STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

12 June 1986

EXAMINER HEARING

IN THE MATTER OF:

Application of Yates Drilling Company for waterflood expansion. Eddy County, New Mexico. CASE 8916

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Jeff Taylor
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For the Applicant: William F. Carr
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I N D E X

E X H I B I T S

MR. CATANACH: Call next Case 8916.

MR. TAYLOR: The application of Yates Drilling Company for waterflood expansion, Eddy County, New Mexico.

MR. CARR: May it please the Examiner, my name is William F. Carr, with the law firm Campbell & Black, P. A., of Santa Fe.

We represent Yates Drilling Company and I have one witness.

MR. CATANACH: Are there other appearances in this case?

Will the witness please stand and be sworn?

(Witness sworn.)

TOBIN L. RHODES,

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. CARR:

Q My name is Tobin L. Rhodes and I reside

in Artesia, New Mexico.

Q Mr. Rhodes, by whom are you employed and in what capacity?

A I'm employed by Yates Drilling Company as an engineer.

Q Have you previously testified before this Division and had your credentials as a petroleum engineer accepted and made a matter of record?

A Yes, I have.

Q Are you familiar with the application filed in this case on behalf of Yates Drilling Company?

A Yes.

Q And are you familiar with the well which is the subject of the expansion of the subject waterflood project?

A Yes.

MR. CARR: Are the witness' qualifications acceptable?

MR. CATANACH: Mr. Rhodes is considered qualified.

Q Mr. Rhodes, would you briefly state what Yates Drilling Company seeks with this application?

A Yates is seeking approval to expand the injection system of the Artesia Metex system by converting the Artesia Metex Unit Well No. 35 to an injection well.

Q Would you refer to what has been marked for identification as Yates Exhibit Number One, identify this for Mr. Catanach, and generally explain what it is?

A Exhibit Number One is the NMOCD Form C-108, accompanied by the explanation and text required by each of the 13 sections of this form.

Q Does this form set forth the injection zone in the Unit No. 35 Well?

A Yes, it does.

Q And what is the disposal interval we're talking about here?

A This would be the Grayburg formation.

Q When was the No. 35 Well drilled?

A It was originally drilled in 1950 and shortly thereafter plugged and abandoned and the well was re-entered in 1983.

Q What is it's current status?

A It's currently a pumping oil well.

Q When did Yates File Form C-108 with the Oil Conservation Division?

A We filed it in January of this year.

Q And what response did you receive to the filing of this application?

A We received a letter from Mr. Catanach stating that the application could not be approved adminis-

tratively but that it could be set for hearing.

Q And that's why we're here today?

A Yes, that's correct.

Q When was the Artesia Metex Unit originally approved by the Oil Conservation Division?

A The unit was originally approved August 13th, 1973, by Order R-4608.

Q Is a copy of that order attached or included with the packet of exhibits and marked Exhibit Number Two?

A Yes, it is.

Q When did secondary recovery operations commence in this unit?

A August 13th, 1973, and that was authorized by Order R-4609.

Q And have you included that order and marked it Exhibit Number Three?

A Yes, I have.

Q Would you now refer to the plat, which is contained in Exhibit Number One, on page seven, and review the information contained on this plat for Mr. Catanach?

A This is a plat which shows the boundary of the Artesia Metex Unit.

It shows the proposed injection well, our Artesia Metex No. 35. Around this well there's a circle

with a one-half mile radius. This would be the area of review for the proposed injection well.

The triangles around some of the well locations indicate that that particular well is currently an injection well. As you can see, there are fifteen wells currently in the unit which are injection wells.

Two of these injection wells are within the area of review. Also within the area of review there are six producing wells, for a total of eight wells in the area of review.

Q Were the injection wells that you just referenced approved in August of 1983 by Order R-4609?

A Yes, they were.

Q And have they been used for injection since that date?

A Yes.

Q On page six of Exhibit Number One there's another plat. Does this plat show all the wells within the two mile radius of the proposed injection well?

A Yes, it does. The inner circle has a radius of one mile and the outer circle on this plat has a radius of two miles.

Q Does this plat also show the lease ownership in the area?

A Yes, it does.

Q Mr. Rhodes, would you now refer to the tabular data which is contained in Exhibit Number One and review this for Mr. Catanach?

A The tabular data is on pages eight through eleven. These pages contain a listing of information required for each of the wells in the area of review.

At this time I'd like to point out specifically on Well No. 27 on the top of page nine and on Well 44 on the bottom of page ten, that neither of these wells have -- have production casing. All that they have is surface casing.

I would also like to point out at this time that there are thirteen other producing wells in the unit which only have surface casing.

When this C-108 was submitted for administrative approval, there was some concern expressed about injecting water near the No. 27 and No. 44 Wells due to the lack of production casing in these wells.

And if you would, please turn back to page seven, the map that we just looked at, and you can see the No. 27 Well has two offset injection wells which are closer than the No. 35 Well and the 44 Well has three injection wells that are as close or closer than the No. 35 Well, and we have never had any problem with waterflows out of zone in either of these two wells or with any of the other

wells without any production casing in them.

Q Now, Mr. Rhodes, the plat which is marked page seven to Exhibit Number One, this is not the same plat that was originally submitted with Form C-108, is that correct?

A That's correct. The original plat was not quite as clear as what this one -- this one is; therefore this, this plat was substituted in place of the original plat.

Q Are all of the other attachments to the Form C-108 the same as those originally submitted to the Division?

A Yes, they are.

Q Are there any plugged or abandoned wells within the area of review?

A No, there are no plugged or abandoned wells.

Q Would you refer to page five of Exhibit One, which is the schematic drawing of the No. 35 Well, and review the information contained on that exhibit?

A This is a schematic which shows the proposed well hardware configuration if the application is approved.

As you can see, the well has 7-inch casing set at 485 feet. There's 4-1/2 inch casing set at 1,987

feet.

If approved, we would have 2-3/8ths inch tubing, plastic-lined, set in a Baker plastic-coated AD-1 packer, approximately 1800 feet. The injection formation would be the Grayburg and the pool would be the Artesia Queen-Grayburg-San Andres.

Q Does Yates propose to fill the annular space with an inert fluid and equip the well with a pressure gauge that would enable Yates to test the pressure in the annular space as required by the Federal Underground Injection Control Program?

A Yes, we would do that.

Q Into what portion of the Grayburg are you proposing to inject?

A The interval would be from 1858 to 1939, which would include the Metex Sand of the Grayburg formation.

Q What is the source of the water you propose to inject in this -- in the subject well?

A The water would be produced water from the Grayburg formation and fresh water purchased from the City of Carlsbad.

Q What is presently being done with the water that is being produced from the Grayburg in the area?

A It is being injected back into the injec-

tion wells within the unit.

Q What volumes does Yates propose to inject in the well?

A As an average we propose to inject 250 barrels a day with a maximum of 500 barrels a day.

Q And will the system be open or closed?

A We will connect this well to the existing closed system.

Q Do you propose to inject by gravity or under pressure?

A We would like to inject under pressure.

Q And what is the maximum pressure that you propose to utilize?

A We would like to use 1400 psig as a maximum pressure because this -- this pressure is comparable to maximum pressures used in other injection wells in the unit.

Q And in injecting under this pressure in the unit have you experienced any problem with pressurizing the formation so as to fracture or damage the confining strata?

A No, we haven't.

Q Do you have a water analysis of the fluid which will be injected in the proposed injection well?

A Yes, on page seventeen of Exhibit One there's a water analysis report from one of the producing

wells in the unit. This -- this water analysis is representative of produced water which will be injected if the application is approved.

Q So the water you'll be injecting is just produced water plus some fresh water from the City of Carlsbad.

A Yes, that's correct.

Q There would be no compatibility problems in this situation, would there?

A No, we've had none in the past.

Q Are there fresh water zones in the area?

A Yes, there are water zones in the area. Page twelve of Exhibit One is a copy of a letter from the State Engineer's Office stating that fresh water could be expected in the upper 400 feet of the Artesia Group.

We have found by talking to the landowners there that water can first be encountered at approximately 100 feet.

Q And are there water wells within one mile of the proposed well?

A Yes, there is oned and I've included a water analysis from -- from this well and it is page thirteen of Exhibit Number One.

Q And what interval is this water well producing from, do you know?

A No. Again, from talking to the landowner or actually leasehold, State lease holder, they have a State lease for this land, he -- he's indicated that he doesn't know the specific interval but the total depth of the well is only 100 feet.

Q Would you identify what is marked as Exhibit Number Four in this case?

A Exhibit Number Four is a gamma ray neutron log from the -- from the subject well. I believe that the logs were submitted to the NMOCD when the well was reentered in 1983; however, I've included an additional log just to make sure that they have a copy.

Q Mr. Rhodes, has notice of this hearing been given to the offsetting owners and to the surface owner, as is required by Oil Conservation Division rules?

A Yes, they have. Page fourteen and fifteen of Exhibit One are receipts showing that notice was given to offset leasehold operators and to the surface owner.

Q Are you familiar with similar applications for injection that have been approved in the immediate area?

A Yes, the original application to commence waterflood in the Artesia Metex Unit, the order approving the original application is submitted with this application.

Q Have you reviewed the available geologic and engineering data on this area?

A Yes, I have.

Q As a result of this review have you discovered evidence of any faulting or other hydrologic connection between the disposal interval and any underground source of drinking water?

A No, I know of none.

Q In your opinion will granting this application be in the best interest of conservation, the prevention of waste, and the protection of correlative rights?

A Yes, it will.

Q Were Exhibits One through Four either prepared by you or compiled under your direction and supervision?

A Yes, they were.

MR. CARR: At this time, Mr. Catanach, we would offer into evidence Yates Drilling Company Exhibits One through Four.

MR. CATANACH: Exhibits One through Four will be admitted into evidence.

MR. CARR: That concludes my direct examination of Mr. Rhodes.

CROSS EXAMINATION

BY MR. CATANACH:

Q Mr. Rhodes, if you ever had a problem with the waterflow into the No. 27 or the No. 44 Well, would you know it?

A Well, you mean an out of zone type water-flow?

Q That's right.

A If it specifically flowed into the well, no, we might not be able to tell, but we do keep the well pumped down at all times so there's -- there's no way for water to be lost out of zone in the well. If it's lost somewhere else and comes into the well, we would pump it out with the rest of the fluid, but as far as water being lost in the wellbore of 27 or 44, no.

Q The Well No. 27 is completed with 8-5/8ths casing set at 496 feet, cemented with 50 sacks. Do you think that's adequate to protect any fresh water that may be up above it?

A Well, again, if -- when we keep the wells pumped down, the fluid level is down essentially at the pump. There is no produced water to be, you know, that will be that high to get into the fresh water.

Q Mr. Rhodes, do you have any knowledge of what the fracture pressure in the Grayburg formation might

be?

A I don't have the -- I don't have the figures with me. There have been step rate pressure tests taken on some of the other injection wells and I can supply you with that information.

Q Were your other injection wells only permitted at 1400 psig?

A Again I'm not positive on what the original permit was but I'm sure that when the step rates were taken, if the pressures were raised, the step rates were submitted to the state.

Q These wells were approved back in, when did you say?

A 1973, I believe.

Q Okay, Mr. Rhodes, could you provide us with any step rate information you might have of any wells within the Grayburg formation in your waterflood?

A Yes, I will.

MR. CATANACH: I have no further questions of Mr Rhodes.

Are there any other questions of the witness?

If not, he may be excused.

Is there anything further in Case Number 8916?

MR. CARR: Nothing further.

MR. CATANACH: If not, it will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 8916, heard by me on June 13, 1986.

David R. Catanach, Examiner
Oil Conservation Division