

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 11, 1962

EXAMINER HEARING

IN THE MATTER OF:

Application of Arnold H. Bruner for permission to directionally drill, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to directionally drill his Federal Intex Well No. 1, the surface location of which is in the center of the NW/4 SE/4 of Section 8, Township 9 South, Range 37 East, Allison Pennsylvanian Pool (extension), Lea County, New Mexico. Target for said directionally drilled well would be 100 feet from the North and West lines of the NW/4 SE/4 of said Section 8.

CASE 2663

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: We call Case 2663.

MR. DURRETT: Application of Arnold H. Bruner for permission to directionally drill, Lea County, New Mexico.

MR. KELLAHIN: If the Examiner please, Jason Kellahin, Kellahin and Fox, Santa Fe, representing the applicant. We will have two witnesses we would like to have sworn.

(Witnesses sworn.)

(Whereupon, Applicant's Exhibits Nos. 1 through 6 marked for identification.)

R. C. GALLOWAY

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

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DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A R. C. Galloway.

Q What business are you engaged in, Mr. Galloway?

A Consulting geologist, oil and gas, potash.

Q Where are you located?

A Roswell, New Mexico.

Q Have you ever testified before the Oil Conservation Commission?

A No, I have not.

Q For the benefit of the Examiner, would you review your educational background and your experience as a geologist, briefly?

A My primary education was in Oklahoma, Nebraska. My college education was in Oklahoma, graduating from the University of Colorado.

Q What degree did you obtain?

A B. A. Degree in 1949.

Q Is that in Geology?

A In Geology.

Q Do you have any further education?

A None except technical education, yes.

Q What work experience have you had?

A I've had ten years with major companies, Shell Oil Company.

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Q Where did you work for Shell?

A Mostly throughout the Midwest, probably three-quarters of the experience was in New Mexico and West Texas.

Q How long have you been a consulting geologist?

A Since 1959, January.

Q In connection with your work as a consulting geologist, have you done any work for the applicant in this case? Have you examined the area involved in this application?

A Yes.

MR. KELLAHIN: Are the witness's qualifications acceptable?

MR. NUTTER: Yes, sir.

Q (By Mr. Kellahin) Referring to what has been marked as Exhibit No. 1, would you identify that and discuss the information shown on that exhibit?

A Yes. Exhibit No. 1 is the subsea structural map on the top of the Bough-C zone, which is just a few feet above the actual pay zone. It's the common marker used throughout New Mexico and West Texas. This shows the configuration of the acreage involved. The configuration to the west is the established trend which has been established for several years.

Q Does the plat also show the ownership of the acreage in the area involved?

A It does as far as the Federal acreage and the State acreage, but --



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Q Does it show the working interest ownership?

A I don't believe it does, no.

Q Would you locate the well, the Federal Intex Well No. 1 about which we are talking?

A Yes, it would be the Northwest of the Southeast in Section 8 of 9, 37.

Q Is the acreage adjacent to that well location owned by Arnold Bruner insofar as working interest is concerned?

A The West Half, the West 80 of the South Half is held by Bruner through farmout through Kinwarren and Dye.

Q And the acreage adjacent to the west is also held by Bruner, is it not?

A Yes, it is.

Q How about to the north of Bruner?

A That is held by Great Western Drilling Company, Midland, Texas.

Q But Bruner has the drilling rights then on the acreage to the immediate east?

A Right. To the west.

Q To the west and to the east? To the west, pardon me.

A Yes.

Q Is that the same basic lease? I mean is there a difference in the royalty ownership?

A There is a difference in the royalty, yes, in the west.

Q Do you have anything further at this time to add in



connection with Exhibit No. 1, Mr. Galloway?

A I might say this, that this configuration structure was drawn prior to the drilling of the well in question here, and it came in exactly as the contour, within two or three feet of the contour drawn on the map. Since then the Greathouse in Section 8, Northwest Northwest, had just been completed as a dry hole, which is not shown on this map.

MR. NUTTER: That well is indicated by a red circle on the map, though?

A Yes, it is.

MR. NUTTER: That's a dry hole now?

A Yes, it's a dry hole now with scattered shows of porosity which would amount to probably about six inches.

Q (By Mr. Kellahin) Mr. Galloway, what is the general nature of this reservoir?

A The Bouch-C reservoir, especially in this area, has a very thin pay section; usually on the order of two to five feet would probably be the maximum in most cases of net effective pay. Also associated with your thin pay is considerable amount of water, something probably on a fifty percent or more basis. The porosity in general follows your structural configuration; however, you do have local spots which are either dense or shaled out in your whole general area of the whole field. This could be exemplified by, up in 8, 36, for instance, your Atlantic Well in Section 36, that was a dry hole with very little or no porosity in it. Also



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your wells in 9, 37, Section 6, no porosity was found in those wells. That's quite typical of the Pennsylvanian reservoir, the Bough-C reservoir. You will have local areas in which you have no porosity and permeability, either by a dense carbonate formation or shaling out. So it's very difficult to predict your porosity, even though you are on structure.

Q You say that condition is localized in many instances?

A In many instances throughout this area and other areas to the south.

Q Does it occur without regard to the structural position of the formation?

A Usually your structure has something to do with it. You usually have general nosing or some type of terracing, something to that effect, but your porosity does not always agree with your structure.

Q In the specific case of the Intex Well No. 1, what in your opinion occurred there? In the first place, the well was dry in the Pennsylvanian field?

A Yes, the well had no porosity. Your porosity was replaced by shale. In my opinion it is probably a local condition as exists in other fields and in this general area, especially. For instance, the well directly north, Great Western's well straight north of our well here is structurally higher by ten feet or so than our well, yet it is producing allowable well. To the west, the Bruner No. 1 in the Northwest Southwest there, the next well



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straight west is structurally lower than the well in question. So you see, the point is you have production higher structurally, you have production lower structurally.

This well then must have been, is something that cannot be explained by structure nor by porosity. However, you have to assume, since you have production updip and production downdip from the thing, that something is very local in there.

Q You say it's very local. Would the fact that the Federal Intex Well No. 1 had no porosity indicate that the entire 80 acres in that unit is dry?

A No, definitely not. Since you have wells producing higher and lower structurally, there's no reason, no logical reason that I can see why you shouldn't have production even on further east.

Q On further east?

A East, right.

Q How about south?

A And certainly south. South, especially, because if you would mark the well as a dry hole, the Northwest Northwest of 8, that well had very little porosity, not enough to produce; and then the well in question down here, that is a dry hole. All right, if those two wells had been drilled first, your porosity line then would have come directly across there and you would not have had any development further south at all. All right, before that dry hole in the Northwest Northwest of 8 was drilled, Bruner had drilled



his No. 1, which is one of the better producing wells in the area. So therefore your extension to the south is pretty well confirmed by their first well.

Q In your opinion, the acreage that would be dedicated to this well is productive, at least in part?

A In part, certainly I think would be productive.

Q You understand the proposal in this case is to whipstock the well bore and drill to a point 100 feet from the north and west lines of the Northwest of the Southeast Quarter?

A Yes, sir.

Q In your opinion, would that be a wise procedure, based on the geology as you understand it?

A As I understand it, yes. I feel that the well is in a very localized shale environment. I think the only way to ever evaluate the thing, of course, would be to whipstock it northwest to see how far into the shale or how large a body or shale member you are dealing with.

Q Have you prepared an exhibit showing the porosity zones in this area?

A Yes, I have.

Q Referring to what has been marked as Exhibit No. 2, would you identify that exhibit and discuss the information shown on it?

A Exhibit No. 2 should be used in conjunction with your structure map. If you would use the two more or less together,



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included in Exhibit 2 there is an overlay which is off Exhibit 2 here. If you'll take this overlay and place that over the township lines, in other words, the "X", put the "X" in 9, 37 of the Northwest corner of Section 6. Of course, your other township line would be Section 31. Now from the best available information I can obtain, I have tried to visualize the porosity and permeability trend throughout this general area in the vicinity of the wells in question, Intex, in Section 8. I have not projected any porosity to the east, which you must keep in mind there are no wells over there for control, and could very well fan out to the east. However, with what control I have, I have tried to visualize the poor, intermediate, and fair porosity. Then back to the overlay over the structure, if you can look through the overlay you can see that this is generally following your structure, structural contour in quite general situation, and does show a slight separation of your porosity starting in the South Half of Section 8, going down.

Now if you'll look down in Section 20 of 9, 37, you'll note Huber well in the Northwest Quarter of the Section. Now this well did not have enough porosity to produce, but it did have scattered shows equivalent to the Bough-C section, and on the electric log there is slight indication of some porosity available in it. Also in your East Crossroads Field down here, which your Bough-C has not been developed there, but we do have shows, have seen shows in the drilling of the wells in that area. Then this overlay would indicate that certainly to the south you would



certainly have more porous section.

This is based primarily, as explained before, on the Bruner Well No. 1, which is one of the better wells. This is further confirmed by the dry hole now at the Greathouse, of the Greathouse Well in the Northwest Northwest of 8, in which this porosity line came within pretty close, there's probably no value on it, it's about six inches of porosity.

Therefore we feel that the whole south portion of Section 8 and possibly on further south and draining into the Southeast Quarter of Section 8, we feel that we do have porosity, possibly surrounding the well. However, we're considering here that we just will drain from the west.

Q Do you have electric logs of some of the wells in this area?

A Yes.

Q Would you go through those exhibits and identify each one and make any comments you have to make in regard to them?

A The Huber Brown King, which is the one in Section 20 of 9, 37, is the well that I have just explained that there was not enough porosity for commercial completion in that.

Q That is Exhibit No. 3 you are referring to?

A That is Exhibit No. 3, yes.

Q And the electric log does show the small amount of porosity?

A A very small amount. I will have to add here that

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sometimes your electric log is not your basis for your most accurate method of porosity. You have very small interval, just two or three feet. A lot of times your electric log will not show it. On that it might show one foot.

Exhibit No. 4 is the Arnold H. Bruner Hodges Federal No. 1, which was the first well that was drilled in the area, and that's 1980, in Section 8, 1980 from the south, 660 from the west. This is the one that we feel had some of the better porosity in the area, had four and a half feet, which is not much porosity but it's good for the area.

MR. NUTTER: That's the Bruner No. 1 Well which is Exhibit 4?

A Exhibit 4. The Exhibit No. 5 is the well in question, the Intex Federal No. 1, 1980 from the south and east. Exhibit No. 6 is a log of the well in Section 18 of 9, 37. Wait a minute, this is the Great Western Federal MM-2. That is in Section 8. It's marked on the map, I don't see the exact location. It would be the producing well in the Northwest Quarter, 660 out of the center Northwest. These two wells, as far as I know, are making their allowable, the wells in the Northeast, the Great Western wells.

Q (By Mr. Kellahin) Mr. Galloway, do you have anything further to add to your testimony?

A I believe it's pretty well covered. I might mention that the Bruner people feel strongly enough about the porosity in



the southern half that they are drilling, now drilling a well in the Northwest Northwest of 17.

Q Were Exhibits 1 and 2 prepared by you or under your supervision?

A Yes, sir.

Q Exhibits 3 through 6 are portions of the logs of the wells involved, is that correct?

A Yes.

MR. KELLAHIN: At this time we would like to offer in evidence Exhibits 1 through 6.

MR. NUTTER: Applicant's 1 through 6 will be admitted in evidence.

(Whereupon, Applicant's Exhibits Nos. 1 through 6 entered in evidence.)

MR. KELLAHIN: That's all the questions we have of the witness.

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

MR. CHRISTY: Sim Christy of Hervey, Dow and Hinkle for the offset operator, Great Western Drilling Company. We would like to ask one or two questions, please.

MR. NUTTER: Go ahead.

CROSS EXAMINATION

BY MR. CHRISTY:

Q To start out with, I may have misunderstood you, there are no wells to the south in the Bough-C at this time, to the south of the well in question?

A To the south of the well, no, there are not.



Q So we have no controls to the south?

A We have one well down in Section 20, the Huber well which just had a dry hole.

Q Which had no porosity?

A Just a trace of porosity. It had enough to give us hope that we could have porosity further west.

Q Would you consider it as fair, good porosity, or bad porosity?

A It's poor porosity.

Q Poor?

A Probably about a foot, foot and a half of porosity.

Q What controls do we have over to the west, any?

A To the west?

Q Yes.

A Yes. The Bruner No. 1, which is one of the better wells, and the well in Section 18.

Q Section 18?

A 18, yes, that would be 660 from the north, 1980 from the east.

Q The Great Western King No. 1?

A Yes. That had about six inches of porosity, a little more, maybe.

Q Then we have the Greathouse dry hole you mentioned?

A Yes.

Q And the Federal MM-2 Well?



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A Yes, the Federal 2-MM on north.

Q What controls do we have to the east?

A To the east, we have no control there, really.

Q And of course to the north we have the field to work with?

A Yes.

Q Briefly, as I understand you, then, we have this one poor porosity well to the south, nothing to the east, fairly good over to the west, and excellent to the north, as controls, is that correct?

A Yes, that's right. I might add, though, that on the structural map, the Bruner No. 1 which is in the -- we're back now in Section 8.

Q Yes, sir.

A -- which was 660 from the west, 1980 from the south, was low to the dry holes just drilled, and therefore to the east we know that we have to come up; we're coming up, you see. That is the purpose for the continuation to the east, of structure.

Q Right while you are on that point, do I understand your Exhibit 1 correctly, that you could move to the south of your present location or to the east of your present location and still be structurally high of this good producer, No. 1, that you just mentioned?

A Yes.

Q You could?

A Yes, we can be.



Q And you would still be, if you moved to the south, you'd still be in your fair porosity shown on Exhibit 2?

A It would be, we would have some porosity, yes, and possibly we could get better porosity.

Q Are you familiar with the field rules in the Allison-Pennsylvanian Pool?

A Not really. I'm doing the geological work.

Q Certainly. Incidentally, where is your well bottomed? We know where it started from.

A 9717.

Q No, sir, I mean from the surface locations, from the boundaries or the lease lines. You started in a center location, 660; now where is it bottomed?

MR. KELLAHIN: I think the engineering witness will probably be better qualified to testify on that.

Q (By Mr. Christy) Why do you want to move the well to the northwest?

A We want to move it to the northwest, one reason is that the West Half or the Southwest, Bruner has the acreage under farm-out, that would help prove up his acreage there. Only logical we would like to move-- we know that we have porosity to the west, we don't know for sure that we have it to the east, so the logical conclusion would be to move it towards your production and toward the acreage that you already have under farmout.

Q We're trying to get closer to the oil patch?



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A Yes. We're trying to get out --

Q You have the same porosity to the south?

MR. KELLAHIN: Let the witness answer.

Q (By Mr. Christy) I thought you had finished.

A We are trying to get out of what we feel naturally is a localized zone.

Q Could you move 150 feet and get out of the localized field?

A We feel that we can. Of course, there's no way of telling.

Q Assuming the Allison-Pennsylvanian rules permitted a deviation of 150 feet from the center location, would that be sufficient for you?

A I'm probably not as well qualified to answer that as probably the next witness, the engineering witness.

Q Just geologically, you don't care which way you move as long as it's not to the east?

A Well, I certainly would like to move toward the better porosity that we have already evaluated.

Q Well, can you move to the west and get better porosity? Why do you have to move to the northwest?

A Your porosity is definitely established to your north and to your west. Therefore we would like to move north and west.

Q But geologically, you feel --

A The Bruner people are drilling the well in the Northwest



Northwest of 17.

Q Yes, sir.

A That will outline the south end of it. We would actually want to prove out the other end of it by drilling northwest.

Q You said, I believe, that you are just figuring on drainage from the west part of this 80 acres, is that correct?

A Yes. That's all that we can figure on right now. We don't know.

Q So far as you can see geologically, you will not drain the oil from the east or south part of the 80 acres?

A We just don't know that.

Q We have no evidence of that?

A You have to generalize somewhere and that's the best that I can do on the information that I have.

Q Are you familiar with the completion tests run on your well?

A The next witness was on the well as an engineer, and he has that information.

MR. CHRISTY: Thank you very much.

BY MR. NUTTER:

Q Mr. Galloway, on your porosity map, just what are you contouring here?

A I have tried with this map here to get the net effective porosity of the wells through whatever information I could get. Where core analyses were available, I used core analysis, and some



electric logs, and just the generalized structure. On the legend down here I have tried to give the sources of the porosity configuration.

Q I notice by the various wells that you have numbers indicated there?

A Yes, that is net porosity, supposedly.

Q Feet of net porosity?

A Yes, I'm sorry, I should have put that one.

Q You have one contour line starting from the top there, you have a red portion colored in?

A Yes.

Q And a figure of 4.9 by one well up there?

A Yes.

Q Then you have a contour line coming down through a 3, swinging northeast again through another 3?

A Right.

Q So that contour line represents the breaking point of three feet of porosity or more to the north?

A I'm just dealing in such small quantities of porosity that I have just divided this up, and my contour doesn't necessarily mean exact feet. It means just the limit of your porosity, the poor and the fair, and your past there. Yes, it is all based back of course to your net porosity.

Q Well, what is the number that separates the number from the blue, from the yellow? It would have to be between zero and



three?

A Yes, it would probably be one and a half, if you want to contour on that small scale.

Q What is the number by the Federal Intex, that is a zero?

A Yes, there was no porosity. That's a zero.

Q So actually the line that comes through the zero could be farther to the west?

A Yes, it could. I could have made that just to the west. In other words, I was just trying to connect the areas of no porosity, the areas of poor porosity, and the areas of better porosity.

Q What caused the line to swing, coming south through the Federal Intex Well where it's a zero at the Intex Well and then it's the line that comes south that swings farther to the east; what was the cause of that?

A That is the purpose of my overlay, that I feel that your structure should have some significant value--

Q So in other words --

A -- to your porosity. Your structure then does swing out as the Intex Well here is higher structurally than the one to the west. Also the one in Section 18 is structurally higher than the Bruner No. 1 in the west part of 8 there. Therefore, you have to come up, you have to come up to the south and to the east. Therefore, your porosity, if your structure means anything at all, your porosity should take the same development as your structure, or similar to it.



Q Doesn't the Bruner No. 1 indicate that porosity doesn't necessarily follow the contours or the structure?

A Yes, but then again in your Great Western wells, they are higher than the second Bruner well, which was dry.

Q They also have more porosity?

A Yes. In other words, we are faced with a situation where we have production higher structurally, production lower structurally, and we feel that this is just a local, because the other parts of your field here certainly is following some kind of a structure.

Q So the general reason for turning the porosity line out on Exhibit No. 2 was because the contour there, that 5640-foot contour line swings out on Exhibit No. 1?

A Yes. Of course, your dry hole in 20, that is 5704, this hasn't been changed, but within a very few feet of that there has to be something either high or low in there structurally. All indications point to the fact that it's the high, because your Bruner No. 1 was low in their second dry hole. It's also lower than the one in Section 18. There's just a big hole, subsurface-wise, --

Q Do you know whether your client contemplates drilling a well in the East Half of the Southwest Quarter of Section 8, which would be the 80 acres intervening between the No. 1 and the No. 1 Intex?

A Yes, I'm sure they are contemplating that.



Q If this Federal Intex Well were whipstocked and bottomed under that 80, and that 80 dedicated to it, there probably wouldn't be, according to your exhibit here there wouldn't be any doubt that it would be in the pink, so to speak?

A Right.

MR. NUTTER: Anyone have any further questions of Mr. Galloway?

MR. KELLAHIN: I would like to ask him another one.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q Admittedly, since a well has been drilled, all of the acreage in that acreage is not productive, is that correct, where the Federal Intex well is located?

A Would you repeat that?

Q Since there was no porosity, we must admit that all the acreage is not productive under that acreage?

A That is true.

Q Could you give any estimate of what portion of that 80 is productive, in your opinion?

A I can only go by my general porosity map here, which I've indicated fifty percent possibly could be productive.

Q Fifty percent?

A Yes.

MR. KELLAHIN: That's all.

MR. NUTTER: One more question, Mr. Galloway.



RECROSS EXAMINATION

BY MR. NUTTER:

Q Why does fair start with zero? It looks like fair would be inboard from zero.

A I have listed fair as something between zero and poor. I didn't want to say it was really poor porosity because one foot of porosity in that type of porosity and permeability in my mind is not considered really poor.

Q Well, right here where fair starts, though, is pretty poor, isn't it?

A Well, your Great Western wells up to say two feet of net porosity are making their allowable wells. Now whether you would call that poor or fair, it's just a matter of how you are looking at it. See, you are dealing with such small amounts of porosity plus your water factor that when you come to your porosity map, you are kind of at a loss to find any terms unless you want to contour it in inches or something like that.

Q You stated that the following witness would go into the actual productivity of this well upon its completion?

A Yes.

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

MR. CHRISTY: I would like to get one thing I apparently didn't understand.

BY MR. CHRISTY:

Q Will the following witness go into the question of how

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many acres the whipstock would drain? You mentioned it briefly here in answer to Mr. Kellahin's question. Are you prepared to go forward on that estimate of fifty percent, or would you prefer that the other witness do that?

A On the basis of the knowledge available in the area in conjunction with the structure porosity, I have shown about fifty percent. I don't know for sure what the next witness has in mind.

Q If you say it's fifty percent, perhaps we had better go into it then, I would understand you that in your opinion a part of the 80 acres to the south of the dry hole will be productive?

A Yes, sir.

Q Why don't you move to the south, then, when you whipstock?

A It's just more logical. If you had spent ninety to one hundred thousand dollars out there already, and you were in an intermediate position structurally on the thing, and got no porosity, you would certainly want to take your best chances and drill toward porosity.

Q But can't you go due east and drill to good porosity?

A Due east?

Q Due east -- I beg your pardon, due west.

A We possibly could do that.

Q Geologically you see no objection to going due west?

A No, I don't.



Q Geologically there's no objection to going not more than 150 feet from the center of the location?

A You are dealing with such a nebulous thing there that you don't know how far you have to go to get out of your localized condition; therefore, you are trying to go, if you are going to spend another great amount of money going through this procedure, you certainly want to get far enough out to where you can get, have your best chance of porosity.

Q You think this is a sufficient reason to have an exception to your rules?

A Yes, sir.

MR. CHRISTY: I think that's all.

BY MR. NUTTER:

Q Is that well located in the surface location at the present time in the center of that 40-acre tract?

A Yes, sir, I believe it is.

Q Has any survey been run on the well to date to indicate where the bottom of the hole is at the present time?

A I'm not qualified to answer that. The engineer can.

MR. NUTTER: We'll defer that question. Any further questions of the witness? He may be excused.

(Witness excused.)

J. N. SIKES

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



DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A J. N. Sikes.

Q In what business are you engaged, Mr. Sikes?

A Presently I'm a consulting engineer in Midland, Texas.

Q Have you ever testified before the Oil Conservation Commission of New Mexico?

A No, sir, I have not.

Q Would you outline your educational background and your experience?

A I'm a graduate of the University of Tulsa with a Bachelor of Science degree in Petroleum Engineering, 1952. I worked five and a half years with Shell Oil Company as an engineer and exploitation engineer, and four and a half years with Rodman Noel Oil Corporation in Odessa, Texas, as a petroleum engineer and production geologist, and have been in the consulting business since January 15th of this year.

Q In connection with your work as a consultant, have you been employed by Arnold H. Bruner?

A Yes, sir, I have. I have done work on these wells that we're discussing in this vicinity.

MR. KELLAHIN: Are the witness's qualifications acceptable?

MR. NUTTER: Yes, sir. I would like to know for sure

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how to spell his name.

A S-i-k-e-s.

Q (By Mr. Kellahin) You say you were employed by Arnold Bruner in connection with these wells in this area. What have you done in connection with these wells?

A Assisted in supervising the drilling and completion of the wells and operating the presently producing well. Our firm operates the well for them, or supervises the operation.

Q You also serve as an operator, then, on a fee basis?

A Yes, sir.

Q Were you present and supervised the drilling of the Federal Intex Well No. 1?

A Yes, I was.

Q Will you discuss what occurred in connection with the drilling of that well?

A Well, we drilled the well to a depth of 9717 feet. We cored the whole Bough-B, or Bough-B zone in the drilling of the well, and observation of the core showed that there was no porosity, no pay indicated at all; and so we temporarily abandoned it awaiting the outcome of this hearing.

Q Did you personally examine the core?

A Yes, sir, I did.

Q Was there any effort made to complete the well?

A No effort was made to complete the well.

Q Was there any survey made to determine where the bottom

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of the well was?

A No, sir, there was not. However, there were the ordinary precautions taken in drilling of the well, surveys run for the deviation from vertical; however, the direction of deviation is unknown at this time. The deviation, to my knowledge, was never more than three degrees. I could be slightly incorrect on that but I don't think I am.

Q Are you familiar with what is now proposed in connection with this well?

A Yes, sir, I am.

Q Would you discuss that proposal?

A As I understand it, Mr. Bruner's intent is to whipstock from this present hole at a depth of approximately 7,000 feet, from a depth of approximately 7,000 feet, and directionally drill it to a point that would bottom up approximately 100 feet from the north and west boundaries of this 80-acre tract.

Q Are you familiar with the process of whipstocking a well?

A Yes, we've had experience.

Q Can the location of the bottom of the well be controlled with a high degree of accuracy?

A Yes, it certainly can.

Q It will require numerous surveys during the course of the drilling, is that right?

A Yes.

Q Will Mr. Bruner be willing to make all the necessary



surveys in order to be sure that the bottom of the well is at the point permitted by the Commission?

A Yes, sir.

Q Mr. Sikes, you are familiar with the fact that the Allison Pool is based on 80-acre spacing, are you not?

A Yes, sir.

Q Are you familiar with the formation generally?

A Yes, sir.

Q Have you checked into the drainage situation in this pool?

A The outlook in the field from a reservoir engineering standpoint has changed somewhat in the last two years or so, and now we're faced with perhaps, we have a more involved situation than we thought we had originally. I know I had a little experience in the past in some other wells, two or three years ago, that were drilled and now it appears that we have a large influx of water, but due to the great permeability that exists, this water that you drain into your well bore brings some oil with it; and depending on the percent of oil with the water, depends on whether you have an economical well or not.

Q In other words, is this a water drive reservoir?

A At least a partial water drive.

Q At least a partial?

A Yes, to my knowledge.

Q You say there's a high degree of permeability?



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A Yes, sir.

Q Do you agree with the Commission finding that one well will economically and efficiently drain an 80-acre tract?

A Yes, sir.

Q As a general proposition, is the drainage radial around these wells?

A Ordinarily, I would say it is. You have a vugular type porosity, however, that could -- your channels of your vugs could be in various directions so that you might not get exact, the same drainage from each direction.

Q Is there any way that can be determined at this time, as to whether they do lie in one direction or another?

A Oh, it's -- it would be a very involved process and would change probably from well to well. I don't think --

Q It wouldn't be something that in the ordinary course of development you would run into?

A No.

Q You heard the previous witness' testimony regarding the condition found in the Intex Well, and his opinion that it's a localized condition. Do you agree with that?

A Yes, sir.

Q Have you any evidence in addition to any he has offered to support that condition?

A No, I think he has covered it adequately.

Q To get back to the drainage question again, admittedly



the well was bottomed in a zone that had no porosity, and therefore is not productive, so you can't say that all that 80 acres is productive?

A No.

Q Do you have any opinion as to how much of it is productive?

A Based on the geological information at hand that Mr. Galloway has evolved, I would say that approximately fifty percent of the acreage could be productive.

Q Do you know whether Mr. Bruner would be willing to accept a reduced allowable in the event this application is approved?

A Yes, sir, I am sure that he would, based on economics.

Q Getting to the economics of this situation, what is the cost of a well in this area?

A These wells, or the first well that we drilled to my knowledge was about \$160,000, including the pumping equipment and the tank batteries.

Q Do you have any estimate from the driller on the cost of whipstocking this well to the location proposed?

A Well, it would -- there has been a couple or three estimates in our investigation, and it depends on actually how many surveys have to be run and how many whipstocks have to be run, and how easy it is to get to bottom the well where we want it to bottom up. It will be hard to estimate. I would say an



additional cost of something between thirty or forty thousand dollars.

Q Are you familiar with the operating cost of these wells after they are put on production?

A Yes.

Q Could a reduced allowable enable Mr. Bruner to operate this well on a profitable basis?

A Depending on the reduction, the amount of reduction.

Q What amount would you say would be reasonable, in your opinion?

A I think that assuming that the allowable is only, your depth factor -- I stand corrected on this; say the depth factor, I think the allowable is 167 barrels this month, I'm not positive of that within a couple or three barrels, I think a reduction of 20 or 30 percent probably, I would say it would be reasonable where we could still operate.

Q In the event the northern portion of the 80-acre tract under the Intex well is productive, in your opinion is that acreage suffering drainage at the present time?

A Yes, sir.

Q From what well?

A Well, the Great Western Federal MM No. 2. And possibly to the MM No. 1 some.

Q With the permeabilities encountered in this area, would you expect some drainage from the No. 1 Well?



A Yes, sir.

Q Is there any means of protecting against that offset drainage, other than recompleting this well?

A Not drainage from this 80-acre tract, no, sir, in my opinion.

Q Do you have anything further, Mr. Sikes?

A No, sir.

MR. KELLAHIN: That's all the questions I have of the witness.

MR. NUTTER: Any questions of Mr. Sikes?

MR. CHRISTY: I have one or two, please.

CROSS EXAMINATION

BY MR. CHRISTY:

Q I heard your testimony with respect to completion attempts on this well. Did you run any pressure tests or anything in connection with the completion of this well, or attempted completion?

A No, sir, we did not make an attempted completion. We ran a drillstem test which covered this interval, but we were testing the Bough-B zone. There was a porosity streak which we wanted to evaluate and that was the only way we could do it, by drillstem test, and we had the entire interval open.

Q For about how long?

A One hour, approximately an hour, to the best of my knowledge. We recovered 7200 feet of salt water and 300 feet of



mud with no shows of oil or gas.

Q And you did not actually test the Bough-C?

A It was included in this interval.

Q Included both?

A Yes.

Q And you recovered salt water?

A Right.

Q Would that indicate to you that possibly you are at the outer extremities of the field, this being a water drive field?

A Yes, sir. Probably, well, the water we recovered on this test does not have anything to do with it, no, sir.

Q I see.

A This water came only from the Bough-B zone. There's no porosity in the Bough-C zone. There's no place for any fluids to come from whatever. The fact that we do not have any porosity led me to believe we are on the outer extremities of the field.

Q You agree with Exhibit 1 that you are at zero?

A Yes, sir.

Q As I understood you, you wished to move to a point which would be 100 feet from the north and west lines?

A Yes, sir.

Q About how many acres would there be up there in the northwest corner, an acre or two?

A I'm sorry, I have not figured that.

Q Hundred by hundred?



A Yes.

Q Ten thousand. It would be about a fourth of an acre?

A Yes.

MR. KELLAHIN: Do I understand your question? Are you saying there would be about an acre in the square --

MR. CHRISTY: No.

MR. KELLAHIN: -- surrounding the well?

MR. CHRISTY: Between the bottom of the hole and the north and west lines, there would be a fourth of an acre.

A There would be 100 by 100, 10,000; there would be about a quarter of an acre in the corner from the well, yes, sir.

Q (By Mr. Christy) And you don't know where your well is presently bottomed?

A Exactly, we do not.

Q Do you know where it is at 7,000 feet?

A No, sir, we do not know. We will run a survey, however, before we start any whipstocking operations and find out where we are now before we can plan on what to do.

Q I asked Mr. Galloway and I believe he deferred to you, but expressed an opinion that geologically he preferred to move to the northwest. I understood that to him there was no large geological reason you couldn't move 150 feet from your center location. I may have misunderstood him. What is your opinion with respect to moving the location not more than the permitted 150 feet?



A My opinion would be that we would wish to move this well as far from the present location as the Commission might permit us.

MR. CHRISTY: Did I mis-speak myself? Did I say 100 feet or 150?

MR. NUTTER: The standard location is 150 feet from the center.

MR. KELLAHIN: That has nothing to do with the bottom of the hole, however.

MR. CHRISTY: No, sir.

Q (By Mr. Christy) Why can you not move to the west towards your own companion lease and whipstock to the west? Why do you have to move to the northwest?

A Well, I think a visual examination of the production, where the producing wells are on the maps would indicate that production certainly is to the northwest; the most evidence of production is to the northwest. The rest of the information is based on fairly sound geological evidence. However, we would like to move this well as far as we may, and a hundred feet from the line -- certainly to move it on a diagonal we could get farther from our present location than on a straight east-west line.

Q But you would still be draining production from 50 percent of the 80 acres?

A We would say yes.

Q But you can't economically do it unless they reduce your



allowable not more than 20 or 30 percent, did you say?

A Well, I'm just estimating of pulling a figure out of the air, so to speak. I feel that it would still be a profitable venture with 70 or 75 percent of the allowable, yes.

Q It's profitable from what basis, are you including the drilling costs of this well?

A No, not the original drilling costs. Cost from the present.

Q Just to recover your thirty or forty thousand dollars plus operating expenses?

A Plus the risk involved. Possibly still some risk involved in the venture. I just don't know. We feel that it will produce, but we can't always tell.

Q You feel it would take a 75 percent allowable to make it an economically sound venture, but only 50 percent of the acreage would be drained?

A I would say that 50 percent of the acreage would be drained, yes, sir.

Q There is good communication in this field, is there not?

A Very good.

Q I probably misunderstood you on your direct testimony. You said the property to the north part of your 80 acres is being drained?

A Yes.

Q I assume you mean only the corner shown in Exhibit 2



where there is porosity?

A Yes.

Q You don't mean the north part?

A No.

MR. CHRISTY: I think that's all.

MR. NUTTER: Any further questions of Mr. Sikes? He may be excused.

(Witness excused.)

MR. NUTTER: Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: That's all we have.

MR. NUTTER: Does anyone have anything they wish to offer in Case 2663?

MR. CHRISTY: As the offset operator, Mr. Examiner, we must object to the application insofar as it seeks an allowable anywhere near 50 percent. Frankly, we do not have an objection if they wish to move diagonally towards us, but we feel that the south half of the 80 acres has definitely been condemned; in fact, the south 60 acres has been condemned by the Exhibit 2, and it would appear that another 15 or 20 acres has been condemned. If the Commission wished to permit the directional drilling, whip-stocking, then we feel that the allowable should not be in excess of a 10-acre or 1/8 normal allowable because that, as far as we can see today, is the only possible productive acreage; the north ten acres would be a maximum.

MR. DURRETT: Mr. Examiner, I have a letter from Texaco



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Inc. in the Commission files, received October 8th. I would like to read a paragraph from this letter at this time. The paragraph reads as follows: "Texaco Inc. at the present time does not operate any producing wells in the Allison-Pennsylvanian Pool. However, we do own the working interest in a 320-acre lease located in Section 7, Township 9 South, Range 37 East, which is approximately 3/4 mile west of the subject well. Texaco does not deny the fact that Mr. Bruner has the right to recover any oil or gas that may be located under his lease. However, we also believe that Mr. Bruner should not be allowed to recover more than his proportionate share of the oil in this reservoir. If the Commission approves Mr. Bruner's application, Texaco strongly recommends that the Commission give careful consideration to the amount of productive acreage which can be attributed to the subject well. If the well at the proposed location should prove to be productive, it is recommended that the allowable for the subject well be determined by multiplying the ratio of the productive acreage to a standard 80-acre proration unit by the normal unit allowable. It is believed that this type allowable treatment is necessary to protect the correlative rights of others offsetting Mr. Bruner's tract, and to prevent the migration of oil by drainage from the offsetting tracts to Mr. Bruner's well." That's the end of the letter.

Signed by Mr. R. M. Bischoff.

MR. NUTTER: Mr. Kellahin.

MR. KELLAHIN: Admittedly, the witnesses have stated



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and we frankly admit, since there is a well with no porosity, all of this acreage cannot be considered productive. We have met the issue directly. Our testimony shows that not less than 50 percent of the acreage is productive. It also shows that because of the high degree of permeability in this reservoir, that productive acreage is being drained by offset drainage which is not compensated, and unless we are permitted to complete a well with an allowable equivalent at a minimum to the productive acreage in our unit, we are going to suffer drainage which is uncompensated; and certainly on the basis of the economics of the situation we can't bottom a well in the corner over there and on a 10-acre allowable as has been proposed, and such an allowable would not protect our acreage from drainage.

The issue is how much acreage will be attributed to the well. Our testimony shows that a very minimum of 50 percent of this acreage is productive, and that is what we should be granted.

MR. NUTTER: Anyone else have anything to offer in Case 2663? We will take the case under advisement.

* * * *



STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached transcript of proceedings was reported by me in stenotype and that the same was reduced to typewritten transcript under my personal supervision and contains a true and correct record of said proceedings, to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal this 12th day of October, 1962, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Ada Dearnley
 NOTARY PUBLIC

My Commission Expires:

June 19, 1963.

I do hereby certify that the foregoing is
 a true and correct transcript of the proceedings in
 Case No. 2663
Oct 11, 1962
[Signature], Examiner
 New Mexico Conservation Commission

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BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF THE STATE OF
NEW MEXICO FOR THE PURPOSE OF
CONSIDERING:

CASE No. 2663
Order No. R-2337

APPLICATION OF ARNOLD H. BRUNER
FOR PERMISSION TO DIRECTIONALLY
DRILL, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on October 10, 1962, at Santa Fe, New Mexico, before Daniel S. Nutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 18th day of October, 1962, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Nutter, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Arnold H. Bruner, is the owner of the Federal Intex Well No. 1, the surface location of which is in the center of the NW/4 SE/4 of Section 8, Township 9 South, Range 37 East, Allison-Pennsylvanian Pool (extension), Lea County, New Mexico.

(3) That said well was drilled as a straight hole at the above location but encountered no porosity in the Bough "C" zone of the Pennsylvanian formation.

(4) That there is reason to believe that a portion of the 80-acre tract dedicated to the well is productive from the Bough "C" zone.

(5) That applicant seeks permission to set a whipstock at approximately 7000 feet and drill in a northwesterly direction in such a manner as to encounter the Bough "C" zone of the Pennsylvanian formation at a point 100 feet from the North line and 100 feet from the West line of the NW/4 SE/4 of Section 8, Township 9 South, Range 37 East.

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CASE No. 2663
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(6) That a well so bottomed would be crowding acreage owned and developed in the Bough "C" zone of the Pennsylvanian formation by Great Western Drilling Company.

(7) That Great Western Drilling Company appeared at the hearing and offered no objection to the aforesaid directional drilling but does oppose the granting of a full allowable to a well so whipstocked.

(8) That the granting of a full allowable to a well so whipstocked would result in the violation of correlative rights inasmuch as said well cannot have a full 80 acres of productive pay assigned to it.

(9) That the applicant should be permitted to so directionally drill, provided however, that the allowable should be sufficiently reduced so that no violation of correlative rights will occur. That in view of the location of the proposed bottom of the hole and in view of the non-productive acreage contained in the W/2 SE/4 of Section 8, Township 9 South, Range 37 East, and in view of the necessity of protecting correlative rights, an allowable of no more than 20% of a standard allowable for the Allison-Pennsylvanian Pool should be assigned the well, which would be 0.954 times the Southeast New Mexico normal unit allowable.

IT IS THEREFORE ORDERED:

(1) That the applicant, Arnold H. Bruner, be and he is hereby permitted to directionally drill his Federal Intex Well No. 1, the surface location of which is in the center of the NW/4 SE/4 of Section 8, Township 9 South, Range 37 East, NMPM, Lea County, New Mexico, by setting a whipstock at approximately 7000 feet and continuing to drill in such a manner as to bottom said well in the Bough "C" zone of the Pennsylvanian formation, Allison-Pennsylvanian Pool (extension), at a point not closer than 100 feet to the North line and 100 feet to the West line of the NW/4 SE/4 of said Section 8.

(2) That a continuous multi-shot directional survey should be made of the entire well bore with shot points not more than 100 feet apart, and that the operator shall direct the surveying company to file a copy of the directional survey report with the Santa Fe office of the Commission, Box 871, Santa Fe, New Mexico; further, that the operator shall notify the Hobbs office of the Commission of the time said survey is to be commenced.

(3) That the well shall be assigned a proportional factor for allowable purposes of 0.954.

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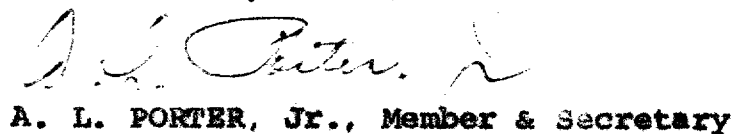
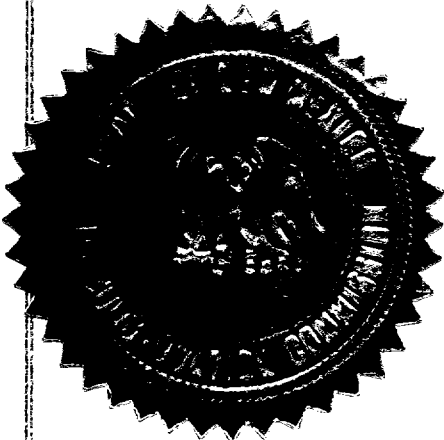
(4) That jurisdiction of this cause is hereby retained for the entry of such further orders as the Commission may deem necessary.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION



EDWIN L. MECHEM, Chairman


E. S. WALKER, Member
A. L. PORTER, Jr., Member & Secretary

esr/