CAMA 1978: Application of SHELL for [illegible] authorization for salt water disposal wells. (Quito Mid Well #1)

Case No.

1978

Application, Transcript,
Small Exhibits, Etc.

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
June 1, 1960

EXAMINER HEARING

IN THE MATTER OF:

Application of Shell Oil Company for an order authorizing two salt water disposal wells. Applicant, in the above-styled cause, seeks an order authorizing the disposal of produced salt water through its State ETA Well No. 1, located in the NE/4 NE/4 of Section 8, Township 16 South, Range 35 East, Lea County, New Mexico, with the injection to be in the Wolfcamp formation in the interval from 10,365 feet to 10,463 feet. Applicant further seeks an order authorizing the disposal of produced salt water through its State EDA Well No. 2, located in the SW/4 SW/4 of Section 7, Township 16 South, Range 35 East, Lea County, New Mexico, with injection to be in the Wolfcamp formation in the interval from 10,712 feet to 10,734 feet.

Case 1978

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: Case 1978.

MR. PAYNE: Application of Shell Oil Company for an order authorizing two salt water disposal wells.

MR. MONTGOMERY: I am A. K, Montgomery, appearing for Shell. We'll have two witnesses.

MR. UTZ: Any other appearances in this case?

MR. MONTGOMERY: George Olson and Mr. W. M. Ashley

are the witnesses.

(Witnesses sworn.)

GEORGE OLSON

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

DIRECT EXAMINATION

BY MR. MONTGOMERY:

Q Will you state your name, please?

A George Olson.

Q What is your official position in connection with the Shell, applicant in this case?

A I am mechanical engineer with the Shell Oil Company in Roswell.

Q Have you testified as an expert before this Commission and this Examiner?

A Yes, I have.

MR. MONTGOMERY: Are the qualifications as an expert of this witness acceptable?

MR. UTZ: Yes, they are.

Q Turning now to ETA State No. 1, there are two wells involved in this application, are there not, Mr. Olson?

A That's right.

(Whereupon Shell's Exhibits 1 through 5 were marked for identification.)

Q Turning now to your Exhibit No. 1, will you tell the

Examiner was that prepared under your direction and supervision?

A Yes, it is.

Q Go ahead.

A Exhibit No. 1 is a plat showing the State ETA Lease in the Townsend Field and Well No. 1 which is marked in red as the well which we propose to use as a salt water disposal well for water produced on our State ETA Lease.

Q Your State Lease is the one hatched in Exhibit No. 1?

A Yes, it's the 640 acre tract marked in the center of the plat.

Q Now, have you contacted the offset operators of this ETA Well No. 1?

A Yes, sir, we have.

Q Have you obtained any waivers or consents from them?

A Yes, sir, we have. We have received waivers from Utex Exploration, Wilshire Oil Company and the Humble Oil and Refining Company.

Q Are those marked Exhibits Nos. 3, 4 and 5 respectively?

A That's correct.

Q Now, continue referring to this Exhibit No. 1. Will you explain to the Examiner what you propose to do and what you seek in this application?

A We propose to dispose of all salt water produced on the ETA Lease into ETA Well No. 1, and, referring to Exhibit No. 2,

we show the casing detail that is now existing in the ETA No. 1, showing that we have 347 feet of 13-3/8 inch casing set and cemented to the surface and we also have 4653 feet of 8-5/8 casing set and cemented also to the surface. We have a string of 5-1/2 inch casing set at 10,488 feet and cemented with 600 sacks of cement with an estimated top of the cement at approximately 8,000 feet. We propose to inject water from our tank battery on the ETA Lease.

Q Where is your tank battery?

A It's just slightly to the Northeast of the center of the section. We propose to run the water directly from our wash tank through the existing flow line that was used by this well until it was temporarily abandoned and inject it into this well by gravity. We propose to inject it directly into the casing and inject the water into the existing Wolfcamp zones as shown on Exhibit No. 2.

Q Have you made an analysis of this water as to the salt content?

A I do not have any figures with me exactly the salt content in this water, but since we are proposing to inject the water directly into the casing, we have had the water inspected by chemical treating companies and we will put inhibitor in the water to minimize the possibility of any corrosion on the casing and we would install coupons on the system to check the effectiveness

of our inhibitor and keep the inhibitor level to the point where corrosion will be negligible.

The life of this lease is quite short, relatively speaking, and we do not anticipate any problem with corrosion during the short remaining life of the lease. We will not, we do not, rather, expect to use any pumps to put the system under pressure.

Q How much salt water are you presently producing from your operating wells in the lease?

A We are presently producing approximately 300 to 330 barrels a day.

Q Is that the quantity you propose to dispose of through this well?

A Yes. In the future the water production may increase to something in the order of 600 barrels a day which is, we believe is less than the, considerably less than the capacity of this well on a gravity flow.

Q How are you disposing of your salt water on the lease at the present time?

A At the present time it's being disposed of in open pit.

Q A single pit or several pits at the wells?

A No, single pit by the tank battery.

Q How many of these wells are producing salt water?

A Four of the wells on the lease are now producing salt water, wells 5, 6, 7 and 8 are producing salt water.

Q Those are the wells you are referring to as marked on Exhibit 1?

A That's correct.

Q Do you feel that this method of disposing of this water will safely and adequately prevent any commingling of the salt water with the fresh water in the area?

A Yes, we do. With the casing that we have in the well now, we don't feel there'll be any problem of contaminating fresh water with the salt water.

Q Is this within any known or established underground water basin, so far as you know?

A Well, I am not sure. I don't believe it's in the area which has been established by the Commission as a critical area. I believe there is fresh water in the area; however, in the shallow zones.

Q Do you know the approximate depth of those shallow zones of fresh water?

A No, sir, I do not. Our other witness can probably give you better answers.

Q Do you have any further explanation or testimony that you care to offer to the Examiner at this time in connection with the State ETA No. 1 Well?

A No, I do not.

MR. MONTGOMERY: Shall we proceed to the next well,

Mr. Examiner?

MR. UTZ: Yes, sir, go ahead.

MR. MONTGOMERY: I didn't know whether you wanted to cross examine on each well or separate.

Q Will you now turn to your EDA application No. 2?

(Whereupon Shell's EDA Exhibits Nos. 1 through 5 were marked for identification.)

Q Were the Exhibits 1 and 2 in this EDA No. 2 prepared under your direction and supervision?

A Yes, sir, they were.

Q In the same or similar manner as the exhibits in the former well about which you have just testified?

A Yes, sir. The Exhibits No. 1 are similar. The Exhibit No. 1 shows the location of our State EDA No. 2, which is the well we propose to inject salt water, which is being produced from Wells No. 1 and 3 on the Shell Lease.

Q The Shell Lease, in this instance the Half Section that's hatched on the exhibit?

A That is correct.

Q What is the exact location of the Well No. 2, the proposed injection well here?

A State EDA No. 2 is located 330 feet from the South line and 947 feet from the West line of Section 7, Township 16 South, Range 35 East.

Q Have you, in this instance, contacted all the offset operators?

A Yes.

Q Advised them of your proposals and intentions and desires in this case?

A Yes, sir, we have contacted Skelly, Humble and Sinclair and we have received waivers from those three companies which you have in your exhibits.

Q Are those Exhibits Nos. 3, 4 and 5?

A Yes, sir.

Q What is the quantity of salt water produced at the present time in your Wells No. 1 and 3 on the Lease?

A We are producing approximately 140 barrels a day at the present time.

Q Where is your tank battery located in this instance?

A It's located slightly North and West of Well No. 3 towards the center of the Half Section.

Q When was the Well No. 2, the injection well in this case, temporarily abandoned?

A That was abandoned in August, 1956. It was a well which went to water production, hundred percent water.

Q Do you propose, in the same manner, to use the former carry line to reverse the flow and carry your salt water to this well?

A In this case we, since we have removed the flow line we have proposed to install a steel line from the tank battery to the well and, as stated in our previous case, we propose to inject salt water down the casing on gravity flow. As you will note, we have a similar well casing program in this well with surface pipe set at 332 feet.

Q You are referring to your Exhibit No. 2 in this application?

A That is correct. We have 332 feet of 13-3/8 casing, 4674 feet of 8-5/8 casing. Both strings have cement circulated to the surface and we have 10,759 feet of 5-1/2 inch casing set and cemented with 700 sacks of cement.

The lower perforations, as you note on the exhibit, are shut off now with the cement retainer and, therefore, we propose to inject the water only in the upper set of perforations.

Q That is as indicated on the Exhibit No. 2?

A That is correct. We propose to handle this well in the same manner, that is in respect to treating the water with inhibitor, to minimize the possibility of any corrosion.

Q Will periodic tests be made to determine whether or not excessive corrosion is setting in?

A Yes. We will be checking this system also to detect any corrosion effects.

Q You aren't familiar, you aren't qualified to testify

concerning the fresh water in the upper horizons?

A No, sir, I'm not.

Q The next witness will testify as to that?

A Yes.

Q What is the estimated life of these wells Nos. 1 and 3, if you know?

A We estimate the remaining producing life of this lease to be approximately three years.

Q What is the weight of the casing installed in that well to the bottom hole?

A Well, that is a combination, the 5-1/2 inch casing is a combination of 15-1/2 pounds and 17 pounds J-55 and N-80 casing.

Q When was that discovery made?

A That well was completed in January, 1954.

Q Do you have any information as to the newness or otherwise of the casing as originally installed in the well, was it new casing?

A Yes, sir, it was new casing.

MR. MONTGOMERY: I have nothing further of this witness, if the Examiner please.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Olson, referring to your ETA No. 1, did I understand you to say that the top of the 600 sacks of cement was about

8,000 feet?

A Yes, sir.

Q You had at least partially of the Abo section protected?

A Yes, sir, it's very close to the Abo section.

Q How about the Glorieta and Drinkard?

A Well, there would not be cement sheath opposite those zones.

Q Are there any Drinkard or Glorieta producing wells in this area? I mean by this area within three or four miles.

A I don't believe so, but our next witness can give you a more definite answer on that.

Q When did you say this well was completed?

A ETA 1 you mean?

Q Yes.

A ETA 1 was completed July, 1954.

Q This 5-1/2 inch string was J-55 and what weight?

A It's combination of 15-1/2 pound and, no, that's just all 15-1/2 pound in this well. It's a combination of J-55 and N-80.

Q That casing has been in there close to six years, hasn't it?

A That's correct.

Q Do you know of any corrosive problems in this area?

A Our experience with our surface equipment indicates that we have negligible corrosion without treatment. We have had, we

don't consider it a corrosive problem at all in that field.

Q You would have room enough to put a three inch string inside of this 5-1/2, wouldn't you, tubing string?

A I don't have the dimensions with me right now but I'm, to be sure we could put as large as three inch, two, possibly 2-1/2.

Q Do you think three inch tubing would handle 330 barrels a day?

A Yes.

Q Are you familiar with the salt water completions of Rice Engineering Company?

A In a general way.

Q In which they inject through tubing and use, as an extra precaution, sweet oil between the tubing and casing?

A Yes. We have not proposed to install the tubing in either case because of the limited life of the leases and the economics involved, the amount of water and the remaining life of the leases. We don't feel that we're justified in spending that much money.

Q This equipment would be retrievable?

A That's true.

MR. MONTGOMERY: What would you estimate the cost of installing a three inch tubing in each of these wells?

A That would be, I would estimate in the order of fifteen to twenty thousand dollars per well.

Q In regard to your EDA No. 2, I don't believe you gave the

top of the cement on that one.

A We have, you mean in the 5-1/2?

Q Yes, sir.

A The top of the cement is estimated there at 7400 feet.

Q So, again, you have the Drinkard and Glorieta open?

A Yes, sir.

Q And what was the weight of this casing again?

A This is combination 15-1/2 pound and 17 pound 5-1/2.

Q This well was completed in 1954 also?

A That's correct.

Q The casing is about the same age?

A That's correct.

Q You intend to inject into what formation, the Devonian?

A No, the Wolfcamp.

Q Is there any producing Wolfcamp wells within three or four miles of here?

A Yes, sir, there are.

Q What is the nearest well?

A The nearest well to the State ETA No. 1 well, there are offsets to the Northwest, to the North, to the Northeast and to the East. Utex Exploration has the Well No. 1 to the Northwest, Wilshire Oil has Well No. 46, I believe it is, to the North, and they also have a Well No. 4 to the Northeast, and Humble has a Well No. 5 to the East of this injection well.

Q What is the water-oil contact in the Wolfcamp Pool?

A I'm not in a position to answer that. The next witness can answer that.

MR. MONTGOMERY: What was that question?

Q The water-oil contact, if it has one. The next witness can answer whether you will be checking water below the water-oil contact if there is any?

A Yes, sir.

MR. UTZ: Any other questions of the witness?

BY MR. PAYNE:

Q How much would it cost, Mr. Olson, to take the cement up to 6,000 feet in both of these wells? That would be considerably cheaper than tubing, would it not?

A Yes, sir, it would be cheaper, but it certainly wouldn't be as effective. I don't off-hand know. It would be something in the order of two or three thousand dollars possibly, depending on what our conditions are.

MR. UTZ: It would be more effective than the way it is, wouldn't it?

A Well, that's true.

MR. UTZ: Any other questions? Mr. Irby.

BY MR. IRBY:

Q Mr. Olson, you stated that there is 140 barrels per day being produced that would go into the EDA No. 2, is that correct?

A That's correct.

Q That would go in by gravity injection?

A Yes.

Q What is the maximum anticipated amount that will be injected or disposed into this well?

A Possibly somewhere between two and three hundred barrels a day. We only have two wells and the 140 barrels a day at the present time comes from just one of the wells, so it remains to be seen how much water the second one will produce and that probably will be another 140 to 150 barrels a day.

MR. IRBY: That's all.

MR. UTZ: Any other questions?

MR. MONTGOMERY: Nothing further.

MR. UTZ: If not, the witness may be excused.

(Witness excused.)

W. M. ASHLEY

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

DIRECT EXAMINATION

BY MR. MONTGOMERY:

Q Will you state your name, please?

A W. M. Ashley.

Q Where do you live, Mr. Ashley?

A I live in Roswell, New Mexico.

Q What is your official position or connection with the Shell Oil Company, applicant in this case?

A My present position, I am a reservoir engineer in the division of Shell Company in Roswell.

Q Have you previously testified before the New Mexico Oil Conservation Commission or the Examiner?

A No, I have not.

Q Will you briefly state your educational background and your experience in this field?

A I graduated from Missouri School of Mines in 1954 with a Bachelor of Science Degree in petroleum engineering. I went to work for Shell immediately after graduation. One year I was on their extension training program and two years I was a field engineer and the past year I have been a reservoir engineer, the present position I have now.

Q Just what are your duties as a reservoir engineer?

A As a reservoir engineer we deal primarily with the prediction of reservoir performance and, carrying it a little bit further, we work with the economic evaluation of most of our projects.

MR. MONTGOMERY: Are the qualifications of the witness acceptable?

MR. UTZ: Yes, sir.

Q Have you made a study of the reservoir in the Shell ETA

State No. 1, the Townsend Field?

A Yes, sir, we have, a very extensive study.

Q Will you just explain that to the Examiner, please?

A We have studied this field just recently as a project for an engineering committee of all the operators at Townsend, but dealing primarily with the salt water disposal. We might say that structurally at Townsend there is not much structural relief here. All the surrounding wells are on about the same plane as this well is.

A moment ago you spoke of where the original oil-water contact is. There has been no oil-water contact established in the Townsend Field on to the Eidson Field, which some consider is more or less a connecting portion to the Townsend Field. The discovery well found this original oil and water contact at approximately 6700 feet subsea. Now, in this case we will be injecting the water at about 6300 feet subsea, so we're not injecting this water below an oil-water contact, but into the main oil column in the reservoir.

I think perhaps you may be wondering if we'll hurt this reservoir by putting water into it. All of the offset operators have waived this, well, they've given us permission to inject water in the wells. They don't think it will hurt their wells. If you are familiar with water drive recoveries in this type of reservoir, which incidently has been operated by a solution gas drive mechanism, if anything is to be gained the water drive is

a more efficient system than the solution gas drive. If anything is to be gained they will probably get a lot more oil rather than losing any of the oil.

Q How do you anticipate that this salt water will be dispelled over the area? How deep will it stand in the 5-1/2 inch casing?

A Well, as we have previously stated, this water will be gravity fed into this well. We have made calculations using some of the empirical equations by Darcy and some other people, which tell us that we can inject under gravity approximately 1,000 barrels a day in either of these wells, either the EDA 2 or ETA 1. Estimation of how high the fluid level will stand in the casing, I haven't calculated that exactly, but I would suspect we would have somewhere around 3,000 foot of fluid in the bottom of the hole, a working fluid level as we inject the water. In other words, the water will more or less cascade down the casing and work at a fluid level of perhaps 7,000 feet maybe. That was just an estimate.

Q There is already salt water in the bottom of the hole in this particular well?

A Well, in ETA 1 there is not, this well has been depleted as far as we are concerned, about a year ago in August or September we abandoned the well primarily because we had a gas lift equipment on it and we needed the equipment elsewhere, so as far as we are concerned the well reached its economic limit.

These wells now produced a considerable quantity of gas with very little oil throughout the whole reservoir. As a matter of fact, none of the wells on the ETA have top allowable oil production. I think there are only one or two throughout the whole field that have top allowable production.

Q The question was asked, I believe, a moment ago of Mr. Olson where the nearest production to this ETA No. 1 is in any of the other zones, the San Andres, Glorieta, Drinkard. Do you know?

A The nearest production, as I recall, is in the Lovington Field which is approximately, I would say, about ten miles to the South and East of the Townsend Field. They produce there out of the Paddock, I believe Pennsylvanian, the Abo and I think that's about all and the San Andres they produce. That is considerable distance away.

Most of the early wells in this field, the initial discovery well, the Wilshire, Townsend #1, I believe they drill stem tested all the prospect horizon. As I recall, from this, they got salt water out of the San Andres formation and the other producing horizons down to top of the Wolfcamp were so tight or the reservoir development was so poor that they didn't yield anything but a little bit of mud, so I would suspect that they are so tight there isn't any fluid in them at all now.

Q In your opinion, is there any possibility of commingling of this ~~produced salt water which you propose to dispose of~~

with any fresh water in the area?

A Not with the fresh water. There are two basic fresh water -- you can call them such -- horizons in this area. There's one in about the 100 to 200 foot interval which is fresh, I'm sure. That is the Ogalla formation, and then the Santa Rosa, approximately 1100 feet. I am not sure how fresh that water is, but we have two strings of casing cemented to surface covering these up and then we have the long production string all the way to the DV casing up to 11,000 feet.

In my mind, there is no danger of contaminating the fresh water with the salt water. As far as the oil horizons are concerned, charging them with water, I think we can dispel that thought because, see, we are injecting this water under gravity. In other words, the pressure outside the casing is greater than the pressure inside the casing. If there were a hole in the casing, the fluids outside would have a tendency to go into the casing and on down to the disposal zone rather than from the casing out into the horizon, so I think we have no problem there whatsoever.

MR. UTZ: Is there pressure in the Glorieta and Drinkard?

A If it is as tight as indicated by drill stem test, the pressures that were measured there were very low. There will be more pressure than in the well bore, but if there is any movement of fluid it should be into the casing from those formations.

Q Do you anticipate that the casing, the water standing

in the casing will reach those horizons?

A Well, we have no way of knowing exactly until we inject the water. It is probable that it will, but I can't say with any degree of accuracy whether it will or not. Once you start injecting water in this thing, you can't tell how it will go. We can only estimate how much water we can put in under gravity, and sometimes our calculations aren't always what we predict, but in this case I am quite sure that we can handle the 300, 320 barrels a day under gravity.

Q The testimony you have given here is based on your experience and other people in the company and their experience and training and knowledge of reservoirs of this sort?

A Yes, sir.

Q Turning to your EDA State No. 2 for a moment, will you explain the Eidson Field there similar to your explanation in the EIA No. 1?

A This is slightly different than the Townsend Field. The Eidson Field is a small domal closure off to the West of the Townsend Field. This accumulation is located structurally quite lower than the Townsend Field itself is and the oil-water contact is in close conjunction, sort of surrounds the structure. Our well, as Mr. Olson stated, it did go to 100 percent water and now we propose to inject water back into the well. We will be putting the water in this well below the original oil-water contact. I doubt

if in this well it will have any effect on any of them. It is sort of like putting a drop in the ocean in this case. It is similar except we are putting the water below the oil-water contact in this case.

Q With respect to that well, do you know where the closest or nearest production from the Drinkard, Abo or Glorieta sand is?

A It will still be in the Lovington Field, approximately ten, twelve miles to the East.

Q You feel, with respect to this well, the same as you expressed a moment ago, that there would be no likelihood or little likelihood of any contamination or commingling of this produced salt water with the fresh water in the area?

A I think the chances are very small, if any, that we would ever contaminate the fresh water in this area.

MR. MONTGOMERY: I believe that's all.

A I have one thing else I would like to say here, if I may.

Q Go ahead.

A You mentioned to Mr. Olson, you mentioned the possibility of running three inch tubing and how much it would cost. I deal primarily with the evaluation of our projects and, as you know, money is quite tight in the oil industry these days. Most people in their evaluation work determine the present value of the money. We look into the future some five or six or twenty years and determine what that income then will be worth to us then.

We do the same with expenditures. In this case, if we had to spend $20,000 immediately, even though that this tubing would have some salvage value five years from now, we would consider that as lost income. The money we get after five years in this present value system is almost worthless. Anything in excess of five years that you get income from is not worth much to you now. It would be the same way with the expenditure. If we had to spend $20,000 in five years, even if we did get the salvage value, it would be quite worthless to us on the present basis.

CROSS EXAMINATION

BY MR. UTZ:

Q We understand that, Mr. Ashley, but on the other hand, if there's a possibility of your ruining fifteen or twenty thousand dollars worth of reservoir here, then it's money poorly spent.

A It surely is and we don't want to ruin the reservoir, I'm sure of that.

Q There are no shows or any wells closer than Lovington in Glorieta or Drinkard?

A I would say there are no significant shows and there is no production that I have knowledge of except over in the Lovington area.

Q Have you had considerable experience with this salt water injection and salt water treating?

A I have done quite a bit of calculations with salt water

injection. I haven't had any with the treating of these facilities. We work quite a bit with this water and calculating how much it will take and what rates we will inject in our water flood, but I haven't done much with the treating facility.

Q In your experience, do you know that treating of salt water prior to injection has been completely successful so far as Shell is concerned?

A I cannot say. Perhaps Mr. Olson could shed some light on that.

MR. UTZ: Do you have that information regarding that, Mr. Olson?

MR. OLSON: Well, I haven't had any experience with where we have actually treated a salt water well in this particular manner. We have treated water and found that our surface equipment has held up all right under those conditions, and we've kept our treatment up to the proper level.

MR. UTZ: Do you feel with the use of coupons you can definitely determine that the casing can be protected, Mr. Olson?

MR. OLSON: Yes, sir. And further, if we find that our coupons do not indicate that we're getting satisfactory treatment or satisfactory protection, we would propose to caliper our casing periodically and check the condition of the casing to be sure that we are not corroding the casing when our coupon checked to show whether or not it agrees with our coupon checks.

MR. MONTGOMERY: Describe what you mean by "checking the casing."

MR. OLSON: We will run a regular caliper survey, which is an instrument to detect pits or holes in the casing or anything affecting the casing due to internal corrosion. This is a standard tool being used in the oil fields right now.

MR. MONTGOMERY: Any pit or hole in the casing above the standing water level would not let water escape from the casing, would it?

MR. OLSON: Well, as long as there's no pressure on it, there's no real chance; but we would, if we detected a hole in the casing, we would certainly not continue to inject without taking remedial measures to correct it. Our aim is to inhibit the water to prevent the occurrence of such things.

MR. UTZ: Other than your caliper surveys on these wells you have no way to check whether or not you are losing salt water through the casing, Mr. Olson?

MR. OLSON: Well, the caliper surveys would only fail in that respect if it did not pick up the hole where you would be losing the salt water through the casing.

Q (By Mr. Utz) Then you actually have no check to determine whether or not you are losing salt water through the casing?

A Well, there is a check that could be made. We use it in the water floods quite consistently. That is to use the radioactive

tracers and then run a gamma ray log to locate where the water is going. If you suspect you have a leak you can trace it in that manner.

MR. UTZ: I think we will have to admit that the principle of using tubing with sweet oil annulus has that very definite advantage, in that you know when you are losing water.

MR. OLSON: That's correct.

MR. UTZ: Are there other questions?

BY MR. PAYNE:

Q Are any of the Townsend Wolfcamp wells, Mr. Ashley, near to the proposed injection wells, producing top unit allowable?

A No, they aren't.

Q So that if, as you suggest, the water injection would actually benefit the wells, there would be slight chance of any bypassing, in other words, the producing well has some tolerance insofar as allowable is concerned, it could go ahead and produce the oil?

A Oh, yes, that's quite right. As a matter of fact, I have looked at them and all the offset wells, I think that they are all down to about 200 barrels, between 200 and 300 barrels a month. The top allowable is something around 4,000, I suspect, out there now. I don't recall quite what it is, but they are almost at the point where they're going to have to be abandoned.

Q And in view of the fact that these two wells would only be used a maximum of three years, and the casing is only some six years old, you feel that the likelihood of any casing leak is relatively small?

A Well, with the experience I have had, of course I am not the expert George is, I would question that without any treatment you probably wouldn't have enough corrosion in this case to get a hole in your pipe.

MR. PAYNE: Thank you.

BY MR. UTZ:

Q How about the Wolfcamp oil, is it sweet or corrosive?

A As far as I know it's relatively sweet. I can't say if it's real corrosive or not. We haven't experienced much corrosiveness in our surface equipment.

MR. OLSON: We checked the hydrosulfide and the gas out in the field recently, and it's not even measurable, I don't believe. It's less than five parts, I believe.

MR. UTZ: So you feel that the casing is still in pretty good shape?

MR. OLSON: Yes, sir.

MR. UTZ: Any other questions? Mr. Irby.

BY MR. IRBY:

Q Mr. Ashley, you estimate the life of this production at approximately three years, and you referred to the three years

again in reply to questions by Mr. Payne. Is it the intent of Shell to abandon these wells as salt water disposal wells at the end of the life of this production?

A We have just completed, like I say, this extensive study of the Townsend Field. The report hasn't come out yet. We have investigated the field for secondary recovery prospects and now the field is almost 90 percent depleted by primary methods and the field has gone for so long without any pressure maintenance project being started that at the present time it looks like we can not economically start a secondary recovery project out there. So, in all events, or for all practical purposes, the field will probably be abandoned in another three to possibly five years.

Q Is there likelihood that these two injection wells might be used to dispose of salt water from other areas or horizons?

A There are no other producing horizons in this area except the Wolfcamp horizon. It's probably speculative that we might dispose of some water from the other operators' leases in these wells, it may be the case at Townsend; I doubt it very much because 80 to 90 percent of the water from the Townsend Field, some hundred wells, there are produced from four four wells on the flank of the field, so we have most of the water in the field there. Over in the Eidson Field there are two wells producing just water there. That's our well and then the Humble Townsend 4 immediately East of it.

Q Do you anticipate that there might be, at a later date, salt water to dispose in other areas nearby or at reasonable distances which might want to go through these injection wells?

A No, I think not. The nearest production from here is, as I believe, the Kenmitz Wolfcamp Field three miles to the West, which now we are currently working on a gas injection secondary recovery project for the Kenmitz Field and we have seen no water production in this field yet. It's more or less like the Townsend. First of all, we couldn't afford to run the lines probably from Kenmitz to the Townsend Field to inject the water. If we are going to put away salt water we probably would do it in the Kenmitz Field, it is quite expensive to run a large line for several miles.

MR. IRBY: Thank you.

MR. UTZ: Any other questions?

MR. MONTGOMERY: We offer in evidence the Exhibits 1 to 5 inclusive in connection with each of these wells and also the respective radioactivity log and the Schlumberger electric logs which were filed and made a part of our application here.

MR. UTZ: The exhibits, as stated, will be made a part of the record. The witness may be excused.

(Witness excused.)

MR. UTZ: Any other statements to be made in this case? The case will be taken under advisement and we will recess until one-fifteen.

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 8th day of June, 1960.

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. 1976, heard by me on June 1, 1960.

New Mexico Oil Conservation Commission

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

June 10, 1960

COPY

Mr. A. K. Montgomery
Seth & Montgomery
Box 828
Santa Fe, New Mexico

Dear Sir:

On behalf of your client we enclose two copies of Order R-1691 in Case 1978, issued by the Oil Conservation Commission this date.

Very truly yours,

A. L. Porter, Jr.
Secretary-Director

ir/

Carbon copy of Order R-1691 sent to:

Oil Conservation Commission
Hobbs, New Mexico

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 1978
Order No. R-1691

APPLICATION OF SHELL OIL COMPANY
FOR TWO SALT WATER DISPOSAL WELLS
IN TOWNSHIP 16 SOUTH, RANGE 35 EAST,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on June 1, 1960, at Santa Fe, New Mexico, before Elvis A. Utz, 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 10th day of June, 1960, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Elvis A. Utz, 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 seeks an order authorizing the disposal of produced salt water into the Wolfcamp formation through its State ETA Well No. 1, located in the NE/4 NE/4 of Section 8, Township 16 South, Range 35 East, NMPM, Lea County, New Mexico, with the proposed injection interval from 10,365 feet to 10,463 feet.

(3) That the applicant further seeks an order authorizing the disposal of produced salt water into the Wolfcamp formation through its State EDA Well No. 2, located in the SW/4 SW/4 of Section 7, Township 16 South, Range 35 East, NMPM, Lea County, New Mexico, with the proposed injection interval from 10,712 feet to 10,752 feet.

(4) That inasmuch as injection is to be by gravity flow, the applicant proposes to inject the produced salt water through the casing, utilizing a corrosion inhibitor as a safety feature.

(5) That the applicant's proposed salt water disposal

program will not jeopardize the production of oil, gas, or fresh water in the area, provided that the casing in each of the subject disposal wells is tested with 2000 pounds pressure for a minimum of 30 minutes prior to disposing of any produced salt water in either well and annually thereafter on the anniversary date of the injection program, or as an alternative to inject the produced salt water through tubing with a packer set immediately above the injection interval.

IT IS THEREFORE ORDERED:

(1) That the applicant be and the same is hereby authorized to dispose of produced salt water into the Wolfcamp formation through its State ETA Well No. 1, located in the NE/4 NE/4 of Section 8, Township 16 South, Range 35 East, NMPM, Lea County, New Mexico with the injection interval from 10,365 feet to 10,463 feet.

(2) That the applicant be and the same is hereby authorized to dispose of produced salt water into the Wolfcamp formation through its State EDA Well No. 2, located in the SW/4 SW/4 of Section 7, Township 16 South, Range 35 East, NMPM, Lea County, New Mexico with the injection interval from 10,712 feet to 10,752 feet.

PROVIDED HOWEVER, That the applicant shall test the casing in each of the above-described wells with 2000 pounds pressure for a minimum of 30 minutes prior to utilizing said wells for the disposal of produced salt water, and shall pressure-test the casing in each of said wells each year thereafter on the anniversary date of the initiation of the injection program, or as an alternative the applicant shall inject water into the above-described wells through tubing with a packer set immediately above the injection interval.

(3) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1119 of the Commission Rules and Regulations.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JOHN BURROUGHS, Chairman

MURRAY E. MORGAN, Member

A. L. PORTER, Jr., Member & Secretary

esr/

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date 6-3-60

CASE 1928 Hearing Date 6-1-60

My recommendations for an order in the above numbered cases are as follows:

1. Grant Shell the salt water disposal wells requested.
   (a) ~~Shell~~ State EDA #2, SW SW 7-16S-35E, an abandoned well in the Eidson-Penn. ~~pool~~. to dispose of salt water from ~~Shells~~ State EDA lease consisting of W/2 of Sec. 7.-16S-35E.
   (b) Shell- State ETA #1 NE NE Sec. 8-16S-35E. an abandonded well in the Townsend-Wolfcamp Pool to dispose of salt water from Shell's State ~~lease~~ ETA lease consisting of all of sections 8.
2. Operator shall test the casing in these wells with 2000 pressure for a minimum 30 minutes before disposing of any salt water and once each year thereafter. or as an alternative inject water thru tubing with a packer set immediately above the injection zone.

Elvis A. Utz

J. O. SETH
A. K. MONTGOMERY
OLIVER SETH
WM. FEDERICI
FRANK ANDREWS
FRED C. HANNAHS

SETH, MONTGOMERY, FEDERICI & ANDREWS
ATTORNEYS AND COUNSELORS AT LAW
301 DON GASPAR AVENUE
SANTA FE, NEW MEXICO

POST OFFICE BOX 828
TELEPHONE YU 3-7315

May 3, 1960

New Mexico Oil Conservation Commission
State Capitol
Santa Fe, New Mexico

Attention: Mr. A. L. Porter, Jr.

Re: Application by Shell Oil Company for Permission to Dispose of Produced Salt Water from the Townsend and Eidson Fields into the Wolfcamp Formation

Gentlemen:

Shell Oil Company hereby applies for permits, as required by Rule 701 of your Rules and Regulations, and requests that the matter be scheduled for Examiner's Hearing thereon at Santa Fe as soon as practicable.

Shell Oil Company, as applicant, requests permission to dispose of produced salt water from the Townsend Field into its State ETA No. 1 well located in Unit "A", Section 8, T-16-S, R-35-E, in the Wolfcamp Formation in the intervals 10,365 to 10,380, 10,398 to 10,430, and 10,444 to 10,463.

Applicant also requests permission to dispose of produced salt water from the Eidson Field into its State EDA No. 2 well located in the SW¼ SW¼ of Section 7, T-16-S, R-35-E, in the Wolfcamp Formation in the interval 10,712 to 10,734.

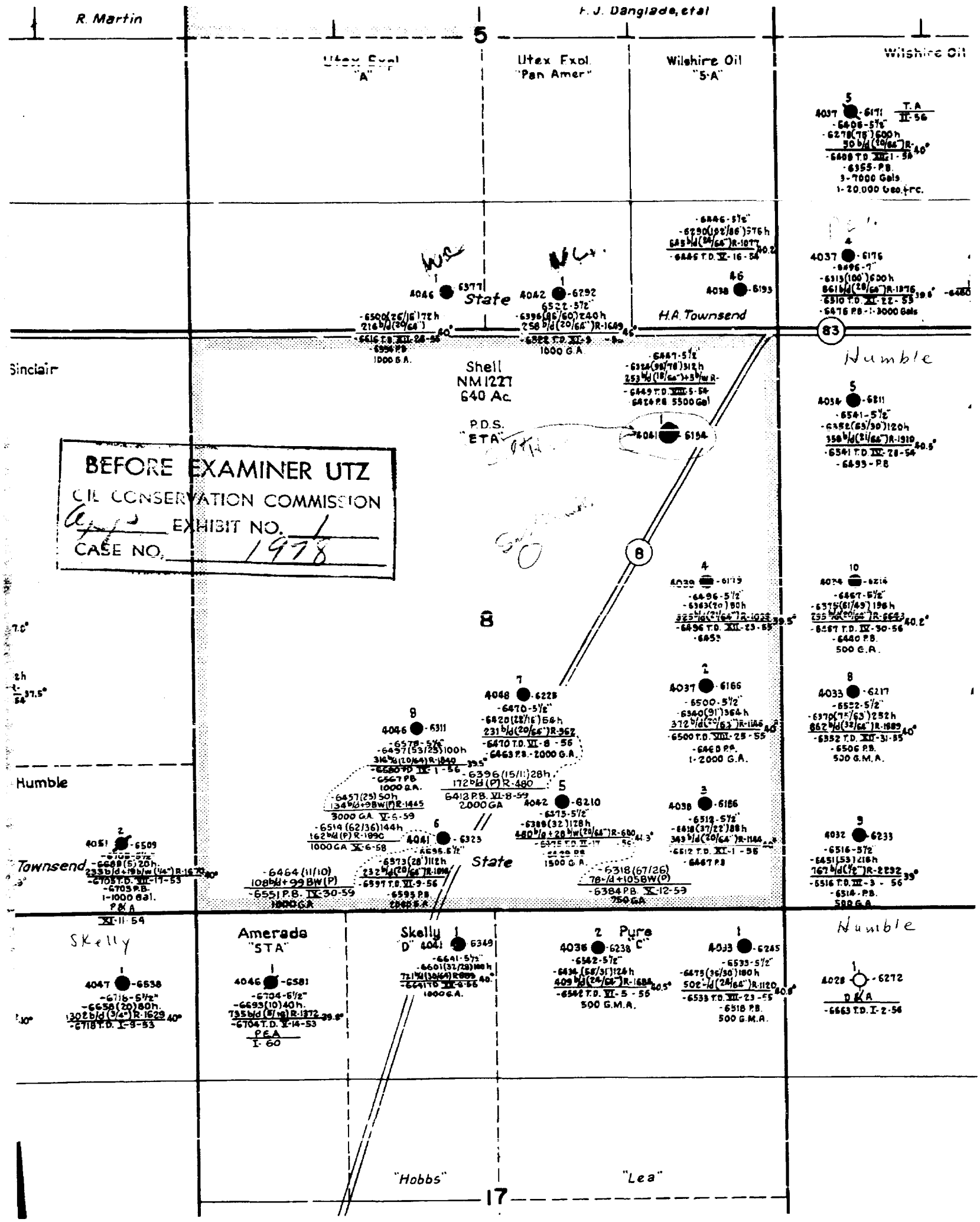
Attached herewith are plats of the respective areas and radio activity logs and Schlumberger electrical logs covering the respective areas, which you will please consider a part of this application.

I am not certain whether it is necessary that separate file numbers be given with respect to each well, but if this is the case, please do so, and for that purpose, I enclose this letter application in duplicate. If anything further is necessary at this time, please advise.

SHELL OIL COMPANY

By: A. K. Montgomery
One of Its Attorneys
Santa Fe, New Mexico

AKM:lb
Enclosures


R. Martin
F. J. Danglade, etal
5
Utex Expl "A"
Utex Expl "Pan Amer"
Wilshire Oil "5-A"
Wilshire Oil
Sinclair
Shell NM1227 640 Ac.
P.D.S. "ETA"
State
H.A. Townsend
Humble
Townsend
Skelly
Amerada "STA"
Skelly "D"
Pure "C"
Humble
8
17
"Hobbs"
"Lea"
BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 1
CASE NO. 1978

K Martin

17

18

R-35-E

B. Lusk

Forrest C. York et al

York

Shell
NM-1231
(634.79 Ac.)
320 Ac.
P.D.S.
"EDA"

Sinclair

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 1
CASE NO. 1978

Eda well

Hill Bank, et al

12

T 16 S

Humble
4068 -6574
-6975 TD
XII-55 | DKA

Cities Service
8-29-59

Humble

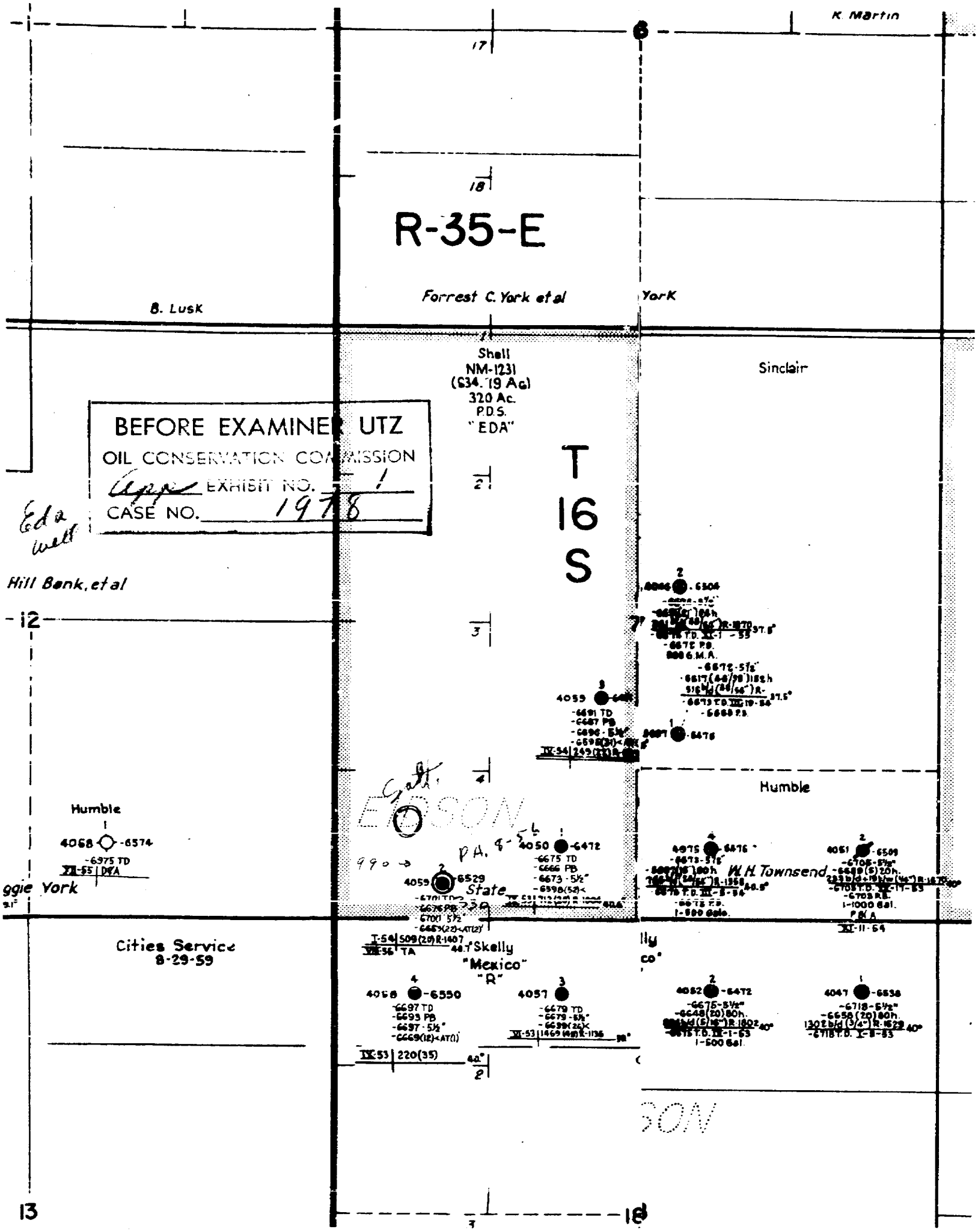
Skelly
"Mexico"
"R"

Humble

W. H. Townsend

13

18


K. Martin
17
18
R-35-E
B. Lusk
Forrest C. York et al
York K
Shell
NM-1231
(634.19 Ac)
320 Ac.
P.D.S.
"EDA"
Sinclair
BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 1
CASE NO. 1978
Eda well
T
16
S
Hill Bank, et al
12
3
4
Humble
4068 -6574
-6975 TD
XI-55 D&A
ggie York
Cities Service
8-29-59
4059 -6491 TD -6487 PB -6496 - 5½" -6598(31)< IX-54 249(33)
4050 -6472
-6675 TD
-6666 PB
-6673 - 5½"
-6598(52)<
4059 6529
-6701 TD
-6676 PB
-6701 5½"
-6665(23)<AT(2)
T-54 509(29) R-1407
VIII-56 TA
Skelly
"Mexico"
"R"
4058 -6550
-6697 TD
-6693 PB
-6697 - 5½"
-6669(12)<AT(1)
4057
-6679 TD
-6679 - 5½"
-6639(24)<
VI-53 1469 (48) R-1136
IX-53 220(35)
2
Humble
4975 -6476
-6673 - 5½"
-6678 T.D.
-6673 P.B.
1-500 Gals.
W. H. Townsend
4051 -6509
-6705 - 5½"
-6689(5) 20h.
-6705 T.D.
-6705 P.B.
1-1000 Gal.
P&A
XI-11-54
4052 -6472
-6675 - 5½"
-6648(20) 80h.
-6675 T.D.
1-500 Gal.
4047 -6538
-6718 - 5½"
-6658(20) 80h.
-6718 T.D.
EDSON
990
P.A. 8-5-4
13
18

SHELL STATE ETA # 1
Townsend Field
990' FNL & 990' FEL, Section 8, T-16-S, R-35-E
Lea County, N.M.

Elevation 4041' (DF)

13 3/8", 48# H-40
347' 400 sx.
Circulated cement

8 5/8", 32# H-40
4653' 2850 sx.
Circulated cement

4480'
-539 San Andres

6152'
-2111 Glorieta

7291'
-3250 Drinkard

8036'
-3995 Abo

9518'
-5477 Wolfcamp

Disposal Zones
10,365-10,380'
10,398-10,430'
10,444-10,463'

5 1/2", 15.5# J-55 & N-80
10,488' 600 sx.
Estimated top of cement 8,000'

TD 10,490' DOD 10,465

SHELL STATE EDA # 2
Eidson Field
330' FSL & 947' FWL, Section 7, T-16-S, R-35-E
Lea County, N.M.

Elevation 4059' (DF)

13 3/8" 48 & 36# H-40
332' 350 sx.
Circulated cement

8 5/8" 32# J-55
4674' 3150 sx.
Circulated cement

6176'
-2117 Glorieta

7350'
-3291 Drinkard

8127'
-4068 Abo

8792'
-5733 Wolfcamp

Baker Model K retainer @ 10,740
5 1/2" 15.5 & 17# J-55 & N-80
10,759' 700 sx.
Estimated top of cement 7,400'

Perforations
10,712-10,734'
10,750-10,752'

TD 10,760' DOD 10,758

W A I V E R

New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Gentlemen:

We have been notified of Shell Oil Company's application to dispose of produced salt water from the Eidson Field into their State EDA # 2 well and hereby waive objection to this application.

HUMBLE OIL & REFINING COMPANY
Company

By: H Potenski

Date: May 19, 1960

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 3
CASE NO. 1978

W A I V E R

New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Gentlemen:

We have been notified of Shell Oil Company's application to dispose of produced salt water from the Eidson Field into their State EDA # 2 well and hereby waive objection to this application.

Skelly Oil Company
Company

By: J. M. Dunlavey
J. M. Dunlavey

Date: May 17, 1960

BEFORE [illegible] LITZ
Case No. 1978

SINCLAIR OIL & GAS COMPANY
P.O. BOX 1470 MIDLAND, TEXAS MUtual 3-2781

R. L. ELSTON
VICE PRES. & DIVISION MANAGER

O. G. SIMPSON
ASSISTANT DIVISION MANAGER

C. S. TINKLER
DIVISION EXPLORATION SUPT.

J. MEFFORD
DIVISION PRODUCTION SUPT.

F. C. ROGERS
DIVISION GAS & GAS PRODUCTS SUPT.

May 23, 1960

New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Attention: Mr. A. L. Porter, Jr.

Gentlemen:

We have been advised that Shell Oil Company has made application for permission to dispose of salt water by injection into the Wolfcamp formation from 10,712 to 10,734' through their State EDA Well #2, Eidson Field, Lea County, New Mexico. We understand that the proposed injection well is located 330' from the South line and 947' from the West line of Section 7, T-16-S, R-35-E. We also understand that Shell plans to initially dispose of approximately 150 barrels of water per day.

Sinclair Oil & Gas Company as an offset operator has no objection to the granting of the above described salt water disposal application.

Yours very truly,

O. G. Simpson

OGS:BMAsmk

Orig. & 1 cc: Shell Oil Company
P. O. Box 845
Roswell, New Mexico

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
Application No. 5
May 1960

SHELL
RECEIVED
MAY 25 1960
ROSWELL PROD.

Divn. Mgr.	
~~Supt.~~	
E. Eng.	
~~M. Eng.~~	
P-S Supv.	
Drlg. F.	
Off. Supv.	
Discuss	Well File
Reply	Lse. File
Call Up	Field File
Destroy	Gen. Cor.

W A I V E R

New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Gentlemen:

We have been notified of Shell Oil Company's application to dispose of produced salt water from the Townsend Field into their State ETA # 1 well and hereby waive objection to this application.

UTEX EXPLORATION COMPANY
Company

By: Julian C. Ashby

Date: May 23, 1960

W A I V E R

New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Gentlemen:

We have been notified of Shell Oil Company's application to dispose of produced salt water from the Townsend Field into their State ETA # 1 well and hereby waive objection to this application.

HUMBLE OIL & REFINING COMPANY
Company

By: H R Stensland

Date: May 19, 1960

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 5
CASE NO. 1978

SHELL
RECEIVED
MAY 23 1960
ROSWELL PROD

Divn. Mgr.	1
Supt.	2
E. Eng.	
M. Eng.	3
P-S Supv.	
Drlg. F.	
Off. Supv.	
Discuss	Well File
Reply	Lse. File
Call Up	Field File
Destroy	Gen. Cor.