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

19 December 1984

EXAMINER HEARING

IN THE MATTER OF:

Application of Exxon Corporation for a pressure maintenance project, Lea County, New Mexico. CASE 8429

BEFORE: Gilbert P. Quintana, 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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I N D E X

E X H I B I T S

MR. QUINTANA: We'll call next Case 8429.

MR. TAYLOR: The application of Exxon Corporation for pressure maintenance project, Lea County, New Mexico.

MR. BRUCE: Mr. Examiner, my name is Jim Bruce from the Hinkle Law Firm in Santa Fe, representing Exxon.

I have two witnesses that need to be sworn in.

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

Will the witnesses please stand and be sworn in?

(Witnesses sworn.)

JOEL A. DEGENSTEIN,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q Will you please state your name, city of residence, occupation, and employer?

A My name is Joel Degenstein and I reside

in Andrews, Texas.

I work for Exxon Corporation as a production geologist.

Q And have you previously testified before the New Mexico OCD?

A No, I have not.

Q Would you please give a brief summary of your educational and work experience?

A I graduated from the University of North Dakota with a BS and an MS in geology in 1978 and have worked for Exxon since -- since 1978.

I have worked in this area for three and a half years.

Q By "this area" you mean eastern New Mexico and West Texas?

A Yes, sir.

Q And are you familiar with Case 8429 and the geological matters involved in this case?

A Yes, sir.

MR. BRUCE: Mr. Examiner, is the witness considered qualified?

MR. QUINTANA: He is considered qualified.

Q Would you briefly state what Exxon seeks by this application?

A Exxon Corporation is applying for an injection well for pressure maintenance, Lea County, New Mex-

ico.

The applicant seeks authority to inject produced salt water into the Delaware Ramsey Sand in the proposed Exxon New Mexico State "EF" No. 3 at a depth of approximately 5160 to 5250 feet.

This proposed injection well is located 990 feet from the south line and 330 feet from the west line of Section 17, Township 23 South, Range 33 East.

The salt water to be injected is produced from the Ramsey Sand from Exxon wells on State leases in the Cruz Delaware Field, located in Sections 17 and 18, Township 23 South, Range 33 East.

Q Will you now please refer to Exhibit Number One and describe that for the Examiner?

A Exhibit Number One is a base map located approximately 25 miles northwest of the City of Jal, New Mexico. The proposed New Mexico State "EF" No. 3 is pointed out by the arrow in the center of the map.

Surrounding this well is a half mile radius circle and two mile radius circle.

The green dots indicate those wells that have penetrated the proposed injection well within this half mile radius circle.

The orange dots indicate those wells that have penetrated the proposed injection zone within the two mile radius circle.

The map also shows Exxon acreage outlined

in yellow. All other leaseholders are also shown on this map.

All offsetting lessees have been notified, including a surface owner.

Conquest Exploration is the lessee to the north. Conoco is the lessee to the southwest. American Quasar and Phillips Petroleum are the lessees to the south.

The surface owner is the State of New Mexico.

The lines of two structural cross sections are also shown on Exhibit One.

Cross section A to B, located in the east central part of Section 18, and the easternmost part of Section 17, or the westernmost part of Section 17, runs from the Exxon "DL" No. 5 on the west to the Exxon "EF" No. 1 on the east.

Cross section C to D crosses the southernmost part of Section 18 and 17 and runs from the Helbing Shell State on the west to the PM Oil Texaco State on the east.

Q In connection with this, would you please refer to the cross section marked as Exhibit Number Two and describe that?

A Exhibit Number Two, shown on the wall, is being shown to show the zone of Ramsey production, the position of the oil/water contact, and the proposed -- and the relative position of the proposed injection zone.

Both cross sections have a vertical scale of one inch equals feet and horizontal scale of one inch equals 300 feet.

Both cross sections are hung on a -1400 foot subsea datum and show the Castile anhydrite and the Morrow limestone, the Ramesy Sand, the Ford shale, and the Olds Sand.

In addition, the oil/water contact at -1435 feet subsea is also shown on each cross section.

Cross section A to B on the top of this Exhibit Number Two, shows three producing Exxon wells. The proposed injection well will affect the Exxon New Mexico State "DL" No. 1 in the center of the cross section and the Exxon "EF" No. 1 on the right side of the top cross section.

The lower cross section, C to D, shows a dry hole, the Helbing Shell State, on the west, three Exxon producers in the middle, the proposed Exxon "EF" No. 3, and a dry hole on the east, the PM Oil Texaco State.

The Exxon "DL" No. 6 will be affected by the injection in the proposed Exxon "EF" No. 3.

The proposed interval and the injection zone is the Ramsey Sand, which consists of a very fine to fine grained, clean sand, composed predominantly of quartz.

The cross sections show the Ramsey Sand is bounded above and below by impermeable formations, the Castile and the Lamar above and Delaware shale below.

The proposed injection well, the Exxon

"EF" State No. 3, is shown as being at or slightly below the oil/water contact at -1435 feet subsea.

The perforated intervals for each well are also shown on both cross sections.

Q Would you please now refer to Exhibit Number Four and describe that?

A Exhibit Number Three?

Q Or Exhibit Number Three, excuse me.

A Exhibit Number Three is a structure contour map drown on top of the Ramsey Sand.

This values a subsea horizon found by subtracting the log depth from the top of the Ramsey, subtracted from the Kelly Bushing obversation.

This map shows gentle southeastward dip of one degree.

Also highlighted in blue is the oil/water contact at -1435 feet subsea.

Conventional and sidewalk core data from the New Mexico State "EF" No. 1 and the "DL" No. 6 indicate that there are no hydrocarbons below this -1435 foot subsea value.

Q Would you pleease now refer to Exhibit Four?

A Exhibit Number Four is a gross Isopach of the Ramsey Sand and shows a northeast to southwest trend to the thick of this interval. The values used in this map are the gross thickness of the Ramsey Sand from the top of the

Lamar limestone to the top of the Ford shale.

Also shown on the Isopach map is the area which will be affected by our proposed injection well. This area is shown by the cross hatched area.

Q And finally, would you refer to Exhibit Number Five and describe that?

A Exhibit Number Five is a three-page exhibit and it contains a topographic map on the last page that shows the location of the proposed injection well and the Graham fresh water well approximately 3/4 miles east of the proposed Exxon State "EF" No. 3.

The well is completed in the Santa Rosa formation.

Also included on page two is an analysis of the water coming from that well performed by an independent consultant laboratory.

We have found no indication of open faults or other hydrologic connections between the disposal interval and this fresh water zone.

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

A Yes, sir.

Q And were Exhibits One through Five prepared by you or under your direction?

A Yes, sir.

MR. BRUCE: At this time I'd

move the admission of Exhibits One through Five.

MR. QUINTANA: Exhibits One through Five will be admitted into evidence.

MR. BRUCE: I have no further questions of this witness.

MR. QUINTANA: No further questions.

The witness may be excused.

DAN BABCOCK,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q Would you please state your name, city of residence, occupation, and employer?

A My name is Dan Babcock. I live in Andrews, Texas, and I work for Exxon as a reservoir engineer.

Q And have you previously testified before the OCD?

A I have not.

Q Would you give a summary of your educational and work experience for the Examiner?

A I have a BS degree in electrical engineering from the University of Texas at El Paso.

After graduating in May of 1980 I worked

for Dresser-Atlas as a logging engineer until March of '82 when I was hired as Exxon as a reservoir engineer.

Q And you've been working in Andrews since that time?

A Yes.

Q Are you familiar with Case 8429 and the engineering matters involved in this case?

A I am.

MR. BRUCE: Mr. Examiner, is the witness considered qualified?

MR. QUINTANA: Your duties with Exxon have been primarily reservoir engineering?

A They've been strictly reservoir engineering.

MR. QUINTANA: He's -- he's considered as a qualified reservoir engineer.

Q Mr. Babcock, would you please refer to Exhibit Number Six and describe it?

A Exhibit Number Six is a wellbore schematic of the proposed injection well. The proposed TD is 5400 feet with surface and production casing set at 650 feet and 5400 feet, respectively.

Cement will be circulated to surface on both strings.

The composed completion interval is based on our own geologic mapping of the Ramsey and is from 5160 feet to 5250 feet, as was shown on Exhibit Two.

The well will be completed naturally.

Also included in Exhibit Number Six is a tabulation of this same data. We are presenting this exhibit to show how the well should appear after drilling and completion.

Q Would you please now refer to Exhibit Number Seven and describe that?

A Exhibit Number Seven lists the completion data on the eight wells within a half mile radius of the proposed injection well, as shown by the green dots on Exhibit Number One.

It lists things such as completion zones and casing programs for each well.

In addition, wellbore sketches are also included in the following pages.

This exhibit is being presented to show that the injected water will be contained in the Delaware interval.

Q Please move on to Exhibit Number Eight.

A Exhibit Number Eight lists the information on the proposed injection operation.

The source of the injected water will be produced water from our "DL" and "EF" Leases, all of which are Delaware completions.

The anticipated volume of injection is 800 barrels of water per day and it's based on the available reservoir information and a calculation we were able to make

from those.

We have no frac pressure data in this area and therefore the injection pressures are only approximations. We plan to run step rate tests periodically to determine parting pressure for this injection well and in so doing we can assure that injection pressures will be maintained below frac pressure.

Q Will you please now refer to Exhibit Number Nine?

A Exhibit Number Nine is a chemical analysis of produced water from our "DL" State No. 1. Since we are proposing to inject produced water, there will be no compatibility problems.

Q And would you please now refer to Exhibit Number Ten and describe that briefly for the Examiner?

A Exhibit Number Ten is a summary of our recovery estimate calculations for the application. It shows that if the application is approved, we estimate recovery for the project area to be approximately 76,000 barrels of oil.

Without approval, primarily -- strictly by primary means, about 30,000 barrels will be recovered, and therefore, the incremental recovery is estimated to be nearly 46,000 barrels of oil.

The primary justification of this project is increased oil recovery; however, incidental to this recovery is cost savings associated with the disposal of pro-

duced water.

We are presently paying from $700 to $1000 a day to haul the water.

Q Mr. Babcock, in your opinion will the granting of this application be in the interest of conservation and the prevention of waste?

A Yes.

Q And were Exhibits Six through Ten prepared by you or under your direction?

A Yes, they were.

MR. BRUCE: At this time, Mr. Examiner, I move the admission of Exhibits Six through Ten.

MR. QUINTANA: Exhibits Six through Ten will be admitted as evidence.

MR. BRUCE: I have no further questions of this witness.

CROSS EXAMINATION

BY MR. QUINTANA:

Q Mr. Babcock, do you realize that I'll limit you to .2 psi per foot limitation at first until you do provide me with a step rate test as far as injection pressure is concerned.

A All right.

Q Also, prior to commencing of injection in this well, I'd like you to have a pressure test done on the casing to determine its mechanical integrity.

A All right.

Q You can get with our District office and determine what they consider as acceptable in a pressure test --

A Okay.

Q -- and determine its mechanical integrity.

Also, would you ever plan an expansion of this pressure maintenance project? Would you care for a clause in there allowing for an expansion of this?

A If we can find some beneficial results from it, yes.

Q You would care for a clause in there to allow for administrative application to allow for expansion so you wouldn't have to come to hearing?

A Yes, we would.

Q I just want to -- bear with me just one second.

I noticed the well to the southeast, directly southeast of the proposed injection well is plugged and abandoned, is that correct?

A That's correct.

Q For the record would you please go over the plugging program for that well?

A There is a wellbore schematic of that well in Exhibit Number Seven. It's on page two of the wellbore schematics.

The well was drilled to a TD of 5415 feet and was never -- production casing was never set.

There is 7-1/2 inch surface string set at 331 feet and cemented with 150 sacks of cement, and it was circulated.

Upon plugging the well they set 25 sack -- a 25 sack plug at TD, one through the Lamar section, one at approximately 1220 feet to 1320 feet, and one from 281 feet to approximately 381 feet, and then a 10 sack plug at the surface.

Q In your opinion do you think that's an adequate plugging not to allow produced waters or liquids to escape from the Lamar formation up the pipe into fresh water zones?

A Yes, I do.

Q I didn't notice that there was any notice to offset operators. Do you have those to offset operators?

A Yes.

MR. BRUCE: Yes, Mr. Examiner. If you want, after the hearing we can provide copies of the letters and the certified mail receipts.

MR. QUINTANA: Okay.

Q Are there any fresh water wells located within a mile of the proposed injection zone? Proposed, excuse me, proposed injection well, you know, like a windmill type for a ranch or farmers or anything like that, where you could provide us with a fresh water sample?

A There is in Exhibit Number Five, there is a topographic map with a water well. It's called the Graham water well.

Q Yes.

A Listed on the map and right before that exhibit or right in front of that topographic map is a water sample from that well.

Q Yes, I missed that.

CROSS EXAMINATION

BY MR. TAYLOR:

Q We're obliged by law to protect fresh water sources and I just want to know if it's your testimony that the manner in which you're doing this will afford reasonable protection against contamination of fresh water sources.

A Yes.

Q I think that's it.

MR. QUINTANA: I have no further questions for the witness.

Is there any further questions from anybody else for the witness?

If not --

MR. BRUCE: I have one final question.

REDIRECT EXAMINATION

BY MR. BRUCE:

Q Mr. Babcock, what in your opinion will be the area affected by the injected water?

A Since we are producing three wells in the immediate area, that provides a pressure sink for this water that we would inject into the "EF" No. 3; therefore the affected area should be to the east of the "EF" No. 3.

Q West.

A I mean to the west.

MR. QUINTANA: I have no further questions.

I would like to recall Mr. Degenstein for a quick question.

JOEL A. DEGENSTEIN,

being recalled and being still under oath, testified as follows, to-wit:

CROSS EXAMINATION

BY MR. QUINTANA:

Q Mr. Degenstein, would you briefly describe the acreage that you plan to -- that has been planned for involvement in this pressure maintenance project?

I wanted to clarify that so I won't put it down on the order wrong.

A Okay. It is described by an area that's enclosed going from the Exxon "EF" No. 3, the proposed injection well, north up the oil/water contact, directly west to the "EF" State No. 1, west to the Exxon "DL" No. 1 in Section 18, and south to the Exxon "DL" No. 6.

Q So essentially it would include all of Section 18?

A It would only include that portion of Section 18 that is shown by the cross hatched area on Exhibit Number Four.

Q Number Four, okay, let me pull that out. You're talking about this right in here?

A Yes, sir.

Q Just this right in here?

A Yes, sir.

Q I'd like to have a little bit more -- neater definition of the lines, you know, than -- it's not quite, you know, like -- in quarter sections, that's what I'm talking about. I would need a better definition, a legal description, better -- better legal description than -- even though technically we know that's the only area that's going to be affected, we need a legal description in squares, you know, not cutting off in angles and stuff like that. That makes it a little bit difficult for me to describe.

Do you understand what I'm talking about?

A Yes, sir.

Q Is it possible you could -- you can determine that now, what you plan to include in that and you could submit that to me at a later dae.

MR. BRUCE: Okay.

A Yes, sir, we will.

MR. BRUCE: I'll write a better description for you.

MR. QUINTANA: I would appreciate that.

I have no further questions of Mr. Degenstein.

He may be excused.

Is there anything further in Case 8429?

If not, Case 8429 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 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. 8429 heard by me on Dec. 19 1984.

Gilbert P. Quintana, Examiner
Oil Conservation Division

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

27 March 1985

EXAMINER HEARING

IN THE MATTER OF:

Application of Exxon Corporation for a pressure maintenance project, Lea County, New Mexico.	CASE 8429

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division:	Jeff Taylor Attorney at Law Legal Counsel to the Division State Land Office Bldg. Santa Fe, New Mexico 87501

MR. STOGNER: We'll go back to the first page and call next Case No. 8429.

MR. TAYLOR: The application of Exxon Corporation for a pressure maintenance project, Lea County, New Mexico.

MR. STOGNER: This case was heard on December 19, 1984 and was taken under advisement at that time.

Due to an error in the lease name in the advertisement at that time, this case is now reopened to correct that error.

We will now call for any appearances.

Any additional testimony?

There being none, this case 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 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. 8429, heard by me on 27 March, 85.

, Examiner
Oil Conservation Division