Q Did you give any consideration to the Field Rules themselves and what the Commission had heretofore done in similar matters, in making that recommendation?

A Yes, sir.

Q Do you have an exhibit prepared which illustrates the information you obtained in that investigation and led you to the conclusion the Commission would probably grant this application?

A Yes, I have an exhibit.

MR. MCGOWAN: We will ask the Clerk to mark this Exhibit

No. 6.

Q Now, I notice on this Exhibit, Mr. Marmor, that you have included Sinclair's J. R. Cone "A" No. 1 unit, which is the one we are here seeking approval for. That was included, was it not, solely for comparison purposes?

A Yes, sir.

Q Now, will you briefly explain to the Commission what this Exhibit shows?

A This Exhibit shows a number of Commission-approved non-standard units which have deliverabilities either less --

Q It shows those units together with their deliverabilities and the maximum distance of any acreage assigned to the well for each of the units listed, does it not?

A That is correct.

Q Now then, I note that two of those units have 240 acres assigned to the well and one of them -- and one has 320 acres, is that correct?

A Well, the Ohio Wortham 9 and 11 are each 160-acre units, but --

Q Let's talk a minute about the Hunt and Skelly unit shown on this Exhibit, which have 240 acres attributed to them, as we are seeking here. For instance, how far is the farthest boundary of the unit we seek to attribute to the J. R. Cone "A" No. 1 Well from that well?

A 4667 feet.

Q And how far is it from any other well to the farthest boundary attributed to it?

A Well, for example, the Sunray State 15 No. 4, which is a 160-acre unit. However, the farthest point on that unit to the well is 4667 feet. The Ohio Wortham No. 9, which is actually a 160-acre unit originally, actually has a distance right now of 5365 feet to the farthest point in the unit.

Q Now then, let's take, for instance, the "E" No. 1 Well, which has 240 acres attributed to it, and compare the deliverability of the Cone "A" No. 1 Well and the Hunt Well.

A Well, the Cone "A" No. 1 has a deliverability against a 600-pound line of 4,600,000 cubic feet per day. The Hunt Weatherly No. 1 has a deliverability of 2,759,000 cubic feet per day.

Q In other words, then, the Cone Well, to which we seek to attribute 240 acres, has close to twice as much productive capacity as the Hunt Weatherly Well, to which 240 acres is attributed to in the same Pool, is that correct?

A That is correct.

Q Will this J. R. Cone No. 1 "A" Well make the allowable?

A Yes, based on the allowable for the last year. This well is capable of producing seven times the allowable of a 240-acre unit.

Q Well then, is it your opinion that it will drain a 240-acre area, and that it will make far in excess of the total allowable that is or probably ever will be assigned to it, or are you of the

opinion that this well will recover all gas from the Tubb, that Sinclair and Mr. Cone and all royalty owners are entitled to from their 240 acres?

A That is correct.

Q Now, Mr. Marmor, I would like to direct your attention back to Exhibit No. 2, I believe it is, which is the contour map. Now, you are familiar with the Field Rules that were adopted in 1954 by this Commission for the Tubb Gas Pool, are you not?

A Yes, sir.

Q The J. R. Cone "A" No. 1 Well is properly located as prescribed in those Field Rules, is it not?

A That is correct.

Q The Field Rules themselves recognize and provide a method for the establishment of non-standard units, do they not?

A Yes, sir.

Q They even in some instances, under certain circumstances, provide for them being approved without a hearing, do they not?

A They do.

Q Now, the offset operators of this acreage well were all given notice of this application, were they not?

A Yes, sir.

Q And I believe they all executed waivers with the exception of Continental and Olson Oil Company, is that correct?

A That is correct.

Q And I believe Continental wrote a letter to the Commiss-

ion, in effect, stating it is a matter of policy, they feel that it should be restricted to standard units?

A That is correct.

Q It, however, is further apparent from your Exhibit No. 6 that the Commission has already deviated, to some extent, from that policy?

A Yes, sir.

Q Now then, in thinking in terms, for a moment, of correlative rights, and looking at this map, it would appear that this acreage is offset in all directions by Tubb Gas wells, is that correct?

A That is correct.

Q And they all have assigned to them an allowable as set forth in the Field Rules, do they not?

A Yes, sir.

Q Now, the proration formula set forth in the Field Rules applicable to the Rubb Pool is on 100 percent acreage, is that correct?

A That's correct.

Q As over simplified practice, is the effect of that to determine that the allowable from the Tubb Gas Pool is so many MCF's of gas that there are so many acres in it and give to a well, then, the MCF per acre allowable times the number of acres assigned to it?

A That is correct.

Q So if that well has been on acres assigned to it, then it gets the allowable assigned to 30 acres?

A If they are capable of producing the allowable.

Q And if it has 240 or 300 acres, it gets the allowable equal to those acres?

A Yes, sir.

Q And if a well is capable of producing the allowable based on 100 percent acreage, so long as it is producing the allowable, it obviously would be producing that operator's share and none other, is that correct?

A That is correct.

Q Now, to simplify that a little further, let's assume for the moment that the S/2 of 26 was the entire Tubb Gas Pool. Mr. Olson and his associates, if he has any, I have no knowledge of it, own 80 acres within that 320-acre gas pool, do they not?

A Yes, sir.

Q Sinclair, Gulf and Cone own 240 acres, do they not?

A Yes, sir.

Q Then, Mr. Olson is entitled to 80/320ths of the gas under that 320 acres, isn't he?

A That's correct, based on--

Q On the acreage allowable formula in the Field Rules?

A Yes, sir.

Q And Sinclair, Gulf and Cone are entitled to 240/320ths?

A That's correct.

Q Now, Mr. Olson has assigned an allowable to his well of 80 acres, has he not?

A Yes, sir.

Q And it can produce that allowable?

A Yes, sir.

Q And is producing it?

A Is producing right now.

Q So he is getting his 80/320ths of gas under that half section?

A Yes, sir.

Q Now, Sinclair's well is capable of producing 240/320ths, is that correct?

A It is.

Q However, under the present form it is only getting 160/320ths, is that correct?

A That is correct.

Q Without the granting of this application, Sinclair, Gulf and Cone will never be able to get the fair share of gas under that section?

A No, sir, they will get a small percentage of that gas.

Q Do you see any way of granting this application so that Sinclair, Gulf and Cone could get any of Mr. Olson's gas?

A No, there is no way.

Q He will still be allowed to produce his 80/320ths, is that correct?

A That's correct.

Q Could you see, then, in any respect how the granting of

this application would violate Mr. Olson's or anybody else's correlative rights?

A No, sir.

Q Would you be of the opinion, then, that the Sinclair and royalty owners' correlative rights would be denied by the denial of that application?

A Yes, sir, they would be.

MR. MCGOWAN: That's all.

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

CROSS EXAMINATION

BY MR. COOLEY:

Q Mr. Marmor, at the outset of your testimony, you testified that in your opinion, that when you have a continuous uninterrupted reservoir, one well will drain the entire pool, if given sufficient time?

A That is correct.

Q What do you suppose sufficient time would be in the Tubb Gas Pool?

A It would be a very long time.

Q About how many years?

A I have no idea. It would be a very long time.

Q A thousand years?

A It could be as long as that.

Q Now, you testified also that you are convinced since you got out into the Field that this theory was correct. Wouldn't

it take more than a thousand years to become convinced?

A Well, the main thing -- I said this -- is that if you have transmissibility and if you have continuity, you are going to deplete it. Now, transmissibility means that if the gas can go through it, you will produce it. Therefore, you should be able to get it out. If you create a pressure sink you will have pressure away from the well bore, which will bring in the gas to the well bore, so sooner or later you will produce everything until that pressure is completely depleted.

Q Now, Mr. Marmor, our Rules require that we space wells so that they will efficiently drain and develop the acreage. You wouldn't say that one well would efficiently develop the entire Tubb Gas Pool, would you?

A Well, efficiently, if you can afford to wait that long.

Q Well, that is interpreted, efficiently and economically.

A Well, then, it would not be economically feasible.

Q Then we come to the question of economic limits, do we not?

A Yes, sir.

Q What is your opinion of appropriate abandonment pressure in the Tubb Gas Pool?

A Well, it depends on the line pressure. Of course, you can always set a compressor at the depth of the well which will keep the hydrostatic head of your gas. It will probably be in the

lower pressure range. I would say somewhere around 100 to 300 pounds.

Q Now, if you had one well located as near the center at an advantageous a position as possible, that when the pressure declined to this abandonment pressure, whatever it might be at the well bore, at the outer periphery of this main drainage radius, the pressure would be extremely high, wouldn't it?

A Now, are we talking on economic terms or time?

Q Just talking about what the pressure would be at the outer periphery or outer boundaries of the Tubb Gas Pool, since that is the area which you say the well will drain.

A When?

Q Well, we are going to give it a thousand years?

A The pressure at the outer periphery will be practically the same as it is at the well bore.

Q When the pressure at the well bore drops to 125 pounds for the first time, what will the pressure be at the outer periphery of the Pool at that time?

A For the first time?

Q Yes.

A It would be somewhat -- as you are producing it, it will be somewhat greater, away. At periphery.

Q As you progress away from the well?

A As you are producing it. If you shut in the well, let it sit for a while, and open it again, the pressure will build up,

equalize throughout the reservoir, and then there will be the average of pressure at the periphery when you first shut it in and the pressure at the well bore. Then, as you shut it in, it will average out, and you will have a somewhat average pressure and produce some more --

Q It would never stabilize completely again, would it, if you shut it for a hundred years?

A You could open that well out, and the gas would come out slowly, and it would be a long time.

Q Any consideration of appropriate spacing, we must take into consideration the questions of sufficient development and economic limits?

A Yes, sir.

Q On your Exhibit -- it is not marked here, the one that portrays the pressure at the periphery of your drainage area -- what number is that?

A That would be 5, I believe.

Q Your Exhibit No. 5, I believe, you indicate that the pressure differential between the 160-acre periphery -- drainage periphery and the 240-acre drainage periphery, would that be it, of 6 pounds per square inch?

A Yes, sir.

Q Now, when your well reached abandonment pressures on a 240-acre unit rather than 160, you would leave the amount of gas that is represented by this six pounds psi?

A It will be three pounds. In other words, it is six pounds from one corner to the other corner, so the average in that area will be three pounds.

Q So whatever amount of gas this represents would be left in the reservoir?

A Yes, sir. Would be three pounds worth.

Q As compared to development on 160?

A Yes, sir.

Q And --

A There would be about three pounds, would be about one-tenth of a percent of the original pressure.

Q Would be about one-tenth of a percent of the original pressure?

A Yes, .15.

Q Now, Mr. Marmor, on this question of correlative rights, you have adequately considered the relative positions of the various operators in the Pool with regard to the acreage that they have dedicated to their wells?

A Yes, sir.

Q That is, the individual should share in proportion that his acreage bears to the total acreage in the Pool?

A That is correct.

Q But also in the matter of correlative rights, must we not also consider the question of where your well is located; wouldn't it make some difference on how much gas you are going to

recover, how close another operator's well is located to you?

A No, sir. In a gas field, the location of a well has no bearing on the recovery as long as you have uniformity of the well.

Q Is it your testimony that the Tubb Pool -- that the wells which directly offset the proposed unit well here will not experience any decline in production -- ultimate production as a result of your well producing 240-acre allowable?

A Well, there will be a small decline, that is, because of this -- at this time, if we don't get the 240 acres, they would get a share of the gas reserves underlying the 240-acre leases. There would be a small decline.

Q I don't want to go into whether you are entitled to this or not, I want to know whether there will be a decline in the offsetting production?

A There will be that small decline, yes, sir.

Q Now, would you please explain to me why you feel that Sinclair is entitled to bring about this decline in this offset operators' --

A That decline actually belongs to us, that percent that they are getting right now, that they will ultimately get actually belongs to Sinclair.

Q Did you feel that is so because you have an additional 80 acres in the Pool?

A That is correct.

Q Isn't it ordinarily required that you develop your 80

acres before you are entitled.--

A This is proven development.

Q You haven't developed.

A Well, we have developed 240-acre. Actually, it is proving productive, and that is developed, is it not?

Q Acreage can be proven productive and yet not developed. You can drill on a 40-acre prorated oil pool, you can go around the particular 40-acre tract; until you drill a well on it, it is not developed.

A We don't have a well under the SE of the SW of 26.

Q We consider a 160-acre spacing thus far as being efficient and economic?

A Well, if the Commission does not grant the proposed unit, then it is not developed.

MR. COOLEY: That's all the questions I have. Thank you, sir.

MR. PORTER: Mr. Stamets.

QUESTIONS BY MR. STAMETS:

Q Would it be an economic venture to drill an additional well to get the gas from, say, an 80-acre tract? I wouldn't be bothered to try to tell you which way to divide this up.

A It would not be economical if we can do it with one well right now that we already have completed in the reservoir.

Q What I mean is, will you get enough gas to pay out seventy-five thousand dollars?

A That's kind of hard to tell. It may be. We don't have any cores in this area. We know they are continuous. We can tell the continuity, but the logs are hard to evaluate for porosity and net pay, and it will be hard for me to put an actual reserve value to the gas.

Q Your answer seems to indicate to me that you feel it would be somewhere near?

A It could possibly be.

Q So, in that event, a dual completion, if successful, would be a profitable venture?

A Any place in the field?

Q On an 80 acre of your selection.

A Yes, it could be.

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

QUESTIONS BY MR. UTZ:

Q Mr. Marmor, in your theoretical conclusions as to one well draining an entire pool, is that not based on the fact that the reservoir has to be completely homogenous?

A That's what I say. Not necessarily homogenous as long as you have transmissibility of fluid, as long as -- if you have permeability regardless of what degree of permeability, then, and you have pressure, the pressure will level off in time.

Q Is the Tubb Gas Pool, in your opinion, such a pool?

A Yes, sir.

Q There is no lengthening out and the communication, you

feel, is perfect throughout the Pool?

A At lease the area we have studied, it looks fairly good.

Q In regard to another part of your testimony, to the effect -- I believe your testimony was to this effect, that you felt that correlative rights would be protected because of the fact that your well can produce 240-acre allowable, is that your testimony?

A Yes, sir.

Q If that well was capable of producing 180-acre allowable, do you think it should have any?

A Yes, I think it should, if it is able to produce it economically. We have to weigh the economics. It might be that we prefer to get the gas faster, and then we would want to drill some more wells.

Q I am speaking from the standpoint if this well were capable of producing the 240-acre allowable?

A If it were capable of producing it, I think I would recommend it.

Q If it were capable of producing a 5000-acre allowable, would you?

A If the well is capable of producing 5000-acre allowable, I'd rather just drill one well because it is the economics. If I can do with one well what I have to do with ten other wells, and get the same allowable, there wouldn't be any use for me to drill the other nine wells.

Q Then, I gather from your statement, then, that you feel somewhat that a well should have a spacing comparable to the ability to produce?

A Actually, I feel this, that a well should have an allowable that is as near as possible to the underlying reserves on the acreage that a person owns.

Q If this well would not produce a 240-acre allowable, you would not be asking for it, is that true?

A That's true. There wouldn't be any need for it.

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

RE CROSS EXAMINATION

BY MR. COOLEY:

Q Mr. Marmor, isn't it true that in determining the efficiency of a well in any given reservoir draining a certain amount of acreage, that the permeability is one of the primary factors that you consider?

A Permeability, rate of production, versus viscosity, and the thickness of the pay, that's the things that everyone of them has a direct bearing, the same weight. In other words, if you double one and divide the other one, you will have the same answer.

Q I am talking about efficiency of drainage. You say if you double the pay thickness and divide the permeability by half that you would have the same efficiency of drainage?

A Yes, sir.

Q I mean that you would drain the same amount of distance away from the well bore?

A Yes, sir.

Q As your permeability increases, is it not true that the pressure at the periphery of drainage radius, when the pressure at the well bore is at abandonment level, it would be higher?

A It would be somewhat higher.

Q And as the pressure at the periphery increases, the amount of gas left in the reservoir increases, does it not?

A Yes.

Q This is what I mean by efficiency, Mr. Marmor, when you drain a lesser percentage of the gas in place, then you have a less efficient drainage pattern.

A To go back to your original question, you say if we have permeability and double the thickness, we will have the same effect?

Q You will produce the same amount of gas?

A Yes.

Q But you wouldn't drain as fast, would you?

A No. Your drainage radius is the same, it doesn't change. The pressure at the outer boundary that you select -- let's assume that the pressure is at original conditions, so many feet away, 2000 feet away, --

Q Yes.

A If you change the net pay, that is, if you double the pay and have the permeability, the pressure at the periphery will

be the same, it will not change.

Q Mr. Marmor, I don't believe we are talking about the same thing because if I understand this correctly, as the permeability factor decreases, the abandonment pressure -- at the time you have an abandonment pressure at the well bore, your pressure at the periphery of the drainage area will be much higher, will it not? It will increase?

A If your net pay is the same, if you don't change the net pay.

Q If you don't change the net pay.

A Then it will be higher, if you change it.

Q We can't change it, the net pay. It is a set affair.

A That's right.

Q It is going to remain constant. Now, remaining so, as your permeability increases, you are going to increase your drainage radius of the well, are you not, your efficient drainage radius of the well?

A The ultimate pressure at the outer boundary will be somewhat higher under those conditions, yes.

Q And to the extent that it is higher as a result of low permeability; then you have left that much more gas in the ground, have you not?

A That is correct.

Q If you drill on denser pattern, you will recover that gas?

A That is right.

Q Now, do you have any information as to what the permeability characteristics of the Tubb reservoir are in the general area of the proposed unit?

A No, sir, we don't have any cores available at all.

Q Then, is it not logical to conclude, in the absence of permeability data, that you cannot determine whether a well can efficiently drain in excess of 160 acres?

A Well, it seems to me that -- for example, in this particular case, we used the permeability of one millidarcy, which is in the low range; that's in the, right to the bottom economically of a commercial well. If you have a well which has permeability which is much lower than one millidarcy and not fractured, then it may not be commercial.

Q Aren't there several wells in the cores that have been taken throughout the Tubb Pool which show areas of permeability of substantially less than one millidarcy?

A I have no cores available.

Q None at all in the Tubb Gas Pool?

A We've searched and tried to contact some of the operators, and haven't been able to obtain any.

MR. COOLEY: Thank you very much.

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

MR. MCGOWAN: I have a few questions I would like to ask.

## REDIRECT EXAMINATION

BY MR. MCGOWAN:

Q Mr. Marmor, in stating that, given sufficient time, one well would drain a gas field, you were not in any way intending to recommend that the gas field, like the Tubb, be spaced for one well, were you?

A No, sir, not at all.

Q You recognize that drainage from an engineering standpoint has been adjusted to the economic and realistic application of every day business?

A Definitely. We compare what we believe the reserves are against the cost of drilling a well, and arrive at a conclusion.

Q Would you be of the opinion that one well would, however, economically and efficiently drain 240 acres in the Tubb Pool?

A Yes, sir.

Q Do you feel that it would recover essentially the recoverable gas under 240 acres?

A Yes, sir.

Q Now, in Mr. Cooley's questions concerning the decline of offset wells, ultimate recovery, if this application were granted, I believe you stated that their ultimate recovery would decline to some extent?

A Yes, sir.

Q Would that same decline take place if this application

were denied, and we drilled an additional well on each of these 40's we seek to attribute to this well?

A Same decline.

Q So, in either instance, we would simply be getting the gas to which we are entitled?

A That's right.

Q The decline would not result from the -- would result from us not being allowed to produce the gas?

A That's right.

Q Then, would you say that, in your opinion, the 240 acres we seek to attribute to this well will be developed if this application is granted?

A Yes, sir.

Q Now, in discussing the possibility of a second well, or possibly even a dual completion being economical in that there would be enough gas under that 40 or 80 acres to pay the cost of it, I believe you stated you felt it would be for a dual completion and possibly might be for the drilling of additional wells on 80 acres?

A Yes, sir, it could.

Q Would that, however, in your opinion, recover any gas that the Cone "A" 1 Well will not recover?

A No, sir.

Q So it would increase the cost of the gas to the operator, would it not --

A Yes, sir.

Q -- and make it more noncompetitive in today's market?

A Yes, sir.

Q Now, you stated you had no definite information concerning permeability. You do have, however, the potential of the wells and their production history, do you not?

A Let's see. I --

Q You have had that available to you, for study, at least?

A Yes.

Q Can you not draw a conclusion from such information as that over a period of time, maybe not as to the exact measurement of the permeability, but as to the sufficiency of the permeability?

A Yes. As to the degree of permeability, I say that it is of fair quality.

Q This study information, then, has convinced you that whatever the permeability may be, it is of sufficient value to allow a well to drain at least 240 acres?

A Yes, sir.

MR. MCGOWAN: I believe that's all I have.

MR. PORTER: Any further questions?

MR. MCGOWAN: Exhibits 5 and 6 were prepared by you and under your supervision?

A Yes, sir.

MR. MCGOWAN: I offer them in evidence.

MR. PORTER: Without objection, the Exhibits will be admitted. Mr. Cooley.

MR. COOLEY: Mr. Marmor, you testified on redirect examination that the drilling of additional wells would recover no additional gas whatsoever. Would you like to reconsider that answer in view of your testimony in cross examination?

A Well, it will recover that additional gas we would have lost to the other operators.

MR. COOLEY: Thank you, sir.

MR. PORTER: No further questions, the witness may be excused.

(Witness excused)

MR. MCGOWAN: With permission of the Commission, I would like to make a few closing remarks. I desire to -- at the second case, they will be applicable to both cases, which again, will be in the interest of time because the same remarks I have will be applicable to both cases.

MR. PORTER: That will be permissible, Mr. McGowan.

MR. COOLEY: Make the Reporter make a notation that the concluding remarks in the other case will be applicable to this case.

MR. MCGOWAN: I will be able to cut these witnesses' testimony considerably shorter by being able to ask questions, "Would your answer concerning certain things be essentially the same as in the previous docket," which I also assume will be acceptable.

We are ready, then, for the next case, if the Commission is.

ATTENTION: A L PORTER JR RE SINCLAIRS CASES 1499 AND 1500 WHICH ARE SCHEDULED FOR REHEARING ON THE NOVEMBER 13TH DOCKET. GULF OIL CORPORATION IS THE OPERATOR OF THE 40-ACRE UNIT CONSISTING OF THE NE/4 OF THE SW/4 OF SECTION 26, T-21-S, R-37-E. IN WHICH GULF OWNS A FIVE-EIGHTHS OR 25-ACRE INTEREST. IF THE ABOVE-DESCRIBED 40-ACRE UNIT IS NOT INCLUDED IN THE EXPANDED BLINEBRY AND TUBB NON-STANDARD GAS PRORATION UNITS AS PROPOSED BY SINCLAIR, GULF'S PROPERTY WILL SUFFER DRAINAGE IN EACH CASE

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