

AARON F. GIEBEL

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q State your name, please.

A Aaron F. Giebel.

Q By whom are you employed, Mr. Giebel, or are you in business for yourself?

A We're in business for ourselves as consultants, but we are employed by Sam Boren for this particular hearing.

Q What connection have you had with the well involved in this particular hearing, Mr. Giebel?

A We have been responsible for the drilling and completion of this well.

Q Have you ever testified before the Oil Conservation Commission?

A No.

Q Would you, for the benefit of the Examiner, outline your education and experience as a petroleum engineer?

A I was graduated in 1950 from Texas A. and M., B. S. in petroleum engineering, and employed for approximately four years by Amerada Petroleum Corporation. Thence to employment by

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Stewart and Sherman Hunt of Dallas for two years, and then into the partnership of Major and Giebel as petroleum consultants from that time up until the present.

Q Where are you located?

A We're located in Midland, Texas.

Q In connection with your work in Midland, do you handle consulting engineering work in the Permian Basin in New Mexico?

A Yes.

MR. KELLAHIN: If the Commission please, the application, I believe, was filed in the form of a letter and here is the application on the forms used by the Commission for a dual completion. I think the case has been advertised on the basis of a letter and we just submit that for the Commission's file.

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

Q Now, referring to what has been marked as Exhibit No. 1, Mr. Giebel, would you identify that exhibit and discuss briefly the information shown thereon?

A Yes, this exhibit shows the well and acreage, and the applicant is desirous of dually completing this well located 1980 from the North line and 660 from the East line of Section 23, Township 9 South, Range 33 East, Lea County, New Mexico, in such a manner as to produce the oil from the Bough "C" pay of the

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Pennsylvanian formation, and to dispose of the produced salt water through the intermediate casing annulus into the open-hole interval from 4184 to approximately 5700 feet.

This plat shows, in effect, the well itself as well as all the other dry holes that have been drilled previously, and shows the closest production, Lane Field to the south being from the Bough "C" as well as from the Wolfcamp formation; and then the closest San Andres production approximately four miles to the northeast, the CLR Field.

Q You mentioned another formation in connection with the salt water disposal area. That was the San Andres and the Jeso, wasn't it?

A That's correct.

Q Is there any Jeso production in this area?

A There is none.

Q Now, the exhibit shows a well located to the south as a dry hole, is that correct?

A It shows a well that was drilled by Monterey is located some 3350 feet to the southwest of the subject well.

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

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



shown on it?

A Exhibit No. 2 shows, is a certified plat of the Boren well, Robinson No. 1, and shows its proximity to the Ainsworth drilled by Monterey as previously cited. The location known as the Ainsworth Boren No. 1 Well is an abandoned location and should not be considered.

Q That well was not drilled?

A No, it was not.

Q Why can't Boren utilize this abandoned well for salt water disposal rather than making the dual completion proposed here?

A That well was plugged and abandoned in keeping with Oil Conservation Commission rules, and in the process of the abandonment the operators attempted to pull the intermediate casing by shooting this with nitro in two different places. We feel that it would be impossible to go into the well and would not justify the cost to set this well up as a water injection well. The casing was finally pulled at 1100 feet.

Q It was shot twice then?

A It was shot twice.

Q Would you consider it a safe engineering procedure, from the point of view of protecting producing horizons or fresh water zones, to utilize that well under those circumstances?

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A I would not. Actually, I have more concern over getting into the well and setting it up as an injection well than I would whether it could be properly utilized as a disposal well, however. The cost could run anywhere from twenty to thirty thousand dollars just to get back into this well and recomplete it. It has been properly plugged, there are some six different plugs in that particular well, and it was witnessed by the Oil Conservation Commission.

Q Do you have a log of the subject well, the Robinson No. 1?

A Yes.

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

Q What information have you marked on that log?

A We have marked all the tops of various formations and have shown also the calculated tops of the cement behind the various strings.

MR. KELLAHIN: The tops have only been marked on the one you have, Mr. Nutter. Here's another one.

Q You say that also shows the calculated tops of the cement?

A That's correct. We did not run any temperature surveys.

Q Do you have an exhibit showing the casing program and



cementing used in this well?

A Yes, we do.

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

Q I refer you to what has been marked as Exhibit No. 4 and ask you what that is designed to show.

A That's designed to show the tops of the formations, the casing strings, where they were set and cemented, and the weights of these various casing strings.

Q What is the condition of that casing, Mr. Giebel?

A All material used in this well was brand new.

Q No used casing involved here?

A No.

Q This shows also the volumes of cement that were used in each string?

A That's correct.

(Whereupon, Applicant's Exhibit No. 5 was marked for identification.)

Q Now, referring to what has been marked as Exhibit No. 5, would you discuss the information shown on that exhibit, please?

A This is a diagrammatic sketch of the well where the casing was set and cemented, and the annulus. It also shows in color what we propose to do and the manner in which we propose to

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produce the well. The red shows production from the Bough "C" pay from perforations from 9644 to 51, being produced by KOBE pump out the casing. The blue, or the blue arrow shows the injection of the water produced with the oil down the annulus. You will note that the intermediate string being 7-5/8" casing was set down in the San Andres at 4184, the San Andres was at 3908. The top of the cement is back into the surface casing. There's approximately 1600 feet of annulus in the San Andres and Jeso, between the top of the cement and the bottom of the intermediate casing. This is where we propose to inject and dispose of the water.

Q Does your log indicate any porous zones in there that you believe would take the water in the volume you are proposing to put in here?

A In both the San Andres, and especially the Yeso formation.

Q Was the San Andres and Yeso tested in this particular well?

A It was not drill-stem tested, but the reason it was not is because there were no shows in either the San Andres or the Jeso. I might point out at this time that in the Monterey Ainsworth to the southeast, there were no shows in the San Andres, and therefore no drill-stem tests were conducted in it, but in the



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Jeso a drill-stem test was conducted in that formation and recoveries were approximately a thousand feet of water, so it was construed as non-productive.

Q Getting back to the casing and cementing program, in the surface string, was the cement circulated?

A It was.

Q What is the situation, then, as to the production string in the Bough "C" zone?

A Casing was set through the Bough "C" and shown at 9784 and cemented with 800 sacks of cement. A temperature survey was not conducted, but a calculated fill was estimated. We contacted Haliburton Engineers and they run research on wells in which so many sacks of cement had been utilized in cementing other production strings in the area and on which temperature surveys had been conducted. We have proper confirmation through letter from the Haliburton Engineers, and the calculation of the top of the cement was made from this information.

Q What percentage of fill did you use in your calculation?

A 62%.

Q Are there any fresh water zones in this area?

A There are fresh water zones in the area immediately below caliche.

Q At what depth, approximately, is that fresh water



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found?

A I would say approximately 60 feet.

Q Is the completion of this well adequate in your opinion to protect that zone from any possible contamination?

A It is.

Q Is the casing and cementing of the well such that it will protect any other possible producing horizons?

A Yes.

Q Or any fresh water zones that might exist below the one you mentioned?

A Yes, that's right. The surface casing, the 10-3/4" was set into the red bed.

Q Is there any irrigation carried on in this area?

A To my knowledge, I don't think that there is.

Q Just stock water?

A Stock water from windmills.

Q Is any of that close to this well?

A Yes, it is.

Q Do you think it is adequately protected by this completion?

A I do.

Q What are you doing with the water at the present time?

A We're disposing of it in an earthen pit adjacent to the



well.

Q What volume of water will you anticipate disposing down the well bore?

A Some 350 to 375 barrels of water daily.

(Whereupon, Applicant's Exhibit No. 6 was marked for identification.)

Q Referring to what has been marked as Exhibit No. 6, what does that indicate as to the characteristics and nature of this water?

A We had this water tested by Dowell Chemical Company and their conclusion was that it is slightly corrosive. They say that the water can be treated and they have given their proposal here in writing, the correspondence you have there, whereby it's their thought to treat the water by injecting the chemical down it, poweroil supply into the KOBE pump and then from the KOBE, pump the water and oil being produced from the formation to the surface to be treated. They feel that would take care of any corrosive properties of the water.

Q Will periodic tests be run to determine whether corrosion is being experienced?

A Yes.

Q Would you use coupons in the annulus space to which the water is being injected?

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A We would use coupons just upstream from where the water was being injected. I would like to say at this time, too, that the system will be a closed system; at the time the water and oil is separated at the surface the water will be in a closed system and injected down the casing.

Q What is the economic situation as to production from this well?

A Well, it's presently producing 30 barrels of oil and 350 barrels of water daily. It is our thought that the economic limit of this well will be reached in less than three years at the present producing rate.

Q Would this installation be adequate to protect for that period of time?

A Yes. We feel very strongly that in view of the fact that we will be treating the water, in view of the fact that the material used in the well, namely the producing string and casing was new, and in view of the short economic life of the well, we do not feel that we will have any trouble with corrosion in the well.

Q Has there been any experience in this area from this particular zone where oil production has increased and water has declined as the productive life of the well continues?

A Very definitely, in the Lane Field to the south, which



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is shown in our Exhibit No. 1, many of these wells were completed initially as making almost a hundred percent water, and in a matter of six months to nine months the oil production increased, and most of the wells now are only making 20 to 30% water that initially came in making almost 100% water.

Q Is there any other practical means of disposing of this water to your knowledge?

A To our knowledge, no.

Q Do you think it is safe practice to continue disposing of it in pits?

A Definitely not. Right now the pits are handling the water, but we feel that it's expedient that we get a more feasible way of actually disposing of the water.

Q Has this type of salt water disposal dual completion been approved by the Commission in other areas?

A Yes, it has. In the matter of Case No. 2269, May 4th, 1961, there was a similar case that was approved.

Q In your opinion, as an engineer, is the approval of this application in the interest of conservation and the greater ultimate recovery of oil from the reservoir?

A Very definitely.

Q Were Exhibits 1 through 6 prepared by you or under your supervision?



A Yes.

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

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

(Whereupon, Applicant's Exhibits Nos. 1 through 6 were offered and admitted in evidence.)

MR. KELLAHIN: That's all the questions I have on direct examination.

MR. NUTTER: Are there any questions? Mr. Irby.

CROSS EXAMINATION

BY MR. IRBY:

Q Mr. Giebel, have you given me, you and your attorney both given me assurance that a copy of your application to the Commission and a copy of each of the exhibits entered in this case will be furnished the State Engineer?

A Yes, sir.

MR. IRBY: Mr. Examiner, may I see the letter that I dictated on this matter? I didn't bring a copy with me. In view of the information submitted in this hearing on this matter, the State Engineer withdraws his objection to the granting of this application.

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MR. NUTTER: This is the letter of April 1st, 1963?

MR. IRBY: That is correct.

MR. KELLAHIN: We apologize to the State Engineer for not furnishing him with copies of this in advance. It was inadvertent.

BY MR. NUTTER:

Q You stated, Mr. Giebel, that you had the calculation by Haliburton of the fill-up. What did they do? They used a calculated fill-ups versus actual fill-ups as determined by temperature survey for wells in this area with similar formation?

A Yes, sir, in the Lane Field.

Q Would you furnish the Commission with a copy of the correspondence that you received from Haliburton regarding this fill-up, please?

A Yes, sir, I have it with me.

MR. NUTTER: We would appreciate that being offered as one additional exhibit, Mr. Kellahin.

MR. KELLAHIN: Can we furnish you with a copy?

MR. NUTTER: A copy will be satisfactory.

MR. KELLAHIN: Referring to Exhibit marked No. 7, is that the letter you referred to from Haliburton?

A That is correct.

(Whereupon, Applicant's Exhibit No. 7 was marked for identification.)



MR. KELLAHIN: We offer Exhibit No. 7 in evidence.

MR. NUTTER: Exhibit No. 7 will be admitted in evidence.

(Whereupon, Applicant's Exhibit No. 7 was offered and admitted in evidence.)

Q (By Mr. Nutter) Mr. Giebel, you stated that the Bough "C" is presently being produced by KOBE pump?

A That is correct.

Q Is the power oil run down the casing annulus and through the tubing or vice versa?

A Vice versa, power oil down the tubing to activate the KOBE and then the annulus is the producing string.

Q It is your proposal to treat the power oil in the manner as suggested by Dowell, that would be to treat the power oil with chemical prior to its injection into the well?

A Yes, that's right.

Q This, in turn, would treat the produced water that comes up with the production?

A That would be the purpose, yes, sir.

Q You will install coupons to determine the corrosion immediately upstream?

A That's correct. At that time, if it's not satisfying the conditions, we will treat the water just prior to its being injected so the condition of corrosion can be met.

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Q If there is corrosion into the 4-1/2" casing, would that be indicated by any change in production? That is if corrosion should result in a leak in the 4-1/2" casing, would that be indicated by any possible change in production characteristics in the well?

A We feel that it will. It, of course, would not be as good as pressuring up the casing behind the packer, but this, of course, without the installation we have, would be impossible. We do feel that in view of the fact that the annulus will be full of produced fluid at all times, that in case of a leak we will get a change in the fluid production at the surface and it will be immediately noticeable.

I would like to say at this time, too, that one of the purposes of injecting the chemical down the tubing and the power oil would be so that we would have the water treated as it comes back up the annulus to further discourage corrosion on the inside of the casing.

Q So theoretically you would have treatment of the 4-1/2" casing from both sides?

A Yes, that is correct.

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

(Witness excused.)



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

MR. KELLAHIN: That's all I have.

MR. NUTTER: Does anyone have anything they wish to offer in Case 2789?

MR. SARGENT: William M. Sargent for Cabot Corporation. Cabot, as offsetting lease holder to this well, approves the granting of the application as stated.

MR. KELLAHIN: If the Commission please, we do have one letter from Humble. Do you prefer to have this marked as an exhibit or just put it in the file? It is a letter from Humble Oil & Refining stating they have no objection to this proposed application.

MR. NUTTER: We'll just put it in the file.

MR. KELLAHIN: They are offsetting operators.

MR. NUTTER: If nothing further in Case 2789, we will take it under advisement, and the hearing is adjourned.

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