STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
18 August 1982

EXAMINER HEARING

IN THE MATTER OF:

Application of Harvey E. Yates Company for statutory unitization, Lea County, New Mexico.	CASE 7594

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: W. Perry Pearce, Esq.
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

MR. NUTTER: We'll call next Case Number 7594.

MR. PEARCE: That is on the application of Harvey E. Yates Company for statutory unitization, Lea County, New Mexico.

MR. NUTTER: Applicant in this case has requested continuance in this case.

Case Number 7594 will be continued to the Examiner Hearing scheduled to be held at 9:00 o'clock a. m. October 27th, 1982.

(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. 7694 heard by me on 8/18 1984.

, Examiner
Oil Conservation Division

SALL. BOYD, C.S.R.
, Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

STATE OF NEW MEXICO.
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
16 December 1982

EXAMINER HEARING

IN THE MATTER OF:

Application of Harvey E. Yates Company for statutory unitization, Lea County, New Mexico. CASE 7594

BEFORE: Richard L. Stamets, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: W. Perry Pearce, Esq.
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

MR. STAMETS: Call next Case 7594.

MR. PEARCE: That is on the application of Harvey E. Yates Company for statutory unitization, Lea County, New Mexico.

MR. STAMETS: At the request of the applicant this case will be continued to the January 19th Examiner Hearing.

(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

12-16 7594

Oil Conservation Division

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STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
19 January 1983

EXAMINER HEARING

IN THE MATTER OF:

The application of Harvey E. Yates Company for statutory unitization, Lea County, New Mexico. CASE 7594

BEFORE: Richard L. Stamets, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: W. Perry Pearce, Esq.
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

MR. STAMETS: Call next Case 7594.

MR. PEARCE: That is on the application of Harvey E. Yates Company for statutory unitization, Lea County, New Mexico.

Mr. Examiner, we've received a request from the applicant in this matter that it be continued until March the 30th of 1983.

For those in attendance, I would point out that this case was inadvertently left off of the docket.

MR. STAMETS: Case 7594 will be so continued.

(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

Richard L. Stamets, Examiner
Oil Conservation Division

7594
1-19-83

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STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
30 March 1983

EXAMINER HEARING

IN THE MATTER OF:

Application of Harvey E. Yates Company for statutory unitization, Lea County, New Mexico.	CASE 7594

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: W. Perry Pearce, Esq.
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

MR. STOGNER: Call next Case Number 7594.

MR. PEARCE: That case is on the application of Harvey E. Yates Company for statutory unitization, Lea County, New Mexico.

Mr. Examiner, applicant has requested the dismissal of this matter.

MR. STOGNER: Case Number 7594 will be dismissed.

(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. 7594, heard by me on March 30, 1983.

Michael E. Stogner, Examiner
Oil Conservation Division

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
27 October 1982

EXAMINER HEARING

IN THE MATTER OF:

Application of Harvey E. Yates Company for statutory unitization, Lea County, New Mexico.	CASE 7594

BEFORE: Richard L. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: W. Perry Pearce, Esq.
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

MR. STAMETS: We'll call next Case 7594.

MR. PEARCE: That is on the application of Harvey E. Yates Company for statutory unitization, Lea County, New Mexico.

Mr. Examiner, we've received a request that that matter be continued until December the 16th, 1982.

MR. STAMETS: The case will be so continued.

(Hearing concluded.)

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

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

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[illegible], Examiner
Oil Conservation Division

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
21 July 1982

EXAMINER HEARING

IN THE MATTER OF:

Application of Harvey E. Yates Company for statutory unitization, Lea County, New Mexico.	CASE 7594

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: W. Perry Pearce, Esq.
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

MR. NUTTER: We will now call Case Number 7594.

MR. PEARCE: That is the application of Harvey E. Yates Company for statutory unitization, Lea County, New Mexico.

MR. NUTTER: Case Number 7594 was heard on May the 26th, 1982, at which time it was continued to the docket being heard today; however, it was inadvertently left off the docket.

Applicant has requested further continuance of the case, and Case Number 7594 will be continued to the Examiner Hearing scheduled to be held at this ame place at 9:00 o'clock a. m. August 18th, 1982.

(Hearing concluded.)

CERTIFICATE

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. 7594 heard by me on 7/21 19 82.

, Examiner
Oil Conservation Division

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Phone (505) 455-7409

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
26 May 1982

EXAMINER HEARING

IN THE MATTER OF:

Application of Harvey E. Yates Company for statutory unitization, Lea County, New Mexico. CASE 7594

and

Application of Harvey E. Yates Company for a waterflood project, Lea County, New Mexico. CASE 7595

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: W. Perry Pearce, Esq.
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant: Joe Hall, Esq.
HARVEY E. YATES COMPANY
P. O. Box 1933
Roswell, New Mexico 88201

I N D E X

E X H I B I T S

MR. NUTTER: The hearing will come to order, please.

The first case this afternoon will be Case Number 7594.

MR. PEARCE: That is the application of Harvey E. Yates Company for statutory unitization, Lea County, New Mexico.

MR. NUTTER: And also Case Number 7595.

MR. PEARCE: Which is the application of Harvey E. Yates Company for a waterflood project, Lea County, New Mexico.

MR. NUTTER: I'll call for appearances in these cases.

MR. HALL: Mr. Examiner, I'm Joe Hall, representing Harvey E. Yates Company, and I have one witness.

MR. JENNINGS: I'm James T. Jennings, Jennings and Christy, representing Anadarko, and I would like to make a statement into the record and be excused.

MR. NUTTER: Would you like to make that statement at this time, Mr. Jennings?

MR. JENNINGS: I would like very much to make that statement, Mr. Nutter.

MR. NUTTER: Does this refer to both cases or --

MR. JENNINGS: No, sir, just to the statutory -- to 90 -- 7594, which is statutory unitization.

MR. NUTTER: All right, sir, if you'd proceed, please.

MR. JENNINGS: Anadarko is the owner of a Federal Lease NM-4364, which covers the south half southeast quarter southeast quarter of Section -- southwest quarter southwest quarter of Section 4, Township 18 South, Range 32 East.

Anadarko is aware of the unit, of the prior unit, and has executed a unit operating agreement; however, it being the holder of a Federal lease it will not join in the unit as it is a lease based upon original twenty-year lease, which is subject to ten-year extensions, and if it joins the unit it will lose its right to continue extension, and it will make an assignment of operating rights, or any other deal, but it refuses to join in the unit.

MR. NUTTER: Thank you. Mr. Hall?

MR. HALL: I have one witness, Mr. Nutter, Mr. Ray Nokes.

(Witness sworn.)

RAY NOKES

being called as a witness and being duly sworn upon his oath,

testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. HALL:

Q. Would you state your name and address, please, sir?

A. Ray Nokes. I live in Roswell, New Mexico.

Q. And what is your position with the applicant, Harvey E. Yates Company?

A. Reservoir engineer.

Q. Mr. Nokes, have you testified before the Division before and have your qualifications as a reservoir engineer been accepted?

A. Yes, sir.

MR. HALL: Mr. Examiner, I request Mr. Nokes be accepted as an expert reservoir engineer for the purposes --

MR. NUTTER: Mr. Nokes is qualified.

Q. Mr. Nokes, are you familiar with the application filed in Case 7595?

A. Yes, I am.

Q. And would you please state for the Examiner the purpose of this application?

A. The purpose of this application is to inject

water into the Bone Springs formation at an interval of 8444 to 8597 in the Young Deep Unit, or under the Young Deep Unit, which is located in Township 18 South, Range 32 East, the south half of Section 4, all of Section 3, 9, 10, in Lea County, New Mexico.

Q. All right, Mr. Nokes, why is it important that this project be undertaken at this time?

A. It is imperative at this stage of the production from this zone that waterflooding be undertaken due to the content of the reservoir; the characteristics of the crude are very heavy crude and at which time bubble point is reached the utilized solution gas mechanism which its being produced by at this point, we're at a low point at which several thousand million barrels of oil will be lost because there will be no ability to move the very viscous crude through the interstitial pores.

Q. Mr. Nokes, this waterflood project is within the boundaries of a currently approved Federal exploratory unit, is it not?

A. Yes, it is.

Q. And this has been designated as the Young Deep Unit?

A. Yes, sir.

Q. Is that correct? And who is the operator

of the Young Deep Unit at this time?

A. Harvey E. Yates Company.

Q. And who would be the proposed operator of the injection project?

A. The same, Harvey E. Yates Company.

Q. All right. I'll hand you -- I'll refer you to what's been marked as Applicant's Exhibit Number One and ask you to please identify that and tell what it shows, please.

A. The area that is outlined in red is the proposed area for consideration for injection under this unit.

The orange arrow indicated on that exhibit indicates the well, the Young Deep Unit No. 2, which is to be considered as the injection well.

Q. All right,how many wells would be involved in this project, Mr. Nokes?

A. Under this area that's defined there are nine wells, as such.

Q. Okay, let's focus now on the proposed injection well, the Young Deep No. 2. Would you please indicate its location and legal description, please?

A. The Young Deep Unit No. 2 is located 660 foot from the north, 1980 foot from the west of Section 10, Township 18 South, Range 32 East, Lea County, New Mexico.

Q. And what type of lease is that located on?

Lease Number NM-16350-A.

Q. All right, would you please refer now to Applicant's Exhibits Two-A and Two-B, I wish you would identify what those two exhibits consist of.

A. Exhibit Two-A is a well history summary sheet, diagrammatic wellbore, indicating location, production, the zone of completion, treatment, casing design, perforations, plus additional perforations for this flood.

Exhibit Two-B is a continuation under C-108 questions under Section 3, which indicate like information. Do you want to go through that step by step?

Q. We'll go through it in the series of questions.

Q. What is the proposed injection formation?

A. Bone Springs in the North Young Bone Springs Field.

Q. And what is the injection interval in the injection well?

A. The proposed injection interval, overall interval is a footage depth of 8444 foot to a depth of 8597 foot, inclusive.

Q. What was the original purpose of the Young Deep No. 2 Well?

A. The original purpose for the Young Deep

was for the development of the North Young Bone Springs Pool and today has a cumulative production of 79,677 barrels of oil and 68,750 Mcf of gas.

Q. Other than the proposed injection interval, are there any other perforations in the wellbore?

A. If you'll refer back to Exhibit Two-A, the present perforations from 8,444 foot to 8,488 foot are the existing perforations. At which time permission is granted by the Commission for injection, additional perforations in the "B" zone from 8500 to 8511 foot, will be included and also in the interval zone "C". These perforations in zone "C" and "D" have not been picked yet, but it will be an inclusive interval from 8512 foot to 8564 foot for zone "C". Zone "D" will be 8564 foot to 8597 foot.

Q. Okay, thank you.

MR. NUTTER: What was "C" again? 8512 to what?

A. 8512 foot to 8564 foot is zone "C". It is presently perforated in zone "A".

MR. NUTTER: Right.

A. And partially in zone "B".

MR. HALL: Mr. Examiner, he has added it in in pencil on the exhibit.

MR. NUTTER: Okay. Actually, "D" would

probably be 65 to 97.

A. Yes, sir, I'm sorry, pick up at 65, yes, sir.

MR. NUTTER: So you would actually have continuous perforations, would you not?

A. It will be selectively --

MR. NUTTER: The present ones are -- or first proposed, are from 85 to 8511 and then the next set picks up from 12 to 64, and this last one would be 65 to 97.

A. Yes, sir, it would not be inclusive. I mean it would not be a continous foot by foot perforation. Just selected --

MR. NUTTER: They would be in that interval anyway.

A. Just selected perforation, yes, sir, through that interval in each zone.

Q. Would you please give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well?

A. Okay. There are no other oil and gas zones producing above the North Young Bone Springs Pool in the Bone Springs formation, but the next lower possible producing interval is the Morrow formation, which is a Morrow Sand previously producing in the Young Deep "4" Federal No. 1 at a

depth of 12,767 foot to 12,784 foot. This well, the Young Deep "4" Federal No. 1, is presently going under evaluation for approval to plug back and since this form -- this was typed up, it is under the procedures now of plug back operations, for the Bone Springs formation.

Q. And at one time did not the Young Deep No. 1 also produce from the --

A. Yes. The Young Deep No. 1 was also a dual completion and prior to the No. 4-1, or 4 Federal 1, it was also plugged back.

Q. All right, utilizing Exhibit Two-A, let's now discuss the wellbore of the proposed injection well and would you please summarize the casing program for the well?

A. In the Young Deep Unit No. 2 there is 13-3/8ths inch casing of a weight of 54 to 68 pounds to a depth of 660 foot, cemented to surface with 650 sacks of cement. The original hole that was drilled was a 17-1/2 inch hole, set with 13-3/8ths inch casing.

Intermediate hole was drilled to 4,640 foot; that was 11-inch hole; 8-5/8ths inch casing was set of a weight of 24, 28, and 32 pound, respectively, and then the production string, or long string, was drilled with 7-7/8ths inch bit. 4-1/2 inch production casing was set of a weight of 11.6, 10.5, to a depth of 8,550 foot, cemented with 300

sacks, and the top of the cement was indicated by a cement bond log at 7,381 foot.

Q. Okay. Would you please summarize now the tubing to be used in the injection well?

A. The tubing that we'll use for this injection well will be 2-3/8ths inch EUE J-55 internally plastic-coated tubing.

Q. Okay, now please describe the packers or the sealing system that will be used.

A. Presently we are considering using a packer, LocSet, totally nickel-plated, with also a possibility, due to cost, may use a Model 81, Baker Model 81 nickel-plated packer, tension packer.

Q. Does this wellbore comply with New Mexico Oil Conservation Division requirements? Do you feel it's adequate to the use to which it will be put so as not to damage any of the other subsurface formations, to include any fresh water aquifers?

A. Yes, sir, it would be.

Q. Is this an expansion of an existing project?

A. No, sir.

Q. Okay. Let's turn now to the well's area of review, and I'd ask you to identify Applicant's Exhibits

Three-A and Three-B.

A. Exhibit Three-A is a land plat identifying wells and leases within two miles injection -- two miles of the injection well, which is the Young Deep Unit No. 2, and also indicating a one-half mile radius around the well for the area of review.

The Exhibit Three-B is a little clearer and larger scale of the like, but it does not indicate leases outside the -- it just indicates the wells within the area of review.

Q. All right. Would you now please refer to Applicant's Exhibit Number Four, which consists of three pages, Appicant's Exhibit Five, which is Exhibit Five-A through L, and Exhibit Six, which is A through M, and would you please explain what these documents are and what information they contain?

A. Exhibit Number Four is a well history information required by the C-108 for each individual well in the immediate area, and I went ahead and included all wells in the Young Deep Unit for the benefit of the Commission. It indicates not only the well name and number but the legal location, the pool that it is completed in, the date of completion, or the date of spud, the date of completion, the type of completion, the depth, plug back depth, completion interval,

casing design and sacks of cement used in setting this casing, the present tubing depth and top of cement indicated by a temperature survey or by cement bond log.

Exhibit Five is a well by well identification, including a wellbore schematic of the same type information with the addition of initial potentials, elevations, well treatment, and any other pertinent data as far as well tests, and this is for each individual well that was also in Exhibit Four.

Exhibit Six is a copy of the completion reports sent to at the time the U. S. Department of Interior, Geological Survey, indicating all pertinent data as far as lease numbers, locations, dates of completions, depths, perforations, treatment, and initial potentials for each of the existing wells that have been completed.

Q. Within the information contained in Exhibits Four, Five, and Six, does this data include description of each well's type, construction, date drilled, location, depth, record of completion, and schematic of the plugging of any plugged well?

A. Yes, sir. In this area there were no plugged wells.

Q. Next will -- we'll discuss the proposed plan of operation for the injection project.

MR. NUTTER: Well, if there's no plugged well, what's this well, Mr. Nokes, on your Exhibit Three-B, there's a well within that half mile circle there that's a plugged, P&A'd well, immediately southwest of the TD --

A. Yes, there's the number two, I noticed that. I am sorry, at this time I'm not aware of -- I was not aware of that and I am not knowledgeable of that well, but I will get the information on that well.

MR. NUTTER: Of course, if that's a plugged and abandoned well, we'll have to have a schematic diagram of the plugging program that was used to plug casing in that well.

A. Yes, sir.

Q. Let's continue.

A. Okay.

Q. Would you please refer to what has been marked as Applicant's Exhibit Number Seven and indicate what that consists of, please?

A. This is the proposed plan of operation, indicating the injection of Ogalalla water, supplied by Double Eagle Water Company of Carlsbad, New Mexico. Water will be injected into the proposed injection well of the Young Deep Unit No. 2, located 660 from the north, 1980 from the west of Section 10, Township 18 South, Range 32 East, Lea County,

New Mexico.

Q. Okay, would you please indicate what the proposed average and maximum daily rates and volume of water to be injected?

A. Initially we will begin with approximately 1000 barrels of water per day, increasing in 500 barrel increments on a 3-month rate, approximately three months into the program we will increase to approximately 1500 barrels; then, approximately six months into the program we will increase an additional 500 barrels.

During this injection period it would require approximately 1200 pounds initially and at which time we have a pressure response, noticing that the injection water is beginning to increase our pressure, it will take approximately 1500 pounds pressure to maintain adequate injection.

Q. Okay. Do you feel that these proposed volumes and pressures will be adequate to lead to a successful project?

A. Yes, sir. Due to the hydrostatic weight of our fluid, that should be, is what's calculated now to be an adequate pressure to handle the injection.

Q. Will this be an open or a close system?

A. The injection system will be closed system, gas blanket.

Q. You indicated previously that the -- the water, the injecton fluid will be from the Double Eagle Water Company. Have you had an analysis made of their water?

A. Yes, sir. That is Exhibit Eight.

Q. Okay. Let's turn now to the geologic data in the case. If you'll refer to applicant's Exhibit Number Nine, which is the report.

A. Okay, this is Mr. Ralph Viney's report.

Q. And this report contains, does it not, a geological description of the proposed project area?

A. Yes, sir, it does.

Q. Would you indicate where that is located in the --

A. Under the geological section of this report, page six has a summary, a statement by Sally Meador as to the geologic makeup lithology of this reservoir that is in the Bone Springs formatin.

Q. And who is Sally Meador, please?

A. She is a staff geologist in our Midland office.

Q. Okay.

MR. HALL: Mr. Examiner, would you like us to elaborate on that or would this be sufficient?

MR. NUTTER: The report should be sufficient.

Q. Okay. Concerning our proposed injection formation, what does the North Young Bone Springs formation consist of?

A. Predominantly a dolomite pay zone of approximately 153 foot of net pay of a 429 foot zone.

Q. Okay. And you've previously indicated the area that is proposed to be perforated?

A. Yes. I have indicated that zone.

Q. Okay, have you had a study made of all underground sources of drinking water underlying the proposed injection formation?

A. As far as fresh water aquifers, if that's what you're --

Q. That's what I'm referring to.

A. -- referring to, on April the 22nd, I had conversation with Mr. Ed Kinney and also Mr. Delbert Nelson. Mr. Kinney is a consultant geologist living in Artesia, New Mexico. This is under Exhibit Ten. Reference is made to his statement in the first paragraph, that the fresh water aquifers, the only ones in the area of Township 18 South, Range 32 East, would be the Ogalalla, occurring at an approximate depth of 350 to 400 foot, and the Santa Rosa at a depth of approximately 1100-1200 foot below surface.

He also indicated that the San Andres aquifer,

which is present to the west, is only present in sparsely located areas. It is very hard to identify the specific locations of these and he said also that the water of the nature that it wouldn't of drinking nature.

Due to the casing design of this injection well, the Young Deep Unit No. 2, the surface and intermediate casings were set through both of the known possible aquifers, the Ogalalla and the Santa Rosa, and cement was circulated back to surface for both the surface and intermediate casing, and therefor it is our feeling that it is protected.

Mr. Delbert Nelson, in regard to fresh water wells in the area, I spoke with him and the only one that he mentioned that was in the area was in the southeast southeast of the northwest of Section 4, Township 18 South, Range 32 East, of Lea County.

After following up on this we were able to determine that that well was abandoned, and it was originally drilled in 1977 by Abbott Brothers out of Hobbs to a depth of 133 foot for Mr. B. E. Frizzell out of Hobbs. This well was not drilled with permit, therefor has been since abandoned, and is covered up and there is no possible chance or way of getting a water analysis from that well to compare it at future times.

Q. Referring to the proposed stimulation pro-

gram, would you please refer to that, it's Exhibit Number Eleven, and explain what that is and what it contains?

A. This is basically information pertaining to the well that we would submit or give to our field personnel for completion procedures of plugging this -- of pulling the production assembly as it is right now, and recompleting this well at the additional perforations that were entered in earlier testimony, plus the additional zone "C" and "D" perforations, which we will pick at a later date, and the well would be set up as an injection well with the tubing and packer assembly as was indicated before. Packer fluid behind the tubing would be of a nature that would be an advantage to prevent bacteria from forming and also corrosion inhibitors would be added to this liquid.

Q. Okay, Mr. Nokes, are there any producing fresh water wells within one mile of the injection well?

A. Not at this time.

Q. Okay. Have copies of this application been furnished by certified mail to the owner of the surface of the land in which the injection well is to be located?

A. Yes, sir, it is. That's Exhibit Twelve, a copy of this letter that was submitted to them.

Q. Harvey E. Yates Company is the leasehold operator of all the property within half a mile of the injection

well, is it not?

A. Yes, sir, it is.

Q. Okay. Mr. Nokes, from your study of the North Young Bone Springs formation and the wells within the area of the proposed injection project, do you feel that the wells in this area are approaching or in an advanced stage of depletion?

A. Yes, sir, we feel, due to the fact that as the nature of reaching bubble point pressure in an oil production well, you can and will sometimes start witnessing or having evidence of paraffin buildup, and at the point it is right now, we are having to cut paraffin at a rate of approximately every two weeks on all of the flowing wells in this field.

At one time in the Well No. 1, which was a Morrow completion and plugged back, we could not even get a pressure bomb down the tubing because it had approximately 1/4 of an inch opening due to paraffin buildup.

As a result of this paraffin buildup occurs in situations where you're approaching, if you do not have it in primary production, approaching the bubble point, and Mr. Viney's report indicates the information on page three, and I believe it is Exhibit Number Nine, at the beginning of the reserves section, it's Table No. 3 of page three under the reserves, indicates that due to an internal gas drive that was

ran through a computer, Garrett System Computer, indicating that a bubble point of approximately 1575 pounds would be a breaking point on identification to us that we were getting very close to bubble point, somewhere in the nature of 1500, 1575 pounds. In his opinion it is 1575.

At this point, whenever we do reach bubble point, our GOR should indicate a tremendous increase. At this stage we have calculated as of this past month's production, a present GOR of 746, which is very close to what was computed on the information from the program.

It's in his opinion, also, that in approximately nine months or somewhere around the first of the year of 1983, that we will have reached bubble point. There again, that is information that he has determined, or his decision. After conversing with him and talking with him about the GOR's that have been present, that we may be reaching it much quicker than what he'd expected.

Q. Has -- have you had any indication of the differences in recovery that might be expected with the waterflood versus the --

A. Yes, sir.

Q. -- just primary?

A. If you'll refer back to the beginning of Exhibit Nine, on page two, Mr. Viney indicates what our present

production would be at bubble point of 670,000 barrels of oil, 530,000 Mcf of gas; from bubble point to abandonment would be approximately 530,000 barrels of oil and 2,120,000 --

MR. NUTTER: On page two of what section, please?

A. I'm sorry, of the beginning of the report, Mr. Nutter. He really does not have a heading on that, as such.

MR. NUTTER: Okay.

A. I'm sorry. It's on page two.

The total barrels of production projected recoveries, 1,200,000 with a 2,650,000 Mcf of gas. That is his feelings and that is also mine. Preliminary information indicated a little bit higher than that but after further evaluation, this is a little bit more realistic production from the reservoir characteristics and the reserves that we calculated previously, in the office.

As a result of the waterflood, it would add to the production of the Bone Springs in the Young Deep Bone Springs formation, 3,654,000 barrels with an additional 2,890,000 Mcf of gas with a waterflood program.

MR. NUTTER: Well now, Mr. Nokes, excuse me just a minute. Now he's talking here, all these calculations of reserves and oil in place and all that --

A. Yes, sir.

MR. NUTTER: -- of a productive area of 684 acres.

A. Yes, sir.

MR. NUTTER: And you've got nine wells in this pool to date, right?

A. Yes, sir.

MR. NUTTER: So with an average spacing of 40 acres per well, you've only developed 360 out of 684 acres, isn't that correct?

A. Yes, sir, right. He's indicating that there is further production up north, north of this. If you'll refer back to Exhibit Number One.

MR. NUTTER: Okay.

A. You will notice that in the middle of the red outline section from the west side, you'll notice a 4-2.

MR. NUTTER: Okay.

A. That's the Young Deep 4 Federal No. 2. Proceeding to the east is the Young Deep Unit No. 7. Then the Young Deep Unit No. 6, and then the Young Deep Unit -- or the Yound Deep 3 Federal No. 1. That was the initial boundary until this report was determined to have production further north.

If you will notice, well, it would be below

this line which is not pertinent information, but this line on the south border is considered to be the limit of the production. At that point it begins to lime out; production history in the Young Deep No. 4 and No. 3, which you do have production history on, as far as characteristics of the reservoir and initial potentials, indicate that the reservoir pinches out on the south half.

Also, under the geological information in Mr. Ralph Viney's report it also gives this same information in graphic form.

But the production is estimated to -- the zone area of recovery would extend approximately 40 acres north of this or another, you know, possibly four to five wells just north of this.

MR. HALL: Mr. Examiner, pages 12, 15, and 18 under the geological section of Mr. Viney's report show that graphically.

MR. NUTTER: I think particularly with page 18, that graph there, that makes it -- they show the entire south half of Section 3 --

But at any rate, his calculations are based on the amount of oil in place under 684 acres.

A. Yes, sir.

MR. NUTTER: 684.

A. 684? I'm not sure of the exact figures on that. I was thinking it was 640, but he does indicate 684. You're correct.

MR. NUTTER: Well, that would be 17 40-acre tracts. You don't have that many in your unit.

You've got 14 in your unit.

MR. HALL: If I might make a comment on this, Mr. Nutter, the -- at present the area that we are using as the proposed injection project area, is the current second revision of the participating area. It has been accepted by the -- by the Minerals Management Service. We haven't been able to convince them to expand it any further than it is right now.

MR. NUTTER: Now, the actual boundary of the original Yound Deep Unit Area are those boundaries that are shown with a cross hatched line on Exhibit One, are they not?

MR. HALL: That's correct, sir.

MR. NUTTER: And what we're talking about for the lands that are covered by the statutory unitization case here is the orange line, is that correct?

MR. HALL: That would be correct, yes, sir.

MR. NUTTER: Okay, so apparently you've got production outside the orange line, if Viney's calculation

of 684 acres is correct.

MR. HALL: That would correct, yes, sir.

MR. NUTTER: Go ahead.

Q. Mr. Nokes, do you feel this project should result in recovery of otherwise unrecoverable hydrocarbons thereby preventing waste?

A. Yes, sir.

Q. And were Exhibits One through Eight and Ten through Twelve prepared by you or under your supervision?

A. Yes, sir, it was.

Q. And was Exhibit Number Nine prepared by Mr. Ralph Viney at your direction?

A. Yes.

MR. HALL: Mr. Examiner, I'd move the admission of Applicant's Exhibits One through Twelve.

MR. NUTTER: Exhibits One through Twelve will be admitted in evidence.

MR. HALL: Mr. Examiner, now as to Case 7594, I'd like to enter some testimony, brief testimony covering the findings required under Section 70-7-6, A-1, 2, 3, and 4.

MR. NUTTER: All right.

Q. Mr. Nokes, do you feel that the reservoir or portion thereof involved in this seconeary recovery project has been defined as best we can at this time?

A. Yes. The Federal area that is under consideration for the Bone Springs formation was enlarged and expanded to the presently known or established limits of the reservoir in February of this year.

Q. Then the total surface area under which this Bone Springs reservoir, or the portion of it currently determined, is within a Federally approved exploratory unit, is it not?

A. Yes.

Q. Mr. Nokes, you've testified previously that the injection project would result in the ultimate recovery of otherwise unrecoverable hydrocarbons, and you indicated what the magnitude of that expected recovery would be.

Do you feel that this additional recovery could be secured without the unitized management and operation of the area?

A. No.

Q. An individual or per well stimulation program wouldn't be able to carry out this --

A. No.

Q. -- project.

Based on your study of this injection project which requires the unitized management and operation of the area, would in your opinion result in recovery of more

oil and gas from the Bone Spring formation than would otherwise be recovered, correct?

A. Yes, definitely.

Q. So based on the engineering studies to which you've testified previously, you feel that a successful injection project would yield how many additional barrels of oil and how many additional Mcf of gas?

A. Okay, it would yield an additional 3,654,000 barrels of oil and 2,890,000 Mcf of gas. At a current price of $31.94 cents per barrel and $3.24 per Mcf, for a total recovery of $126,072,360 of income over the life of this recovery.

Q. Okay, that's an estimated --

A. Yes, that's estimated --

Q. -- recovery?

A. -- recovery.

Q. Okay. This additional revenue would directly benefit the royalty and overriding royalty owners in the area, would it not?

A. Yes.

Q. As part of the study of this project, has an estimate of the cost involved been made?

A. Yes. For iniating the program is an estimated $339,000 for the initial injection plant, assembly, and

for this to be set up and on production, or injection, and an estimated $15,000 a month for the additional costs, supervision and cost of water.

Over a fifteen year period it would -- operating expenses on today's cost would average approximately $3,039,000 versus the recovery of $126,072,320 in return.

Q. So you estimate it would clearly be a net profit in this particular project?

A. Yes, sir, of approximately $123,000,000.

Q. And this additional profit would be shared by the working interest owners under the unit, would it not?

A. Yes.

Q. Mr. Nokes, were the Minerals Management Service, Anadarko Production Company, and Marathon Oil Company sent by certified mail copies of the application in this case?

A. To the best of my knowledge, they were, yes.

MR. HALL: Mr. Examiner, that is all the testimony I have on Case 7594 at the present time. I'd request that the case be continued, because at this time, as indicated by Mr. Jennings in his statement to you, he and I are still trying to work out a voluntary unitization of this area, and we are also still in negotiations with Marathon Oil Company. So we're not able to continue the case any further at

this time.

MR. NUTTER: Do you have a suggested time that we could continue the case to? How long do you think before you'll know?

MR. HALL: Mr. Examiner, could we have -- put it back on the docket for the second hearing in July?

MR. NUTTER: I think we've got a date for that. Yes, we have a hearing on July the 21st.

MR. HALL: Will that be your hearing?

MR. NUTTER: Yes, sir. Will that be all right?

MR. HALL: That will be fine, yes, sir.

MR. NUTTER: Okay.

MR. HALL: I have nothing further.

MR. NUTTER: At this time we will continue Case Number 7594 to the Examiner Hearing scheduled to be held at this same place at 9:00 o'clock a. m. July the 21st, 1982.

And we've still got the Case Number 7595 alive. Are you through with your witness?

MR. HALL: Yes, sir, I am.

CROSS EXAMINATION

BY MR. NUTTER:

Q. Mr. Nokes, now I was scribbling all over this

page two of the Viney report, that's in the first section.

A. Yes, sir.

Q. All right. Now, he estimates that under enhanced recovery you'll gain an additional 3,654,000 barrels of oil.

A. Yes, sir.

Q. And what did you give as an average value of that oil? Projected?

A. Presently we are receiving for it $31.94 per barrel.

Q. Did you have a value calculated for that oil?

A. Yes, sir, the -- for 3,654,000 barrels of oil at $31.94 per barrel would be $1, -- or $116,708,760.

Q. Okay, he also estimates 2,890,000 extra Mcf of gas.

A. Yes, sir.

Q. What's the current value of that?

A. $3.24 per Mcf at a value of $9,363,600.

Q. And together those added up to that $126,000,000 what was it?

A. Yes, sir, $126,072,360, based on current prices and estimated production.

Q. You estimated then that project costs for

installation of equipment, et cetera --

A. Yes, sir.

Q. -- would be $339,000?

A. Yes, sir.

Q. And additional operating costs, including purchase of water, of $15,000 a month.

A. Yes, sir.

Q. Over the life of the project?

A. Based on current price -- on current costs.

Q. And what is the estimated life of the project?

A. 12 to 15 years, additional.

Q. So your total costs would be something like a little over $3,000,000.

A. Yes, sir, $3,039,000.

Q. Over a 12 to 15 year period.

A. Yes, sir.

Q. Now, with regard to one of these earlier exhibits, I believe -- yeah, Exhibit Four.

A. Yes, sir.

Q. That third well there on the first page of that exhibit, Mr. Nokes.

A. Yes, sir, YOug Deep Unit No. 3.

Q. That Young Deep Unit No. 3.

A. Yes, sir.

Q. Where all these other ones are indicated to be oil wells, or something else, this is indicated to be a "-- Well". What does "--" stand for?

A. Okay, The reason for this, as I indicated earlier, I went ahead and included all wells under the Young Deep Unit. This well, and also the well on the following page, the second well on page -- it's not numbered -- it would be the Young Deep Unit No. 4 --

Q. Well, it's shown to be an oil well.

A. Yes, sir. It produced for a short period of time but it also is temporarily abandoned at this point.

Q. The No. 4 is now TA'd?

A. Yes, sir, at this point, not officially on the record, but as far as production, yes, sir.

Q. Okay.

A. The cumulative production on that well, if I remember correctly, is approximately 512 barrels of oil from the No. 4.

The No. 3, I don't believe it ever produced anything.

Those wells, as a matter of fact, as I've mentioned before in regards to Exhibit Number One, the outlined area, were the two wells that were below the -- the orange or

red outline, those were located below that area in that pinch out, limed -- limed out area.

Q. Okay, this No. 3, then, --

MR. HALL: It's located just --

Q. -- it's not even shown on Exhibit One, is it?

A. I'm not sure of that.

MR. HALL: No, sir, it's not. It's located just below the No. 5 and the No. 4 is located just below the No. 8.

Q. And the No. 3 has never produced yet.

A. Not that I remember. I can look back at the production on it. We tried -- no, sir, it has not produced anything;under Exhibit Five-C, it indicates all the numerous procedures of stimulation to try to get the well to produce.

Q. So the No. 3 and the No. 4 both are TA and they're outside the orange area.

A. Yes, sir, they're outside the productive boundary, or what we consider the productive boundary.

Q. Now, according to Exhibit Seven, you anticipate initial injection at about 1200 psi.

A. Yes, sir.

Q. That's surface injection pressure.

A. Yes, surface injection.

Q. And that later on you'll go up as high as 1500 psi.

A. Possibly, yes, sir.

Q. The Division's rule of thumb of 2/10ths of a pound per foot of depth --

A. Yes, sir.

Q. -- to the injection depth here of 8400 feet would give you approximately 1688 pounds. In other words, you think you're going to be able to stay within that rule of thumb?

A. We should. It is our -- right now we are presently running tests in Houston, or our company is running tests for us in Houston, to see what kind of cementation problems we have in the interstitial transmissibility information that we need to know as far as pressures.

And presently we're considering that that will be the upper limits to be able to do this.

Based on my calculations it would be slightly lower than that, but there again, no knowing it is a consideration that they -- there's a possibility of clays and we would need to know how these could be treated, as well as what kind of a pressure resistance we would have.

Q. Do they have some cores on which they're

running some tests?

A. To my knowledge they do, yes, sir.

Q. I see.

A. I have not received word back from our Midland office and I do not know whether they've received it from Houston.

Q. Then you can give a schematic diagram of any well within this half mile circle that has been P&A'd.

A. Yes, sir, I will get that back to you within the next couple of days.

Q. Okay.

MR. NUTTER: Are there any further questions of Mr. Nokes? He may be excused.

Do you have anything further, Mr. Hall?

MR. HALL: Nothing further, sir.

MR. NUTTER: Does anyone have anything they wish to offer in Case 7445 -- no, 7595?

We'll take that case under advisement, then.

(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. 7594-7595 heard by me on 5/26 19 81.

, Examiner
Oil Conservation Division

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