

BEFORE THE
Oil Conservation Commission
SANTA FE, NEW MEXICO
April 20, 1955

IN THE MATTER OF:

CASE NO. 862 Regular Hearing

TRANSCRIPT OF PROCEEDINGS

ADA DEARNLEY AND ASSOCIATES
COURT REPORTERS
ROOMS 105, 106, 107 EL CORTEZ BUILDING
TELEPHONE 7-9546
ALBUQUERQUE, NEW MEXICO

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
April 20, 1955

IN THE MATTER OF:

Application of the Commission upon its own motion for an order (a) creating the North Benson-Queen Oil Pool in Eddy County, New Mexico, described as follows:

Township 18 South, Range 30 East
E/2 Section 33; W/2 Section 34

Case No. 862

and (b) prescribing rules and regulations pertaining to the proposed pool in accordance with provisions of Order R-111, which pertains to the drilling and completion of oil or gas wells within the designated "potash - oil" area.

BEFORE:

Mr. E. S. (Johnny) Walker
Mr. William B. Macey

TRANSCRIPT OF HEARING

MR. MACEY: The next case on the docket is Case 862.

S. J. STANLEY,

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

DIRECT EXAMINATION

By MR. KITTS:

Q Will you state your name and position, please?

A S. J. Stanley, Engineer for the Oil Conservation Commission.

Q Mr. Stanley, since the last meeting of this case when it was first heard, you have been appointed to a Committee to study further this matter?

A Yes, sir, we have had two meetings in Carlsbad to study this particular problem.

Q Mr. Stanley, in connection with your study, you prepared an exhibit which you wish to comment upon at this time, and introduce?

A Yes, sir, I have prepared one exhibit and also have obtained two exhibits from the United States Geological Survey, which I intend to introduce into the record.

Q This plat on the wall is your Exhibit 1?

A Yes.

Q That was prepared by you?

A Yes, sir, under my direction.

Q Will you proceed with Exhibit 1 and explain what that shows?

A Case 862 deals particularly with Order R-111. The objective of Order R-111, generally referred to as the Potash Order, is as follows: "The objective of these rules and regulations is to prevent waste, protect correlative rights, assure maximum conservation of oil and gas resources of New Mexico and permit the simultaneous economic recovery of potash minerals in the area hereinafter defined."

The potash - oil areas are divided into two parts. Area A includes the various parts in which potash mining operations are in progress, and Area B includes the various parts of which potash mining operations are in progress or in which geologic tests indicate potential potash reserves.

Therefore, Exhibit No. 1, marked in red coloration includes the entire area defined in Order R-111 of potential potash recovery determined by actual exploration or core test date. The scale of the map showing the potash area is one inch equal to two miles, and

therefore it can readily be seen that the area so defined is very large in extent, and for the sake of understanding the area itself I would like to point out on Exhibit No. 1 various landmarks. Here is Artesia, New Mexico, here is Carlsbad, New Mexico and here is Hobbs, New Mexico.

Q That shows both area A and B?

A Yes, sir, it incorporates both areas.

In Order R-1111 in the problem before the Commission, the rules specifies the casing program of wells drilled to a shallow depth of less than 5,000 feet, and deeper wells drilled to depths of greater than 5,000 feet.

The surface pipe in shallow holes will be landed in the red bed section, and cemented to the surface. The salt string will be set between 100 and 200 feet below the base of the salt and cemented to the surface. The oil string shall be cemented with sufficient cement to protect the oil pay zone. Now, in lieu of ~~offsetting~~ a salt string, an operator can pull such string whenever it is landed for water shut-off and then the oil string shall be cemented to surface.

I, at this particular time, would like to read into the record the problem before up pertaining to two wells of Simms and Reese Oil Company, which have been completed within the designated potash area as defined by Order R-111. The Simms and Reese Oil Company's McClay No. 1, located 1980 from the south and 660 from the east of Section 33, Township 18 South, Range 30 East, perforations are 2,844, that is the top of the perforation. The seven inch casing is set at 763 feet, four and a half inch casing at 2,093 feet cemented with 100 sacks. The top of the anhydrite, by our informa-

tion is 250 feet. The top of the salt is 550 feet, the base of the salt is 1,494 feet and the top of the Queen is 2,810 feet.

The Simms and Reese Oil Company's McClay No. 2, 1980 from the north and 660 from the east of Section 33, Township 18 South, Range 30 East, perforations, 3,036 to 61 feet. That is 3,036 to 3,061 feet. Eight and five inch casing set at 590 feet with 80 sacks. Five and a half inch casing set at 3,064 feet with 30 sacks. The top of the salt in this well is at 560 feet, the base of the salt is at 1,495 feet, and the top of the Yates at 2,626, and the top of the Queen to the producing formation is 2,844 feet.

Q I would like to interrupt for a moment here. You are aware the original applicant in this case, Simms and Reese Oil Company, stated in their application and testified at the last hearing, that they did not believe that in the area concerned, the area of their wells, there was potash salt in commercial quantities. Do you have any information as to that? Did your study go that far?

A I don't know whether there is potash of commercial quantities in that area or not.

Q I see.

A In fact, in reading the Simms and Reese Oil Company, the McClay No. 2 file, I might add this is a Federal well. That on the Federal form of sundry notices and reports on wells, the operator, Simms and Reese Oil Company makes the following statement.

"We will drill to approximately 3,000 feet and set eight and five inch surface casing and cement back to surface. Five and a half inch casing will be set and cemented through the red sand and sand fractured. We will comply with New Mexico Oil Conservation

Commission's Order R-111 on any modification thereto."

Q That was filed, well, before their application for exception to R-111, wasn't it?

A Yes, sir. The point that Simms and Reese Oil Company have argued is that potash is not present in this area. It is evidently uneconomical to produce oil from this area in stripper production with the cost of cementing, without exception of Order R-111. The date of the Order R-111 is July 10, 1951, and since that time 18 wells have been drilled in the potash area. Of the 18 wells that have been drilled, 16 wells have complied with the order and the two wells of Simms and Reese Oil Company seek an exception to this rule in this area where the wells are drilled.

To better acquaint ourselves with the problem of the potash company and the oil companies, two meetings were held in Carlsbad prior to this hearing. Certain topics were discussed and probably should be mentioned and introduced into the record. Area A as defined by this order, is a continuously changing picture. I have what is marked Exhibits No. 2 and 3, showing the irregular pattern of potash occurrences.

Q Were those prepared by you, Mr. Stanley?

A No, sir, these were prepared by the United States Geological Survey, and they show a scale on the exhibit. However, that is considered a trade secret and, therefore, it is not actually defined in any one particular area referred to as actual description referred to as township, range.

Q Are you satisfied with the accuracy of these?

A No, sir, I know nothing about the exhibits. All I want to show is the irregular occurrence of potash in this particular area.

What I would like to show with these two exhibits is the irregular occurrence of the potash area as determined by core drill. The closer spacing of core well holes could even connect the areas shown in Exhibits 2 and 3, and probably actual mining operations could change the entire picture.

Today the potash industry is able to mine ore bodies of the thickness of 18 inches, as we understand, it is possible to mine sylvite, an ore of potash, or sylvanite with a 14 percent content, or manganite with eight percent. In some instances the percentage of ore can be lower. In other words, with ever changing and improving techniques in mining, as is true in the oil business, and especially refining continually changes the commercial extent of the boundaries of the proven potash reserves.

It has been stated by the potash companies that porosity exists in the salt section that is mined. It has been definitely proven in the oil business that the salt section is charged in the Monument and Hobbs Pool and charged with gas. The charging of oil and gas in these pools was probably man made by casing leaks.

The point I am trying to make is that I feel that porosity and permeability exists in the salt section throughout Lea County, that the extent of charging the zone, and that is the salt zone, from one well would depend on the amount of gas present, and, of course, the pressure of that particular gas. Fortunately the wells of Simms and Reese Oil Company, if typical of the area, have low gas-oil ratios and also have very low bottom hole pressures. The potash areas defined is unexplored for all practical purposes, for oil accumulation and, therefore, who can say that high pressure wells with considerable gas volumes will not be obtained at shallow depths.

One interesting point that was mentioned at these meetings was a method of mining ore. This type of mining refers to the removal of pillars, after the conventional mining is completed, these pillars or supports are in an order of 100 foot in diameter. One pillar after another is removed until the earth above it subsides. This subsidence is evident at the surface of the ground. It is also believed that horizontal slippage occurs during the period of subsidence, this would have the tendency to shear off the casing of oil well, regardless of the number of strings of casing run in modern completion practices. The well would never be plugged properly since it could never be reentered. This subsidence would effect both the deep and shallow wells. I can see where possible charging of the mine workings would result.

It has been stated that the recoverable potash, based on potash mines at the present going price, is \$154,000.00 per acre. 90 percent of the domestic potash, or I might say that the domestic potash in excess of 90 percent is mined in this area defined by Order R-111.

In conclusion, I wish to state that I have no recommendations in the case, that the Commission will have to recommend.

Q Mr. Stanley, let me ask you this. You stated that you had no knowledge as to whether in the area in question there was potash salt in commercial quantities or not, is that correct?

A That is right.

Q Assuming that there is potash salt in commercial quantities in that area, would you care to make any comment on the casing program set out in R-111, and the casing program of the Simms-Reese Company, as it would protect any such salt? Do you have any comment on that?

A Could I elaborate on my answer?

Q Certainly.

A I have studied all the wells in the Hobbs Pool from a corrosion standpoint, have inspected every well in that particular pool, and have also inspected all the wells or virtually all the wells in the north half, or half the wells in the Monument Pool. The casing program as defined in Order R-111 is not exactly the casing program that I would recommend in the potash area, provided that there was no horizontal slippage. However, I do not recommend that the casing program be altered as defined in R-111. My theories on casing program in this particular area and from the experience that I have had in observing the corrosion problems in Hobbs and the Monument Pool is as follows: If I intended to write an order to protect any potash area or any mine workings, I would write an order whereby the surface pipe would have to be set at 100 feet or 200 feet below the salt string in this manner.

MR. MACEY: Below the salt string?

A Yes. Not set any surface pipe below the salt section, not set any surface pipe at all, but set it -- Assume that this is the salt section, set it a hundred feet below and cement that particular pipe to surface, then the oil string should be cemented in such a fashion that the cement behind the pipe shall come to a point below the oil section, or below the salt section, excuse me. Therefore, at any time we observe this in the Hobbs and Monument Pool, the potash companies, the oil companies or any individual could go to that particular well in question and observe between the annulus at the surface pipe and oil string whether a leakage occurred at any

particular time during the life of the well.

At the present time, by cementing through the salt section, and we have found this in Hobbs and in Monument, there is no method at the surface of determining whether you have a leak or not. The only method that could determine whether you had a leak or not in any particular well, whereby the oil string is cemented through the salt section, it so run your tubing with a packer in such a fashion that you could observe or record the pressures between the tubing and the oil string.

However, I am not making any recommendations that the casing program be altered in Order R-111.

Q Do you feel that the casing program set forth in R-111, you feel that if that were followed it does afford protection to the potash salt section?

A I think it affords protection by merely running an oil string through the salt section.

Q You feel that the cementing helps appreciably?

A I think it possibly could help, but there would be no known method of ever testing the well, due to the fact that most of the corrosion is due to hydrogen sulphide, as we have observed in the Hobbs Pool, that the corrosion is internal, that it is not external, adjacent to the salt section. That pipe pulled in the Hobbs Pool and in the Monument Pool, adjacent to the salt section showed that it would be in condition A, that is considered in new condition externally, but that the holes were formed from the inside by hydrogen sulphide. I do not feel that a rim of cement around this pipe a fraction of an inch in diameter in some cases would protect

that particular salt or potash section, and it would aggravate the problem if you had considerable bottom hole pressure, or gas pressure. I feel that cement would not be able to hold, say, a thousand pounds pressure as we have in the Hobbs Pool, or the Monument Pool.

MR. KITTS: That is all.

MR. MACEY: Any questions of the witness? Mr. Rhodes?

CROSS EXAMINATION

By MR. RHODES:

Q These discussions with the potash operators, was any mention made of the possibility of bringing water in on the potash by drilling in the area?

A You mean from the surface or from the bottom?

Q Below the line water table.

A They do seek protection by setting the surface pipe to prevent any water to go ahead and flow downward into their mine workings. That is the intent of setting surface pipe.

Q Also, you mentioned the potash operators coming through and pulling pillars and letting the back come in and subside?

A Yes, sir.

Q Do you suppose that the potash operators would be willing to conduct a selective program on pulling these pillars in areas where there are producing wells?

A Well, I don't know anything about the potash people. I feel certainly sure that if I owned the potash mines I wouldn't go ahead and pull the pillars out, especially in the area where a deep well is present. What we usually have, by the drilling of several wells in the area, especially by Sid Richardson, and knowing the pressure

of the Pennsylvanian section, that if a well were drilled to the Pennsylvanian section in any one particular area whereby mine workings were in operation, I feel reasonably sure that no one would dare pull these pillars out.

Q That is exactly my point. I wondered if that was any consideration.

A I think the discrepancy in the order, the most dangerous thing about the entire deal is to go ahead and drill a deep well to the Pennsylvanian and then have subsidence and lateral-horizontal movement. It does not mention the concern about the deep wells themselves. I believe by shearing the casing off in the deep wells is what probably will cause all the trouble.

Q I was just wondering if that was too much of a consideration, if accommodation couldn't be made by which that danger could be alleviated?

A I think that would be the concern of the potash company and the concern of the oil operator in that particular case.

MR. RHODES: That is all.

MR. MACEY: Anyone else?

By MR. LANE:

Q You have a value for the potash in this area. Do you have a value for the oil?

A Yes, we had a value of potash as stated by the potash companies of a recovery of past experience of \$154,000.00 per acre. I seriously doubt that the shallow wells in this area with the exception of the ^{Getty} Gaddy Pool, would recover more than 1,500 barrels per acre, or roughly approximately \$4,000.00 per acre.

Q It is our knowledge that the pillars remaining after the first extraction is about 30 or 35 percent, it would be roughly \$50,000.00?

A Yes, sir.

MR. MACEY: Mr. Rhodes?

By MR. RHODES:

Q Do you believe that possibly pulling the pillars in one area would result in horizontal movement in some quite distant area?

A It could possibly affect it. It would have the effect of the earthquake. I understand you can drive over this particular area whereby these mining techniques were followed and see the subsidence on the surface of the ground.

Q I wonder if that is not directly over the particular area where the pillars were pulled?

A Yes, sir. I don't know the extent of the lateral movement.

MR. WEAVER: I can answer that. G. C. Weaver, representing Duval Sulphur and Potash. We have horizontal threats there as well as vertical. Just where it would show up, we can't tell. Assume we are mining at 1,000 feet, I would thoroughly expect to get horizontal displacement a thousand feet from any area we rocked. You can figure on about a 45 degree break there. When we talk about mining an area, when we go in and mine an area, in the first mining in the room and pillar system we extract about, well, from 50 to 75 percent of the potash present, we get subsidence. It is not enough to hinder our mining operations, however, if there are any oil and gas wells within a hundred feet of any one of those pillars, ^s in any one of those pillars 100 feet in diameter, I certainly wouldn't want to be very close to it. It wouldn't take much subsidence to

shear a casing. Suppose the casing was sheared and gas and oil is escaped in the workings, how in the world would you ever replug that well? You have a loss of oil and gas which will never be recovered, and you will never recover the potash.

MR. MACEY: Does anyone have any further questions? Mr. Yates?

By MR. YATES:

Q Harvey Yates. I would like to ask the witness, Mr. Stanley, if, under the circumstances there is any long wall mining, is there any kind of pipe program that you could conceive of that could stand that shearing, so-called?

A No, I can't conceive of the oil industry inventing anything that would stand the shock of any lateral movement.

Q How is the oil industry and potash industry compatible in this area, for instance?

A I don't know.

Q I have a little field out there in the so-called area of the potash company. If you will recall, one potash company said they wanted no wells whatsoever drilled in this area. I would like to know how I am going to protect my leases?

A If I understand, and I believe Mr. Jack Frost with the United States Geological Survey is in the audience. If I understand it correctly from Mr. Frost in conversations that there are particular areas here owned by the government, whereby they do not issue any oil leases for shallow rights. That effective date was probably two or three years ago, I don't know the exact date. They do not issue any oil rights for shallow depths. It is only those that can

drill who had the oil rights prior to that particular date. I wish Mr. Frost would elaborate on that subject.

MR. FROST: Jack Frost, United States Geological Survey. I believe you misunderstood some of our little discussion.

A I am sorry.

MR. FROST: There is a provision in those new leases in the potash area that my office can not approve the drilling of a shallow well without clearing it through Washington in advance.

A I see. May I ask you a question? You can drill anywhere in the defined potash area, an oil well if you do own the oil and gas leases on Federal acreage?

MR. FROST: I think you have something mixed up there. There is no provision that I know of we can't approve the drilling of a well with a valid oil and gas lease, but there would be areas in there where we would have to consult with the potash companies and reach an agreement between the operator and the potash company before I could approve the drilling. Does that clear it up?

A Yes.

MR. MACEY: Does that pertain solely to shallow wells or both?

MR. FROST: No shallow, those from 5,000 feet up. If, on the new leases I would have to clear through Washington.

MR. MACEY: Mr. Yates?

MR. YATES: I would like to ask, under the circumstances, how is a man going to get approval from the potash companies to drill a well. He says that he can't issue a permit to drill a well without approval of the potash company if they don't want any wells drilled in their so-called A or ore body, how is a man going to get

the approval.

A I am sure they have to approve the drilling of the oil well if you conform to Order R-111.

MR. YATES: That suits me.

MR. FROST: This may help clear that up. That oil and gas exploratory test well should not be drilled through any open potash mines or within 1,320 feet thereof, unless agreed to in writing by the potash lessee involved. That is on your R-111, Page 7, Section 3, Exploration of Areas, and this was Area A, a portion of Sub-paragraph A there.

MR. MACEY: Anyone have any further questions of Mr. Stanley? Mr. Stanley, I think we have possibly gotten off the beam here a little bit. I don't think we have done any harm. It appears to me from what you have said, that you are more concerned with the deep drilling than you are with the shallow. Am I right?

A That is correct, if you take into consideration the subsidence and the pressure of the Pennsylvanian Formation.

MR. MACEY: That is all I have.

RE-DIRECT EXAMINATION

By MR. KITTS:

Q Mr. Stanley, leaving the question of subsidence for the moment, you commented on the casing program of R-111. Would you care to make any comment on the casing program of the Reese-Simms Oil Company?

A No, sir, I do not wish to make any comment.

MR. KITTS: That is all.

A Well, I might say that they have not complied with Order

R-111, but they are here to seek an exception.

Q How would you compare the protection afforded by their casing and that afforded by R-111?

A That would be an argument to know whether that core of cement actually protects the salt section on that part of the pipe.

Q That would be the point?

A Yes.

MR. MACEY: Mr. Lane?

RE-CROSS EXAMINATION

By MR. LANE:

Q Things have been said here, how can a potash company agree to a well, when an operator has already been put into intent that he would comply with the regulations and he hasn't? How can we ever agree to it before the well is drilled? We are not getting very much assurance there. He stated that he was going to comply with the regulations.

A You want me to answer that question? I don't know.

MR. MACEY: Anyone else? If not the witness may be excused.

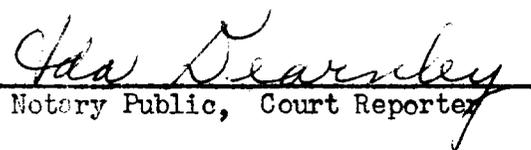
(Witness excused.)

MR. MACEY: Does anyone have anything further in this case? If not we will 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 28th day of April, 1955.


 Notary Public, Court Reporter

My Commission Expires:

June 19, 1955

