

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
MAY 4, 1961

EXAMINER HEARING

PHONE CH 3-6691

DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, NEW MEXICO

IN THE MATTER OF: :

CASE 2271 Application of Pan American Petroleum Corpora- :
tion for two non-standard oil proration units :
and for an unorthodox oil well location. Ap- :
plicant, in the above-styled cause, seeks the :
establishment of a 70.58-acre non-standard oil :
proration unit in the Cha Cha-Gallup Oil Pool :
consisting of Lots 8 and 9 and the S/2 of that :
portion of the San Juan River channel lying in :
the S/2 NE/4, all in Section 18, Township 29 :
North, Range 14 West, San Juan County, New Mex- :
ico, said unit to be dedicated to the Navajo :
Tribal "G" Well No. 7, at an unorthodox loca- :
tion 2545 feet from the North line and 1670 :
feet from the East line of said Section 18, and :
of a 46.75-acre non-standard oil proration unit :
in said pool consisting of Lot 6 and the S/2 of :
that portion of the San Juan River channel ly- :
ing in the SE/4, all in Section 16, Township 29 :
North, Range 14 West, San Juan County, New Mex- :
ico, said unit to be dedicated to the Navajo :
Tribal "E" Well No. 10, located 660 feet from :
the South line and 1980 feet from the East line :
of said Section 16. :

BEFORE:

Daniel S. Nutter, Examiner.

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

MR. NUTTER: We will call next Case 2271.

MR. MORRIS: Case 2271. Application of Pan American



Petroleum Corporation for two non-standard oil proration units and for an unorthodox oil well location.

MR. BUELL: For Pan American Petroleum Corporation. By letter, Atwood & Malone of Roswell, New Mexico, and Guy Buell. We have one witness, Mr. Eaton.

(Witness sworn)

GEORGE EATON, JR.,

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

DIRECT EXAMINATION

BY MR. BUELL:

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

A George W. Eaton, Jr. Senior petroleum engineer for Pan American Petroleum Corporation in Farmington, New Mexico.

Q Mr. Eaton, you have testified at prior Commission hearings, have you not?

A Yes, I have.

Q Your qualifications as a petroleum engineer are a matter of public record?

A Yes, sir.

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

Q Let me direct your attention to what has been marked as our Exhibit No. 1. What does that Exhibit reflect?

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A Pan American's Exhibit No. 1 is a map of the Cha Cha-Gallup pool, showing an isopach of the Gallup sand thickness. The contour interval on Exhibit No. 1 is 2 feet.

Q Has Pan American encountered any problems with respect to the northwest area of the Cha Cha-Gallup pool?

A Yes, sir. Pan American has had considerable problems in the northwest end of the Cha Cha-Gallup pool due to the fact that its lease boundary is the River channel of the San Juan River.

Q At the mid-point of the River channel?

A At the mid-point of the River channel. Therefore, it forms a very irregular boundary.

Q Has Pan American requested and the Commission approved prior non-standard units and unorthodox well locations in this particular area?

A Yes, sir, they have. These non-standard units and unorthodox well locations that have been approved in this area are shown on Exhibit No. 1. The unorthodox well locations are shown by red dots. Now, these unorthodox locations are due to the extremely bad terrain condition which exists in the marshy swamp land area adjacent to the San Juan River itself. The arrows point to the unorthodox locations and the non-standard units that have been granted in this particular area.

Q How are those designated on that Exhibit? By that, I mean the prior non-standard units that have been approved?

A The two prior non-standard units are shown colored in

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brown and in yellow with identically colored arrows pointing to those particular non-standard units.

Q I notice one unorthodox well location that is apparently in a standard unit because it is not, the unit of that well is not colored in any way. Locate that well, for the record.

A Pan American Navajo Tribal "G" No. 5 is located in the northeast quarter of the southeast quarter of Section 18, Township 29 North, Range 14 West. That well has assigned to it a pro-ration unit consisting of a standard 80-acre tract, being the east half of the southeast quarter of Section 18.

Q How have you designated on Exhibit 1 the two proposed units which are one of the phases of the subject matter here today?

A In Section 18, that portion of the northeast quarter of that Section lying within the Navajo Indian Reservation, which is one of the non-standard units, is shown colored in red; the other non-standard unit which is that portion of the southeast quarter of Section 16, Township 29 North, Range 14 West, lying within the Navajo Indian Reservation, is shown colored in green.

Q One of those two units has an unorthodox well location also, which is that Mr. Eaton?

A The unorthodox well location is in the southwest quarter, northeast quarter, Section 18. That well will be known as Pan American's Navajo Tribal "G" No. 7.

Q And you have shown it with a red dot; although the Commission, as yet, has not approved it, you are hopeful that they do?

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A Yes, sir. It is a red dot which is the non-standard location which is being requested in this Case 2271.

Q The three red dots have already been approved by the Commission?

A That is correct.

Q While we are looking at Exhibit 1, Mr. Eaton, let me ask you this question: with respect to both of the proposed units, in your engineering opinion, is each and every acre within such unit productive of oil from the Cha Cha-Gallup oil reservoir?

A Yes, sir. You can see from Exhibit No. 1 that all of the acreage in the southeast quarter of Section 16, that will be in this non-standard unit, and all of the acreage in Section 18, that will be in this non-standard unit is well within the zero isopach contours as depicted on Exhibit 1. So I believe that each and every acre there is productive of oil from the Cha Cha-Gallup pool.

Q I believe you stated that the unorthodox well location we were requesting was for Pan American's Navajo Tribal "G" No. 7.

A Yes, sir.

Q Locate that in distance, for the record, please, from Section line.

A Navajo Tribal "G" No. 7 is located 2545 feet from the North line and 1670 feet from the East line of Section 18, Township 29 North, Range 14 West.

Q Why is that location unorthodox, Mr. Eaton?



A It is unorthodox primarily because it is only some 95 feet from the quarter-quarter section line separating the northeast quarter from the southeast quarter.

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

Q Let me direct your attention to what has been marked as Pan American's Exhibit No. 2. What is that Exhibit, Mr. Eaton?

A Exhibit No. 2 is a copy of New Mexico Oil Conservation Commission Form C-128, showing the location of Navajo Tribal "G" No. 7, and the 70.58-acre non-standard unit to which we wish to dedicate this well. Both of these things are subjects of this hearing.

Q The acreage to be included in the proposed unit is shaded in red on the Exhibit 2?

A Yes, sir, it is shown shaded in red, the acreage.

Q Still talking about the unorthodox location, Mr. Eaton, why is that request necessary?

A The unorthodox location is necessary because of the very severe terrain condition which exists in this area.

Q Are some of these terrain conditions reflected on Exhibit 2?

A Yes, sir.

Q This Exhibit 2 was prepared by a surveyor, was it not?

A Yes, sir. Exhibit 2 was prepared by Mr. Echohawk, who was the surveyor for this location.



Q And these terrain features are his work?

A Yes, sir.

Q Go ahead.

A You will notice a line drawn immediately north and around the non-standard location.

Q Is that the line that's labeled "High Bank of River?"

A That line is labeled "High Bank of River." Actually, what that represents is a point at which the San Juan River flood plain commences. From that point on out to the river bed itself it's all marshy with sand and gravel piles, and it is a flow channel slough, and certainly has a lot of water in it in times of high run-off.

Q It would appear, Mr. Eaton, that you have made an on the ground inspection in this area yourself, is that observation correct?

A That is correct. I have been to this location, and have seen the conditions, and I believe that the surveyor has accurately depicted the conditions on this Exhibit No. 2.

Q About how high is this high bank of the river?

A I would estimate that high bank to be 15 to 20 feet.

Q I wonder, Mr. Eaton -- you may have to go back to the Exhibit No. 1 -- will this unorthodox location that you have requested, will it continue a pattern of uniform development of our properties in this area?

A Yes, sir, it will. Let's refer to Exhibit No. 1 again.

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So far as is possible in this immediate area, Pan American has attempted to so locate its wells so that no well directly offsets an existing well. Now, the proposed location for Navajo "G" 7 conforms and blends in with this desired development program. It is a diagonal 40-acre on a diagonal 40, from an existing well.

Q Mr. Eaton, could you not gain structurewise or paywise if that location was moved to the eastern portion of the proposed unit?

A Yes, sir, that would definitely be a better location from the reservoir standpoint.

Q Why would you not, then, as a reservoir engineer, so recommend it?

A It's simply not practical to so locate the well at the eastern part of that non-standard unit for the reason that that is in that area of ~~tremendously bad terrain~~.

Q You would be off the bank?

A We would be down off the high bank, cut back of the river.

Q Also, would it not almost make that well a direct offset to the well to the south?

A Yes, sir, which, we feel, would not be desirable. It's more desirable to keep on uniform development pattern, which we have established in that area.

Q At least in my own mind, Mr. Eaton, I have always felt that a spacing rule was to serve two purposes: one, to accomplish



orderly development, and another, to prohibit one operator from crowding a common lease line with another operator, and, therefore, violating correlative rights. Assuming that my assumption for a standard spacing rule is correct, how does this unorthodox location we're requesting fit into that? Are we going to crowd anyone's line?

A No, sir. The acreage line immediately south of the well is Navajo Indian lease, which is identical with the ownership of the lease on which the well is located.

Q So if that unorthodox location is crowding anyone, it's crowding the same royalty owner and the same operator?

A That is correct.

Q So it probably wouldn't fit the definition of crowding that, however, related to a standard spacing rule?

A That is correct.

Q With respect to the non-standard unit that Pan American proposes to dedicate to that well, will you locate that acreage, by tracts, for the record, please?

A Yes, sir. The non-standard unit will consist of Lots 8 and 9 of Section 18, Township 29 North, Range 14 West, plus the south half of the San Juan River channel lying immediately north of Lots 8 and 9. The total acreage involved is 70.58 acres, with Lot 8 containing 29.51 acres; Lot 9, 28.00 acres; and the south half of the River channel, 13.07 acres.

Q Now, under the rules currently in effect in this pool, a

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standard size unit it 80 acres, is that correct?

A That is correct.

Q Why is it necessary for Pan American to form this non-standard unit, Mr. Eaton?

A As you can see, these lots don't come close to adding up to 80 acres. The boundary of the lease is such that a standard 80-acre unit is just not possible in this part of the field.

Q Is there any combination of adjacent acreage that you could utilize with the subject acreage here to form a standard 80-acre unit?

A No, sir. If Lot 7 were included, for example, considerably more than 80 acres would be involved. It is just simply that the shape of the acreage is such that a standard unit can't be formed.

Q It's a unique situation, and in this particular area of the field we are not dealing with square 40-acre tracts?

A That's true.

Q It's a situation that we simply have to face?

A That is correct.

Q Do you feel that your recommended solution with respect to this unit and this unorthodox well location is a practical, reasonable solution to the problem in this particular area?

A It is my opinion that the recommended 70.58-acre unit is the practical solution to this rather unique situation.

Q Mr. Eaton, I direct your attention now to what will

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shortly be marked as Pan American's Exhibit No. 3. What is that Exhibit?

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

A Pan American's Exhibit No. 3 is a copy of New Mexico Oil Conservation Commission Form C-128, showing the location of Pan American's Navajo Tribal "E" No. 10, together with the acreage which will be included in the non-standard unit to be dedicated to that well.

Q That acreage is shaded in green on this Exhibit?

A Yes, sir, that acreage is shaded in green on Exhibit No. 3.

Q Would you locate and describe, for the record, the Lots and the tracts that you are proposing in this unit?

A This non-standard unit would consist of Lot 6 and the south half of the San Juan River channel lying in the southeast quarter of Section 16, Township 29 North, Range 14 West. The entire non-standard unit would contain 46.75 acres. Lot 6 contains 35.40 acres, and the south half of the River channel contains 11.35 acres.

Q The acreage within this proposed unit, Pan American intends to dedicate to its Navajo Tribal "E" Well No. 10, is that correct?

A Yes, sir.

Q This unit is non-standard for the same reason as the

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other, is that correct?

A Yes, it is.

Q Again, we are dealing with the meanders of the San Juan River?

A Yes, sir. This tract is located in an area where there are no regular tracts involved.

Q Would it be possible in this situation, Mr. Eaton, dealing with acreage adjacent to this proposed unit, to utilize such acreage in any manner so that you would end up with anything resembling a standard unit?

A No, sir, it would not.

Q Again, let me ask you this. Do you feel that the proposed non-standard unit that you are requesting here is a practical, reasonable situation to this unique problem that we have in this end of the field?

A Yes, sir, I believe that this is the practical solution to this unique situation which exists in that portion of the Cha Cha-Gallup pool where the Navajo Indian Reservation is bounded by the San Juan River.

Q Do you feel, Mr. Eaton, that if the Commission approves our three requests, our unorthodox location for our Navajo Tribal "G" No. 7 Well, the non-standard unit that we propose to assign to it, as well as the non-standard unit we propose for our Navajo Tribal "E" No. 10, do you feel that if the Commission approves these requests, that conservation will be served and the correla-

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tive rights of all the owners of interest in the field will be protected?

A Yes, sir, I do.

MR. BUELL: That's all we have at this time, Mr. Examiner.

MR. NUTTER: Are there any questions of Mr. Eaton?

MR. CHRISTY: Sim Christy of Hervey, Dow & Hinkle for Humble Oil & Refining Company. One or two short questions, if I may, please.

CROSS-EXAMINATION

BY MR. CHRISTY:

Q On your red plat, Exhibit 2, you mention that you could not add Lot 7. Could you add the 13.06 acres north of the River there in the channel to give you about 83 acres?

A That acreage is not within the Navajo Reservation, and it is our desire to retain the Navajo acreage intact, and, so, inasmuch as under those conditions, it could not be added, no, sir.

Q It could be added, you just don't want to?

A It could be added, yes, sir.

Q Let's take the Exhibit 3 lands. I believe you show 46.75 acres. Could you not add the other 11.36 acres in the channel plus Lot 7 of 28 acres to give you 86 acres?

A Again, for a number of reasons, it's highly desirable to retain the Navajo acreage intact, and for that reason it would not be a practical solution to this problem. Communitization agreements could be formed, yes.



Q To foster the 80-acre spacing that we now have in the Cha Cha-Gallup Pool?

A Yes, sir.

MR. CHRISTY: It could be done. Thank you very much.

REDIRECT EXAMINATION

BY MR. BUELL:

Q You might briefly state, for the record, the primary reason that Pan American does not wish to pool even though such may be possible, any outside acreage with the Navajo acreage.

A Yes, sir. An investigation of secondary recovery in the Cha Cha-Gallup Pool is currently under active investigation. As a matter of fact, an engineering committee for the Cha Cha-Gallup Pool is in session at this time.

Q Where?

A In Fort Worth, Texas. Efforts towards unitization, looking toward initiation of secondary recovery, are progressing fairly rapidly. For purposes of conducting a unit operation and getting that unit in operation as soon as possible, it has been the conclusion of the three companies involved on the Navajo Indian lands that it could best be done in an expeditious manner if secondary recovery operation involving injection of some extraneous fluid would be conducted only on the Navajo land without having a miscellaneous State, Federal acreage, ~~and~~ ~~lands~~; mixed in with that Navajo Indian acreage. Now, the reason that that can be done is that it is common royalty ownership, so a unitization, as such,



wouldn't be necessary. It would only be necessary that the working interest agree, since the royalty owner won't care how production is allocated to individual tracts. So, for that reason, if for no other reason, it will be highly desirable to not mix the Navajo Tribal lands with other land having a different royalty ownership, such as would be the case if we stepped across the San Juan River and picked up in the case of the acreage in Section 16, I believe that is State, I believe that is State land. In the case of the acreage in Section 18, I believe that is fee land.

Q Mr. Eaton, approximately how much of the presently developed Cha Cha-Gallup Pool is under Navajo lease --

A Approximately --

Q -- or leases, rather?

A Approximately 65 percent of the lease, of the Cha Cha-Gallup Pool, lies on the Navajo Reservation.

Q So, even if a unitized waterflood or if a full scale waterflood is undertaken only on the Navajo Tribal leases, that is going to get a major portion of the Cha Cha-Gallup Pool, is it not?

A Yes, sir, it is.

Q And certainly the engineering committee, as well as the operator committee are all working towards a cooperative flood with the Navajo leases on fee, Federal and State leases?

A Yes, sir. I do not mean to infer that consideration of secondary recovery was not being considered in the entire Cha Cha-



Gallup Pool. It just stands to reason. It stood to reason to the three operators involved it could be done faster on the Navajo lease than it could be in the remainder of the field simply because there's only one royalty owner involved, and so efforts have really been concentrated toward that portion of the Pool. One other thing I might mention too, that on the northwest end of the Pool and the southeast end of the Pool, the boundaries haven't been nearly so well defined as they have within the Navajo Reservation. In other words, the Pool might be considerably bigger on either end. I believe we know approximately the size of the Pool on the Reservation itself.

Q It's still open, both to the northwest and to the southeast, is it not?

A Yes, sir, it sure is.

MR. BUELL: That's all we have at this time, Mr. Examiner.

MR. NUTTER: Any questions of Mr. Eaton?

MR. CHRISTY: May I ask one more question?

A Yes.

RE-CROSS-EXAMINATION

BY MR. CHRISTY:

Q Do I notice on Exhibit 1 that it appears that the northwest end here of the Pool has been developed on 160 except for the wells that you have been seeking unorthodox locations and proration units?

A Yes. Generally, the Navajo tract, the Navajo lease is



developed on 160-acre density.

Q Not on 40-60's?

A No, sir.

REDIRECT EXAMINATION

BY MR. BUELL:

Q Mr. Eaton, also when we speak of development, we've got to think of two things. One is spacing, as we normally refer to it, and the other is development on a productive acreage basis, is that correct?

A Yes, sir.

Q We don't want to leave the record inferring that Pan American has developed on a productive acreage in this north end of the field 45.6 acres, do we --

A No, sir.

Q -- because that is not true.

A That is not the case.

BY MR. NUTTER:

Q Actually, that half of the pool is only half developed under the existing rules of the Commission?

A Yes, sir.

Q On those last two sections, being the third and fourth sections north of the River which are stippled, is that Pan American?

A Yes.

Q The 10, the 5 and 6 sections are Navajo acreage?

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A Yes.

Q But under other operators' leases?

A Yes. I believe I can identify those for you if you would like for me to. Sections 27, 28, 33 and 34 are El Paso Natural Gas Products Company leases. Sections 25, 26, 35 and 36 are Humble's.

Q Now, the engineering committee which is meeting in Fort Worth to determine the feasibility of water injection here, does it cover only that Township, or does it cover the southeast end of the pool also?

A No, sir. That engineering committee will publish its report to the operators covering the entire Gallup Pool as it determines the productive extent of that pool. But the three operators in this part here are the ones who have really gone further toward initiating action which will result in early initiation of secondary recovery than these operators in this area, simply because of the diversity of ownership.

MR. BUELL: The operators in this area that you were speaking of, by this area, you mean the extreme southeastern portion?

A Yes.

MR. BUELL: They have a lot more problems than the three operators that own the Navajo Tribal leases?

A That is correct. Pan American is one of the big operators in the southeast portion too, but there are simply more pro-

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blems involved, and efforts haven't been able to progress nearly so far as they have on this Navajo end.

Q (By Mr. Nutter) Have any productive wells been drilled north of the San Juan River in the Cha Cha-Gallup Pool?

A No, sir, they have not, to my knowledge.

Q Are any wells drilling north of the River, to your knowledge?

A No, not to my knowledge, although I know that Southwest Production has a case for an unorthodox well location in the west, southwest -- I had better say the west half of the southwest quarter. I had better put it this way, northwest quarter of the southwest quarter, Section 16, 29, 14.

Q And they also had a request for a non-standard proration unit, which would be a companion unit, marked on your Exhibit in the southwest quarter of that Section?

A Yes, that is correct. It would be a companion unit to the non-standard unit which serves Pan American's Navajo Tribal "E" No. 7.

Q But as far as you know, there has been no well completed north of the River?

A No, sir.

Q Well, now, Mr. Eaton, how deep are these wells in this area? Referring to your well in Section 18, what do you expect its depth to be?

A It will be approximately 4850, I believe, possibly not



that deep. Possibly around 4600 feet deep.

Q Assuming a reasonable amount of drift in the well, Mr. Eaton, is it possible for a well which is located 95 feet from the boundary of that unit with a reasonable amount of drift to that depth, to bottom off of the proration unit on which the surface location is staked?

A It would be possible, yes, sir, although these wells in this particular area are unusually straight for the San Juan Basin. We just very, very rarely find deviations of any magnitude whatsoever.

Q The well hasn't been drilled, as yet, has it?

A No, sir.

TOTCO

Q Would you be willing, Mr. Eaton, to take Totco deviation tests during the drilling of the well, and recalculating all of the assumed drift to be in the southerly direction, to determine whether the bottom of the well would be on the proration unit to which the well is dedicated?

A Yes.

Q In the event that assumed deviation were all in one direction and showed the bottom of the well to be off of the proration unit, then take a directional deviation survey to find out what unit the well is bottomed on?

A Yes, sir. We'll be happy to do that.

Q And the location of the well in Section 16 is a standard location?



A Yes, sir.

MR. NUTTER: Any further questions of Mr. Eaton?

MR. MORRIS: Mr. Examiner, I have some correspondence that I would like to read into the record after which I would like to address a question to Mr. Eaton.

MR. NUTTER: Yes.

MR. MORRIS: I have a telegram from El Paso Natural Gas Products Company, signed by W. T. Hollis, Manager Exploration and Production. It reads as follows:

"Please be advised and may the record show in Case 2271 that El Paso Natural Gas Products Company, as an operator in the Cha-Cha Gallup Oil Pool, is opposed at this time to the granting of an order which would permit establishment of the two non-standard oil proration units sought by Pan American. The information of a unit for pressure maintenance and secondary recovery operations is presently nearing completion and with respect thereto, the unit engineering committee has heretofore conducted extensive studies. In such studies, it has not been ascertained that the drilling of a well on either of the two proposed non-standard proration units is desirable or essential to the efficient operation of the unit, and, in fact, it is highly probable that such drilling will introduce additional factors which will complicate the negotiations to the extent of unduly delaying consummation of the unitization agreement and commencement of operations thereunder. Such delay in the commencement of the injection program would result in a reduction in the ultimate recovery of oil from the area to be unitized, and as such would constitute underground waste as defined in Statewide Rule 67 (A), Rules and Regulations of the Oil Conservation Commission of the State of New Mexico. Therefore, in view of the foregoing, it is urged that Pan American's request be denied."

MR. BUELL: I would like to make this comment prior to Mr. Morris' question, for the record. Pan American does not let

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any engineering committee, or rather, a Mr. Hollis' interpretation of what the engineering committee might decide, as to how to develop their properties. We have a basic obligation under our lease, and as a prudent operator, we'll so develop our properties, whether Mr. Hollis likes it or whether the engineering committee likes it. Our obligation is to our royalty owner and to the Oil Conservation Commission.

MR. NUTTER: I think I have a letter here for Mr. John Mason, if he's here.

BY MR. MORRIS:

Q If Mr. Buell hasn't answered the question, I was going to ask Mr. Eaton for his comment upon the telegram and the effect, whether or not, in his opinion, waste will be caused in this instance by granting the units, and thereby delaying the unitization under way.

A Let me answer that question this way, Mr. Morris.

MR. BUELL: Excuse me, Mr. Eaton. Let's add to that. Do you mean assuming this would delay unitization? There's nothing in evidence to show that it will delay --

MR. MORRIS: That's assumed.

MR. BUELL: That's suspicioned on the part of Mr. Hollis, whoever he may be, we don't have him here.

MR. MORRIS: My question was, Mr. Buell, whether Mr. Eaton is of the opinion that the unitization that is being considered by this committee would cause waste. I mean, whether the unitization being considered by this committee would be delayed by

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the formation of the units that you propose today, and that the delay would cause waste.

A Let me answer that question this way. As Mr. Nutter brought out, there are no wells now drilled north of this Navajo Indian Reservation, but I have reason to believe that there will be since I have reason to believe that the field in the pool doesn't suddenly end at that Reservation boundary. I think it eventually will be developed. Now, that portion of the pool, too, will be studied for secondary recovery operations. It will be -- such operation will have to be conducted in cooperation with the operations that are going on inside the Navajo unit. Now, then, to so cooperatively conduct operations, a certain number of wells are going to have to be drilled along this boundary. Now, the number or the specific locations where those wells can be drilled are very limited. As we pointed out previously, we have a terrain condition as well as a lease condition. Now, then, whether those wells which are necessary along that boundary to properly conduct unit operations are used as injection wells or as producing wells, that might be a subject to be determined by the engineering committee. As a reservoir engineer, it's my opinion that both of these wells can be used in the unit operation itself. As I pointed out, there's not very many locations that can be drilled along there, and certainly a number of them are going to be required, so from that, I would conclude that granting these two applications for the non-standard units wouldn't hamper or impede the progress of the

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unit.

MR. NUTTER: Well, Mr. Eaton, aside from the fact that some of the units are larger or smaller than 80 acres due to the meandering of the River, you are still proposing here to develop on the same spacing pattern or the same proration unit size with those exceptions due to the meandering of the River as the Commission currently has outlined as the field development pattern, are you not?

A Yes, that is true. We expect that the allowable for these wells will be reduced to the proportionate size of the unit; that the proportionate size of the unit bears to a standard 80-acre unit.

MR. NUTTER: Any further questions?

MR. CHRISTY: May I ask one or two questions, please?

RE-CROSS-EXAMINATION

BY MR. CHRISTY:

Q Your well, your "E" No. 10 Well, shown in Exhibit 3 --

A Yes.

Q -- will that well effectively and efficiently drain 80 acres?

A Yes.

Q So, I assume, in order to protect the correlative rights, the person to the north will have to drill an offset well?

A Yes, sir.

MR. CHRISTY: Thank you.

MR. NUTTER: Are there any other questions? Mr. Eaton



may be excused.

(Witness excused)

MR. NUTTER: Do you have anything further?

MR. BUELL: I would like to make a brief closing statement after Humble.

MR. CHRISTY: It's your party, go ahead.

MR. BUELL: I think we have the right of closing, as the applicant, and having the burden of proving the case.

MR. NUTTER: Do you have a statement, Mr. Christy?

MR. CHRISTY: Yes. We feel that it is not only the power and duty of the Commission to prevent waste as stated by the Conservation Act, and to protect the correlative rights of all the owners of oil and gas under and within the vicinity of the lands involved in this application. If granted, two spacing requests in this case, coupled with the three already granted, with all five locations immediately south of the San Juan River, could, and doubtlessly will, as mentioned by the witness, result in further spacing exceptions to the north, totaling, could total up to again five wells. These additional exceptions would probably be located in Sections 16, 17, 18 of 29 North, 14 West. Now, according to our records, that is, Humble's records, the areas allocated to these three exceptions that have already been granted and the two more vary between 46.75 acres and 88.7 acres. Now, if the exceptions in this case are granted, the owners to the north of the San Juan River will be forced to drill a similar well density in order to protect

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their correlative rights and to prevent the drainage of oil from under their lands. It is Humble's current opinion that such drilling would result in the well density being greater than is necessary to effectively drain the reservoir, and thus would result in the drilling of unnecessary wells, and, of course, the drilling of unnecessary wells is waste within the definition of the Act.

There is presently pending before this Commission a spacing application for the Cha Cha-Gallup Pool, and a hearing on this application has tentatively been set for the month of October of this year. It is anticipated that complete reservoir information, including the results of interference tests, will be furnished to the Commission at that time. On the basis of such information, it is believed that optimum spacing pattern for the pool can be selected. With this thought in mind, Humble, who is the owner of producing leases in the Cha Cha-Gallup and other leases north of the San Juan River in this area, believes that the present application is premature, and that the requested spacing locations in this case should be presently deferred and denied.

MR. BUELL: On behalf of Pan American, I think we can dispose of Humble's objections rather quickly. It is my firm and sincere opinion that had not Pan American drilled a single well adjacent to the San Juan River, the Commission would still have a myriad of spacing problems north of the River. They're going to have them whether or not these wells are drilled or not. They are



going to have them if these wells are drilled. It's necessitated by the meandering of the River. Humble, powerful as they may be, can't straighten that River out, at least, they haven't to date.

MR. NUTTER: I would like to ask one question. Either Mr. Buell or Mr. Christy can answer it. Would the granting of the applications for the non-standard units south of the River and the subsequent granting of the non-standard units north of the River result in a pattern of wells any greater than two wells to 160 acres?

MR. CHRISTY: Yes, sir.

MR. BUELL: In Pan American's opinion, it will not.

MR. CHRISTY: In the unit over here in Section 16, you are going to have to drill an offset well over here, too, in the southeast quarter to protect your correlative rights. That is going to be two wells on the 80 some odd acres.

MR. BUELL: What Mr. Christy doesn't realize is that the old theory of equidistant went out with high button shoes. We didn't mean to infer that whoever owns the acreage to the north of our proposed unit would have to have a direct and equidistant offset to protect the correlative rights. Mr. Eaton simply stated that a well on this tract, this non-standard unit, would drain in excess of 80 acres. This acreage is being drained now, and it will be drained until they get a well on there and develop their productive acres, but they don't need a direct and equidistant offset. It's true that we have only in this non-standard unit 46.75 acres,

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but we have other productive acreage in the field that is going to contribute to the production of this well, unassigned productive acreage. Drainage, you can talk about it two ways, uncompensated and compensated. It is our opinion that there's not going to be any uncompensated drainage in this area of the field when each and every operator has his productive acreage involved. Did that answer your question?

MR. NUTTER: Yes, sir. Do you have anything further, Mr. Christy? Do you have anything further, Mr. Buell?

MR. BUELL: Yes, sir. I would like to make this further comment. I personally resent the inference in Mr. Hollis' wire that Pan American in this pool or any other pool would do anything purposely to delay unitization, that is the furthest thing from the case. I think the record should show that Pan American was the first operator in this pool to realize the necessity of secondary recovery. The first meeting with respect to unitization was called on the motion of Pan American. Pan American has served both on the operators' committee, the engineering subcommittee, as well as do a tremendous amount of engineering on its own. For instance, Pan American's engineers and geologists have spent a tremendous amount of time developing a water source for the waterflood. Pan American is interested in unitization. We are also interested in operating as a prudent operator.

MR. NUTTER: Does anyone have anything further for Case 2261? We'll take the case under advisement, and take a fifteen-



