BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 10, 1962

EXAMINER HEARING

IN THE MATTER OF:

Application of Carper Drilling Company for the creation of a new gas pool and for temporary special rules and regulations, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new gas pool to be designated the Buffalo Valley-Pennsylvanian Gas Pool for its Baetz Well No. 1, located in the SE/4 SW/4 of Section 35, Township 14 South, Range 27 East, Chaves County, New Mexico. Applicant, further seeks the establishment of temporary special rules and regulations governing said pool, including provisions for 320-acre gas units. Case 2654

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: We will call Case 2654.

MR. DURRETT: Application of Carper Drilling Company for the creation of a new gas pool and for temporary special rules and regulations, Chaves County, New Mexico.

MR. LOSEE: A. J. Losee, Losee and Stewart, representing the applicant, and I have two witnesses in this case, Mr. Storm and Mr. Clark.

MR. DURRETT: Mr. Storm, you are under oath. I don't

think you need to be sworn again.

(Witness sworn.)

(Whereupon, Carper's Exhibits Nos. 2 and 3 were marked for identification.)

TRACY CLARK

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

DIRECT EXAMINATION

BY MR. LOSEE:

Q Would you state your name, please?

A Tracy Clark.

Q Where do you live, Mr. Clark?

A 2411 Loma Drive, Artesia, New Mexico.

Q What is your occupation? A Geologist.

Q Are you employed by Carper Drilling Company?

A Yes, sir.

Q You have never testified before this Commission?

A That is correct.

Q Where did you have your public education?

A Morton Senior High School in Richmond, Indiana.

Q You graduated from high school?

A Yes, sir.

Q Your higher education?

A Texas College of Mines and Metallurgy, El Paso, Texas.

Q Did you graduate with degrees?

A A B. S. degree, major in geology, minor in chemistry.

Q Since your graduation from Texas Western, what has been your occupation and who have been your employers?

A Geologist, Pan American Petroleum Corporation, ten years; geologist, Carper Drilling Company, four years.

Q Have you since your graduation attended any special schools in connection with your work?

A Yes. Electric log school sponsored by Pan American Corporation, log schools sponsored by Schlumberger, Welex, several field trips, Roswell Geological Society, New Mexico Geological Society, West Texas Geological Society.

Q Have you written any papers in connection with your work as a geologist?

A Yes.

Q What papers were those?

A One paper, the subject of Sacramento Mountains in the Roswell Geological Society Field Book, I believe in 1958.

MR. LOSEE: Are Mr. Clark's qualifications as an expert on geology acceptable?

MR. NUTTER: Yes, sir. Please proceed.

Q (By Mr. Losee) I'll refer you to what has been marked

Exhibit 1 in the prior Case 2647, and ask you if you will briefly state what that is.

A This is a plat of the area surrounding the Carper No. 1 Baetz gas well, the yellow showing the Carper Drilling Company, Inc. acreage. Other operators leases are also shown; the oil wells drilled in the area are shown with their total depths.

Q Now, this Carper Drilling Company Baetz No. 1 well, what is the total depth of that well?

A The Carper Drilling Company No. 1 Baetz was originally drilled to total depth, 9983, bottomed in Precambrian rocks by the Richfield Oil Corporation.

Q What is the present plug back depth?

A 8511 in Mississippian age rocks.

Q What are the producing intervals?

A Producing intervals are 8182 to 98, 8260 to 8270, lower Pennsylvanian age sandstone.

Q Has this well been completed as a producer?

A This well will be officially completed for initial potential of 3,503,000 cubic feet of gas per day calculated absolute open flow.

Q Please refer to Exhibit No. 2 and state what that portrays.

A Exhibit 2 is an electric log cross section from the Duffield-Pennsylvanian gas field of northern Eddy County to the subject well, the Carper No. 1 Baetz. Off on the right side is an index map showing the line of cross section, the location of these wells and other wells in the area.

Q Have you correlated or attempted to correlate the Duffield and the Baetz well from a geology standpoint?

A Yes, sir, I have. These wells are correlated on this cross section by age alone. There is no reference to subsea datum. Note that the top of the Mississippian, which is the lowermost correlation line, there is a very excellent correlation there. Note also that the pay sections in the two wells correlate very well.

Q Is there any similarity, in your opinion, with respect to drainage area that has occurred in the Duffield and might occur in the Baetz well?

A Yes, I would think so, because of the amazing similarity of these two logs, Mr. Clark Storm in later testimony will show that the Duffield well has drained probably in excess of 320 acres and we have reason to think because of this similarity in the pay sections that our well can do the same.

Q Does the production history of Pennsylvanian gas fields in Eddy County, or southeastern New Mexico, indicate

anything with respect to the area that is drained?

A I would say that most of them indicate a drainage area in excess of 320 acres. In fact, I know no Pennsylvanian gas field with less than 320-acre spacing.

Q In southeastern New Mexico?

A In southeastern New Mexico.

Q Mr. Clark, are there any water zones, fresh or salt water, present in the area of this Baetz No. 1 well?

A Shallow water zones are known to exist in this area down to approximately 250 feet. Since the subject hole was drilled with rotary and no electric or gamma ray neutron was run above 1556, the presence of fresh water above this point is indeterminate. However, a cable tool drilled one location east reported water zones at 200 to 210 feet at 915 to a thousand feet with no definition of freshness nor of quantity, although both zones were cased off to facilitate further drilling.

MR. NUTTER: What was that lowermost?

A 915 to 1,000. The San Andres has only connate water in small amounts in this area.

Q Based upon your log run on this well and the tests that have been made on the well, in your opinion is there any productive oil or gas zones present in this hole above the Pennsylvanian?

A I would say no, based on electric log, gas mud log, sample analyses and cores that were taken in the Richfield well, also the production tests performed by Mr. Copeland.

MR. LOSEE: That's all the questions I have of Mr. Clark. You might like to wait until Mr. Storm has completed his testimony and then recall Mr. Clark, if you desire.

MR. NUTTER: Does anyone have any questions of Mr. Clark at this time? Mr. Clark, do you have available a complete electric log of this Baetz No. 1 well?

A Yes.

MR. NUTTER: Could you furnish the Commission with a log of it, please?

A Yes.

MR. NUTTER: Mr. Losee, if it's possible, we would like to have this marked as an exhibit and just introduced into the record of the case.

MR. LOSEE: All right.

(Whereupon, Carper's Exhibit No. 4 was marked for identification.)

CROSS EXAMINATION

BY MR. NUTTER:

Q Are you familiar with the Atoka-Pennsylvanian Gas Pool?

A Vaguely. We have not drilled any wells in that field

ourselves.

Q Are you familiar enough with it to know whether the producing intervals in this proposed pool would be correlative with the producing interval of the Atoka-Pennsylvanian Pool?

A I would say they're approximately correlative.

Q What is the name of the two zones as far as the nomenclature of the Pennsylvanian in the general area?

A I would call these probably Atoka in age.

Q These would be Atoka? A Yes, sir.

Q When was the Continental Oil Company Duffield well completed, Mr. Clark?

A It was completed sometime in April of 1952. I do not have the exact date.

Q Do you know how much gas that well has produced or will Mr. Storm testify to that?

A Mr. Storm will have testimony to the exact amount of gas that is produced.

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

MR. LOSEE: I have one further with respect to this exhibit.

REDIRECT EXAMINATION

BY MR. LOSEE:

Q I hand you what has been marked Exhibit 4 and ask you

to state for the record what that is.

A This is a Schlumberger electric log of the Richfield Oil Corporation No. 1 Trigg, Section 35, 14 South, 27 East, Chaves County, New Mexico.

MR. LOSEE: I think that's all.

RECROSS EXAMINATION

BY MR. NUTTER:

Q Is that log run from T.D. up to the surface there?

A No, it is not.

Q Does it come up at least as far as the San Andres?

A It comes up to just below the top of the San Andres.

MR. NUTTER: Very good. The witness may be excused.

(Witness excused.)

CLARK STORM

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

DIRECT EXAMINATION

BY MR. LOSEE:

Q You are the same Clark Storm that testified in Case No. 2647?

A Yes, sir.

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

MR. NUTTER: Yes, they are.

Q (By Mr. Losee) Referring back to what has already been marked Exhibit No. 2, and which is a log comparison of the Duffield and the Baetz well, have you calculated the amount of gas which would be stored or could be stored in one acre surrounding the Baetz No. 1 well, using certain assumptions?

A I have.

Q What amount of gas?

A 11,400,760 cubic feet of gas, that's at 15,025.

Q In arriving at that calculation, what assumptions or what facts did you use?

A I used the porosity of 8.2% taken from a gamma ray neutron log which we ran over the pay section which differentiated the good and the bad from it as far as could be done at this date. And assumed a water content of 40% and used the initial pressure of 3185, which we have already mentioned, and abandonment pressure of 600 pounds, and I used no temperature supercompressibility. I did originally and found it only made one-half percent difference in the storage so I just left it out.

Q Why did you use an abandoned pressure of 600 pounds?

A Because we have to go into a line at about 500 pounds and we couldn't go much below 600.

Q This is what line?

A Southern Union gas line.

Q Then using those assumptions, your calculation as to the initial volume of gas stored in one acre is 11,400,760 cubic feet?

A That's right.

Q How many cubic feet do you calculate would be left in one acre at the time of the abandonment of the well?

A 2,185,860.

Q Which would result in a figure of how much gas produced from one acre?

A We could recover 9,214,900 cubic feet.

Q Then assuming that the Baetz and Duffield are similar wells, how much gas has the Duffield production since it was completed?

A I don't have it right up-to-date, but 1-1-61 it had produced 3,885,551 cubic feet.

Q And using the 9,214,900 cubic feet that could be produced from one acre around the Baetz, how many acres do you calculate have been drained by the Duffield at this time?

A That figure is 421.6 acres.

Q Does Carper Drilling Company have any contract to sell the gas from this well?

A We have a contract with Southern Union Gas Company.

Q Referring back to Exhibit 2, are they having to run a line to this well, and if so, from what point and what is the approximate distance?

A They're running a line from the Southwest Quarter of Section 35, Township 15 South, and 26 East, and that figures about eight and one-half miles.

Q Have you calculated the open flow initial potential of this well?

A I didn't personally. I was in on the calculation.

Q Someone in your department calculated it?

A That's right, Vince Foster figured it 3,600,000.

Q In your application to the Commission you have recommended that this well be called a discovery of a common source of supply in the Pennsylvanian Pool to be known as the Buffalo Valley. Why did you suggest that name?

A This area that is irrigated down through here is known as the Buffalo Valley area and this is near it.

Q In connection with the field rules for this pool, what drilling proration and spacing have you requested?

A We have requested 320-acre spacing, with the wells to be in the Northwest and Southeast quarter sections.

Q Do you understand that to be on a 320-acre spacing rule to be the customary pattern of the wells?

A That's customary.

Q Would the Baetz well then have to be an exception to that well location?

A It would, because it is in the Southeast of the Southwest of Section 35.

Q I hand you what has been marked Exhibit 3. What does Exhibit 3 portray, Mr. Storm?

A It's a sketch that we proposed for the completion of the wells in that area.

Q Does that show the cement and the casing in the proposed completions?

A Yes, sir, it shows 1560 feet of the surface string and total depth casing of some size 4½ west on here. That's right.

Q Now, your acreage is a federally owned lease, this Baetz, is it not?

A Yes, sir.

Q Have you gone over this casing program with the United States Geological Survey?

A I have.

Q Have they approved this type of casing program?

A They have approved this type and would be somewhat more lenient in certain instances. For instance, up at the top in the 5-5/8 is a casing, they think we wouldn't need to set that much

if we would cement the production string all the way to the top. They felt that the surface string of roughly 300 feet, in that nature, they would want to look at each individual case because that water they say strings in and out up there.

Q In other words, they wouldn't require this much surface casing if you had your production string cemented from the top to the bottom?

A That is correct. If you don't do that they want at least 600 feet of cement above the perforations and not less than 100 sacks.

Q And they would want the surface string set through what formation, or into what formation, the top of the San Andres?

A No, I think they're instances where they would even be more lenient than that, but in general that's it, that's right.

Q What abandonment procedure plugging of the wells do you propose?

A Well, the United States Geological Survey requires some sort of a plug every 1500 feet if you don't have anything that's productive. Of course, if you have a productive section, two or three of them there, they want them separated, but that is what they will go with in this particular area.

Q Do you have anything further to add in this case, Mr. Storm?

A I don't believe so.

MR. LOSEE: I have no further questions at this time of the witness.

MR. NUTTER: Any questions of Mr. Storm?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Storm, I presume that the Pennsylvanian has not been cored in this immediate area?

A No, sir, it hasn't.

Q So the only source for the porosity figure that you gave would be interpretation of the gamma ray neutron log?

A That's right.

Q And is any gamma ray neutron log available on the Continental Duffield well?

A Not that I know of.

Q Have you made any study of any logs that may be available on the Continental well to determine what the porosity on it would be?

A No, sir, I haven't.

Q Upon what did you base your 40% water saturation?

A Well, this gas in this particular well is rather damp. Now I don't know whether it is in the Duffield or not, but you could cut that water content considerably and still have lots

of acres.

Q Does this gas make very much liquid hydrocarbons?

A We haven't tested it. When we had the prover on there, two drips off of the prover.

Q But you don't have any test as to the amount of liquids per day it would make at this absolute open flow of 3.6 million?

A No, sir, we do not have.

Q And it's approximately eight and ten some tenths miles that Southern Union has to run the line?

A Measuring on the map it's 8.4 miles. It wouldn't be exactly that.

Q There is a contract with Southern Union and they have agreed to run this line?

A That's right.

Q Does your company have any plans at the present time to drill a second well in the Pennsylvanian area there?

A Well, it depends on what happens here.

Q Are there any seismic structure maps available that would indicate what the Pennsylvanian structure might look like in this area? Do you have any idea as to the size of it?

A I certainly don't know of any. There may be some. Tracy Clark could tell you more about that than I can.

Q Do you know whether Richfield has any seismic information about how they drilled their well?

A I do not know. I presume they do, but I don't know.

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

(Witness excused.)

MR. LOSEE: The applicant moves the introduction of Exhibits 1 through 4.

MR. NUTTER: Applicant's Exhibits 1 through 4 in Case 2654 will be admitted in evidence.

(Whereupon, Carper's Exhibits Nos. 1 through 4 were admitted in evidence.)

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

MR. LOSEE: If the Commission has not at this time received any wires from two of the offset operators, Union Oil Company of California and Pan American, we are authorized to state that they join with Carper in requesting a designation of this pool on a 320-acre spacing.

MR. NUTTER: We have received correspondence from Union Oil Company in California. Do you have anything further?

MR. DURRETT: Yes, sir. I will read a paragraph from this letter from Union Oil Company of California that the

Commission has in its files. This letter was received October 10, reading paragraph as follows: "Union Oil Company of California, owner of acreage in offsetting and neighboring sections, endorses Carper's application for temporary 320-acre gas units. Union's knowledge of and experience with Morrow sand gas production in southeastern New Mexico leads it to the conclusion that 320-acre spacing is the maximum well density on which this pool should be developed. Subsequent well performance may, in fact, indicate that the pool can be efficiently and economically drained on wider spacing." Letter signed R. S. Cook, Division Engineer.

MR. NUTTER: Thank you. Does anyone have anything further they wish to offer in the case?

MR. SMITH: I would like to make a statement in behalf of Pan American.

MR. NUTTER: State your name, please.

MR. SMITH: Robert E. Smith, petroleum engineer. We make a statement to support the 320-acre proration unit. However, we would not want to make a fixed location in quarter, quarter section.

MR. NUTTER: Anything further in this case? We'll take the case under advisement.

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 2nd day of November, 1962.

Ada Dearnley
Notary Public-Court Reporter

My commission expires:

June 19, 1963.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2654 heard by me on 10-10, 1962.

....., Examiner
New Mexico Oil Conservation Commission