STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 10497
ORDER NO. R-9737

APPLICATION OF MEWBOURNE OIL COMPANY FOR TWO SECONDARY RECOVERY PROJECTS, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on July 9, 1992 at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this 1st day of October, 1992, the Division Director, having considered the testimony, the record and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) The applicant, Mewbourne Oil Company, seeks authorization to institute two secondary recovery pilot projects in the Querecho Plains-Upper Bone Spring Pool within Township 18 South, Range 32 East, NMPM, Lea County, New Mexico, on its Government "K" and Federal "E" Leases by the injection of water into the following three existing wells:

Well Name and Number	Footage Location	Unit	Section	Injection Perforations
Government "K" No. 2	1950' FSL - 1980' FWL	K	23	8343' - 8515'
Federal "E" No. 10	2310' FN & EL	G	27	8501' - 8530'
Federal "E" No. 11	660' FNL - 530' FEL	A	27	8360' - 8486'

(3) At the time of the hearing, Mewbourne requested that this application be limited to only the "K" No. 2 and the "E" No. 11 wells and that the portion of this application requesting injection into the Federal "E" Well No. 10 be dismissed.

(4) Mewbourne's objective with this application at this time is to test the injectivity of the Upper Bone Spring interval for a sufficient period of time to establish stabilized injection rates. This data will then be reviewed to determine the feasibility of commencing a waterflood project in this area to be unitized at a later time. Said injectivity testing was from a consensus born out of several operator meetings of owners of interests in the area that would be unitized.

(5) It is not Mewbourne's intention to proceed with its proposed test for any length of time that could indicate a response in any surrounding wells.

(6) The applicant has suggested a period of three months, more or less, to be adequate for such testing phase.

(7) The proposed injection test would secure information that, in the long run, could be utilized in establishing a waterflood project and unit agreement in the Upper Bone Spring formation underlying the immediate area.

(8) The operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape into other formations or onto the surface from injection, production or plugged and abandoned wells.

(9) The applicant's testimony indicates that its Federal "E" Well No. 1, located 660 feet from the North line and 1980 feet from the East line (Unit B) of said Section 27, a North Lusk Morrow gas well completed at a depth in excess of 12,500 feet, is within one-half mile of the proposed "E" No. 11 injection well and does not appear to have adequate cement across its production casing string at the Bone Spring interval. However, a maximum injection rate per well of 800 barrels of water per day, as proposed by the applicant, should not cause any migration of the injected fluids to reach the suspected unprotected wellbore.

(10) Injection should be accomplished through 2 7/8-inch tubing installed in a packer set approximately 100 feet above the uppermost perforated interval; the casing-tubing annulus for both wells should be filled with an inert fluid; and a pressure gauge or approved leak-detection device should be attached to the annulus in order to determine leaks in the casing, tubing or packer.

(11) Prior to commencing injection operations, the casing in each of the subject wells should be pressure-tested throughout the interval, from the surface down to the proposed packer-setting depth, to assure integrity of such casing.

(12) The injection wells or injection pressurization system for each well should be so equipped as to limit injection pressure at the wellhead to no more than 1650 psi.

(13) The Director of the Division should be authorized to administratively approve an increase in the injection pressure upon a proper showing by the operator that such high pressure will not result in migration of the injected waters from the Querecho Plains-Upper Bone Spring Pool.

(14) The operator should give advance notification to the supervisor of the Hobbs District Office of the Division of the date and time of the installation of injection equipment and of the mechanical integrity pressure-test in order that the same may be witnessed.

(15) The subject application should be approved pursuant to the applicable provisions of Rules 702 through 708 of the Division Rules and Regulations.

(16) The provisions of this order should be on a temporary basis only and water injection into both the subject wells should cease as of December 31, 1992. Provisions for a one-time extension to continue the injectivity test should be included in this order, however any such extension should be limited to a period not to exceed forty-five days.

(17) At the conclusion of the injectivity test and should the applicant wish to continue water injection on a permanent basis, this case should be incorporated into the record on any other matter requiring an examiner hearing for approval such as statutory unitization, enhanced oil recovery tax credit and a waterflood project within a voluntary unit area. At that time, the applicant must be prepared to address certain issues pertaining to, but not limited to, the following items:

- inadequate cement behind the Federal "E" Well No. 1;
- requirements for plastic-lined tubing in the injection wells;
- project oil allowable; and,
- project designation and area.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Mewbourne Oil Company, is hereby authorized to commence, on a temporary basis, a two well water injectivity test in the Querecho Plains-Upper Bone Spring Pool within Township 18 South, Range 32 East, NMPM, Lea County, New Mexico on its Government "K" and Federal "E" Leases.

(2) Said operator shall be permitted to convert its Government "K" Well No. 2 located 1950 feet from the South line and 1980 feet from the West line (Unit K) of Section 23 and its Federal "E" Well No. 11 located 660 feet from the North line and 530 feet from the East line (Unit A) of Section 27 from producing oil wells to water injection wells in the Upper Bone Spring interval only.

(3) The portion of this application seeking approval to inject water into the Federal "E" Well No. 10, located 2310 feet from the North and East lines (Unit G) of said Section 27, is hereby dismissed.

(4) Injection into the "K" No. 2 well shall be accomplished through 2 7/8-inch unlined tubing installed in a packer set at approximately 100 feet above the uppermost perforated interval, with injection into the perforated interval from approximately 8343 feet to 8515 feet.

(5) Injection into the "E" No. 11 well shall be accomplished through 2 7/8-inch unlined tubing installed in a packer set at approximately 100 feet above the uppermost perforated interval, with injection into the perforated interval from approximately 8360 feet to 8486 feet.

(6) The casing-tubing annulus shall be filled with an inert fluid; and a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak-detection device in order to determine leakage in the casing, tubing or packer.

(7) Prior to commencing injection operations, the casing in the subject well shall be pressure-tested to assure the integrity of such casing in a manner that is satisfactory to the supervisor of the Division's Hobbs District Office.

(8) The injection well or system shall be equipped with a pressure-limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 1650 psi.

(9) The Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the injected fluid from the Querecho Plains-Upper Bone Spring Pool.

(10) The operator shall notify the supervisor of the Hobbs District Office of the Division in advance of the date and time of the installation of injection equipment and of the mechanical integrity pressure-test in order that the same may be witnessed.

(11) The operator shall immediately notify the supervisor of the Division's Hobbs District Office of the failure of the tubing, casing or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(12) Both wells shall be governed by the applicable provisions of Rules 702 through 708 of the Division Rules and Regulations.

(13) Authorization to inject into both the aforementioned wells shall cease on December 31, 1992; however, a one-time request to continue the injectivity test shall be granted only after a written request to continue such test is submitted to, and approved by, the Division Director and the Supervisor of the Division's Hobbs District Office. Such written request shall explain in detail why such continuation is needed and what effects such continuation will have on the wells and surrounding area.

(14) Monthly progress reports shall be submitted to the Division in accordance with Rules 706 and 1115 of the Division Rules and Regulations.

(15) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

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

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY
Director

SEAL

NEW MEXICO OIL CONSERVATION DIVISION

STATE LAND OFFICE BUILDING

STATE OF NEW MEXICO

CASE NO. 10497

IN THE MATTER OF:

The Application of Mewbourne Oil Company for two secondary recovery pilot projects, Lea County, New Mexico.

BEFORE:

MICHAEL E. STOGNER

Hearing Examiner

State Land Office Building

July 9, 1992

REPORTED BY:

DEBBIE VESTAL
Certified Shorthand Reporter
for the State of New Mexico

ORIGINAL

A P P E A R A N C E S

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BY: **WILLIAM F. CARR, ESQ.**

I N D E X

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EXAMINER STOGNER: At this time I'll call the next case, No. 10497.

MR. STOVALL: Application of Mewbourne Oil Company for two secondary recovery pilot projects, Lea County, New Mexico.

EXAMINER STOGNER: Call for appearances.

MR. BRUCE: Mr. Examiner, my name is Jim Bruce, from the Hinkle law firm in Santa Fe, representing the applicant. I have one witness to be sworn.

EXAMINER STOGNER: Any other appearances?

MR. CARR: Mr. Stogner, my name is William F. Carr with the Santa Fe law firm, Campbell, Carr, Berge & Sheridan. I'd like to enter my appearance in the case on behalf of Kaiser-Francis Oil Company. And I have no witnesses.

EXAMINER STOGNER: Any other appearances?

MR. STOVALL: Off the record for just a second.

[A discussion was held off the record.]

EXAMINER STOGNER: Mr. Bruce, Mr. Carr,

is there anything to come forward at this time before we commence?

MR. BRUCE: Once again Mr. Carr will be silent.

Preliminarily, Mr. Examiner, the applicant had applied for three injection wells, the E No. 10, the E No. 11, and the K No. 2. We would dismiss the portion of the application dealing with the E No. 10 well. And this case will only pertain to the E No. 11 and the K No. 2.

MR. STOVALL: Perhaps it would be nice if I swear your witnesses before we begin.

MR. BRUCE: Yeah, I suppose we should.

[The witnesses were duly sworn.]

KEVIN MAYES

Having been duly sworn upon his oath, was examined and testified as follows:

EXAMINATION

BY MR. BRUCE:

Q. Would you, please, state your name for the record?

A. Yes. My name is Kevin Mayes.

Q. And where do you reside?

A. Tyler, Texas.

Q. Who are you employed by and in what capacity?

A. I'm a project engineer for Mewbourne Oil Company.

Q. Have you previously testified before the Division?

A. No, sir, I have not.

Q. Would you, please, outline your educational and work background?

A. Yes. I received a bachelor of science degree in petroleum engineering from the University of Oklahoma in 1982. I've worked ten years in a full engineering capacity with waterflooding as my main discipline. I'm nearing the completion of a master of science degree in geology.

And I'm a Registered Professional Engineer in the states of California, Texas, and here in New Mexico.

Q. And does your area of responsibility include matters related to these applications?

A. Yes, it does.

Q. And you're familiar with these applications?

A. Yes, I am.

MR. BRUCE: Mr. Examiner, at this time I would tender Mr. Mayes as an expert engineer.

EXAMINER STOGNER: Mr. Mayes is so qualified. Do you have any objections, Mr. Carr?

MR. CARR: No, Mr. Stogner.

EXAMINER STOGNER: Thank you, Mr. Carr.

Mr. Bruce.

Q. (BY MR. BRUCE) Briefly, Mr. Mayes what does Mewbourne seek in this case?

A. Mewbourne seeks the authority to inject water into the first Bone Springs sand and the Federal E No. 11 well located in the northeast quarter of the northeast quarter of Section 23 and into the Government K No. 2 well located in the northeast quarter of the southwest quarter of Section 23.

Both wells are in the Township 18 South, Range 32 East. And these wells are for testing the injectivity of the first Bone Springs at Querecho Plains Field.

Q. And what are Mewbourne's intentions if these injection wells are successful? And I would refer you to Exhibit No. 1.

A. Okay. Exhibit No. 1 is a land plat of the Querecho Plains area. The dashed lined represents a proposed unit outline, which Mewbourne is negotiating with the appropriate offset operators. The wells being applied for today are designated with triangles.

If injectivity is of sufficient volume, then Mewbourne plans on pursuing this unit, installing a waterflood, and producing a predicted 1.4 million barrels of oil, incremental oil.

I might add that testing the injectivity was a consensus of several operator meetings that we have already conducted.

Q. Okay. Referring to Exhibit No. 2, would you describe what that shows for the Examiner?

A. Exhibit No. 2 is an east-west cross-section, stratigraphic cross-section cutting through the center of the field. It's designated to show the continuity of the sands. And the Examiner would, please, note that we've -- Mewbourne has designated the top sand as the green sand and the bottom sand as the blue sand.

Q. If these tests are successful, would

the waterflood program cover both sands?

A. Yes, sir, it would.

Q. Would you, please, now refer to Exhibits 3-A and 3-B and discuss that for the Examiner?

A. Okay. Exhibits 3-A and 3-B, Exhibit 3-A is a net height above the water-oil contact isopach map on the green sand. And it's designated to demonstrate the areal limits of productive hydrocarbons. Exhibit 3-B then will be the same isopach on the blue sand.

Q. And the outline of the proposed unit was based upon the areal extent of these sands?

A. That's correct.

Q. Okay. Now, based on your Exhibits 2 and 3, is the Bone Springs continuous across the proposed unit?

A. Yes, sir, I believe so.

Q. Now, getting into the injection applications, would you, please, refer to Exhibit No. 4 and describe its primary issues?

A. Yes. Exhibit No. 4 is the New Mexico State Form C-108 for the Federal E No. 11 with all of its appropriate attachments. Page 2 of this application is a -- it's revised from the

original application. It's a schematic of the Federal E No. 11 well. And it's revised only to show a calculated top of cement for each casing string.

Q. Revised from what was originally submitted to the OCD?

A. Correct.

Q. And would you, please, move on and discuss the other portions of the application?

A. Okay. Pages 3 and 4 of the application are land plats showing wells which penetrated the Bone Springs in the area of review both on a lease map and a proposed unit map. Page 5 of the application is a tabulation of data from wells in the area of review. This is again revised from the original application to show the calculated tops of cements.

Q. Are there any problem wells in the area of review?

A. There are a handful of wells where calculated top of cement on the production string does not return to the surface casing shoe. However, there's only one well where calculated cement does not cover the Bone Spring, and that is the Federal E No. 1 well.

We have checked and there was apparently no bond or temperature log run on this well. And we are currently monitoring the annulus pressure and have not seen any pressure at the annular surface to date.

Our suspicion is that either cement does not cover -- does cover the Bone Springs or drilling mud has set up sufficient to handle significant differential pressure. We would request that continued monitoring of this annulus be sufficient versus reentering this well.

Q. In your opinion will formation or injection fluids be able to move up any of the well bores to any other zone or formation?

A. No, sir, I don't believe so.

Q. Okay. Now, moving onto the K No. 2 well, could you refer to Exhibit 5 and again discuss the primary portions of this application?

A. Exhibit 5 again is a State Form C-108 for the Government K No. 2 well with its appropriate attachments. Page 2 is the schematic of the Government K-2 well. Again this has been revised from the original application to show calculated top of cement.

Also, there's some perforations that

were overlooked in the original application. These perforations are located at 4859 feet. These perforations we plan on squeezing off with cement before converting this well to injection, and the injection interval will remain the same as the original application.

Pages 3 and 4 again are land plats showing wells which penetrated the Bone Springs and the area of review. Page 5 again is all the well information of those wells which penetrated the Bone Springs and again is revised from the original application to show calculated tops of cement.

Q. Again are there any problems with any of these wells?

A. With the exception of some cement not reaching the surface casing shoe, no, there is not.

Q. Okay. And would you, please, describe the proposed injection operations for both wells for the Examiner?

A. Mewbourne intends to inject approximately 500 barrels of water a day into each of these wells with an anticipated maximum rate being 800 barrels of water per day. The

injectors will be operated as a closed system. The initial injection pressure will not exceed .2 PSI per foot of depth.

Mewbourne does request authority for administrative approval of a maximum injection pressure of 2,000 PSI. This pressure would add .04 PSI per foot of gradient, i.e., the .24 gradient versus a .20 gradient and is more in line with ISIP pressures that we're seeing whenever all the wells in the field were hydraulically fracture treated.

Q. Okay. Is there a stimulation program for these wells?

A. Again all the wells in the field have been treated with a hydraulic stimulation, fracture stimulation. The wells being applied for today will be acid treated at conversion, and it is anticipated at least once more during the life of a proposed full flood.

Q. What is the source of the injection water?

A. The injection water will be Bone Springs, Delaware, and/or a Queen Formation produced water. If additional water volume is needed, it will be purchased from the City of

Carlsbad.

Q. And would you identify Exhibit 6 for the Examiner?

A. Yes. Exhibit 6 is an analysis of the proposed injection fluids which state that there's a minimal compatibility problem with these waters.

Q. Okay. For the full waterflood, if the unitization is approved, where do you anticipate that water or the bulk of that water would come from?

A. I would anticipate that most of the make-up water would be freshwater from the City of Carlsbad.

Q. Are there any freshwater wells within a mile of the proposed injection well?

A. No, sir, there are not.

Q. And at what depth are the freshwater zones found?

A. Well, freshwater zones in the area are at a depth of approximately 270 feet.

Q. And --

A. Okay. Go ahead.

Q. Are there any other faults or hydrologic connections between the freshwater

zones and the Bone Springs?

A. No, sir.

Q. Were offset operators notified of your applications?

A. Yes, sir, they were. Page 9 of Exhibits 4 and 5, the applications, page 9 is a Certificate of Service regarding notice to the offset operators. In addition the BLM has also been notified.

Q. And have you met with the BLM regarding the proposed unitization?

A. Yes, sir, we have.

Q. Is Exhibit 7 a supplemental affidavit containing the certified return receipts of the mailings to the offsets?

A. Yes, sir, it is.

Q. In your opinion will the granting of these applications be in the interests of conservation and the prevention of waste?

A. Yes. We believe the test injectors will pave the way for unitization, which will benefit the operators, the state, and the BLM by profitable producing incremental oil reserves.

Q. And were Exhibits 1 through 7 prepared by you or compiled from company records?

A. Yes, they were.

MR. BRUCE: Mr. Examiner, at this time I move the admission of Exhibits 1 through 7.

EXAMINER STOGNER: Exhibits 1 through 7 will be admitted into evidence. I'll note Mr. Carr is not present in the room, so I'll assume he has no questions of this witness.

EXAMINATION

BY EXAMINER STOGNER:

Q. In looking at Exhibit No. 1, or any of the maps for that matter, the two injection wells, let's take the Federal K No. 2, which wells are you assuming that these that -- this injection is going to assist or see some sort of increase in?

A. The objective of these, converting these wells to injection is only to test injectivity. We're not planning on running the test of a sufficient length to see response from the offset wells.

Q. You talked about 5- to 800 barrels of water a day, 500 being the average, 800 being the maximum. For what length of period in this injectivity test phase?

A. Through meetings we've had with the

operators of the proposed unit, we want to run them along enough to determine stabilized injection rates. And we estimate that time to be on the order of two to three months.

Q. Will both these wells ever be in this first phase injecting simultaneously? Is that your plan?

A. That's the plan, yes, sir.

Q. Since you have some sort of outline for a unit, how long -- how far along are we on that?

A. We've had several meetings with the potential participants, and it was an agreement among those participants that we would run these injection tests for two to three months and meet again and pretty much at that time make application for the unit.

MR. BRUCE: I'd also add, Mr. Examiner, that the unit agreement and unit operating agreement have been circulated in draft form among the operators.

Q. (BY EXAMINER STOGNER) But neither government agency has been approached at this time?

A. The BLM has been approached and verbally approves of our operation here.

Q. Are there any state lands in here?
A. No, sir.
Q. So this would be 100 percent federal?
A. Yes, sir.
Q. No fee?
A. No. I might add that the unit outline was modified from an original design to accommodate the BLM.
Q. The one that's shown on Exhibit 1, and I think a better map is on Exhibit 2 myself.
A. The Exhibit 2 map, you'll see that the unit outline includes some more lands that the BLM felt was appropriate to take out. So the Exhibit No. 1 is the current proposed unit outline.
Q. If the injectivity tests come out correctly, and hopefully you'll go on and get your unit, I'm assuming also your unitization plans are contingent upon the injectivity; is that correct?
A. That's correct, as far as design, equipment, et cetera, et cetera.
Q. What would be your plans then to develop this into a full-blown waterflood?
A. We have got a computer simulation that

is run on the field, and their best prediction is to use a line-drive, injectors running east and west across the field.

Q. In all those wells within your proposed unit that are circled on Exhibit No. 1 as oil, those are Bone Springs producers?

A. That is correct.

Q. It looks like this pool has been developed on 40-acre spacing. Do you know if that is the official spacing out there?

A. I believe it is. I'm not the authority on that but --

Q. But in looking at the map, I think we can determine, especially up in the northeast part where the main producers are?

A. Yes, sir.

MR. BRUCE: Yes, Mr. Examiner, it is 40 acres. I've had some previous exposure to the field.

EXAMINER STOGNER: Thank you, Mr. Bruce. I know a lot of these questions I'm asking are premature at the time; however, being a federal unit, are you expecting all -- maybe I'm not -- well, let me ask you, Mr. Bruce. What is your -- is this the only witness you have?

MR. BRUCE: Yes.

Q. (BY EXAMINER STOGNER) Okay. Let me ask you, do you know or are you aware if all the interests are going to sign, or do you see a potential where this will be a statutory unit application?

A. Are you asking me?

Q. Are you aware?

A. In the meetings that we've had with the potential participants, you know, where everything is in negotiations, but we don't see any problems at this point.

MR. BRUCE: Mr. Examiner, I've heard that there may be a few hold-outs on the working interests that may have to be forced in by statutory unitization.

EXAMINER STOGNER: Mr. Bruce, what I'm saying here is this is a little unusual inasmuch as most of our waterflood applications are for cooperative lease agreements or units that are already set up. In this particular case we've had an injectivity test phase. That kind of put Mitchell in some sort of a predicament in how we should handle it and how we should go on since all waterfloods should come to hearing.

Since we don't have a unit out there and they've all been federal, if it's all voluntary, you wouldn't have to come back in here for the unit agreement, like what the previous Mitchell case was. But if it's statutory, naturally you'd have to come back in here.

As I mentioned to Mewbourne in my conversations, and I can't remember who it was at the time when I made application -- or when they made application and I wrote up the ads to this particular application, that once a unit waterflood got substantiated out there, more than likely we would have to come in here and do this again.

In reviewing what your witness has submitted today, it appears that -- I'm trying to think of a way that we can shortchange or take a shortcut.

MR. BRUCE: We would like to do that if possible.

EXAMINER STOGNER: And one of the ways I see if it's all voluntary agreement, you've got enough information here that I see to, if it's approved, to go ahead and write or issue the standard waterflood application where expansions

can be done administratively.

Like in most cases, an application comes in for writing the ad, a lot of them you don't have enough information to see what's going on, and that's the reason we're here at this point.

With that perhaps you might ask some questions that could maybe formulate some certain findings of this witness for me to formulate some findings or come up with some ideas about how to proceed with the development of the waterflood with the least amount of -- how would you say, bureaucratic hassles with the OCD, and do it administratively.

Would you like to have a few minutes off the record, Mr. Bruce?

MR. BRUCE: Yes.

[A discussion was held off the record.]

EXAMINER STOGNER: Mr. Bruce?

MR. BRUCE: If I could ask a couple of follow-up questions, Mr. Examiner?

FURTHER EXAMINATION

BY MR. BRUCE:

Q. First, Mr. Mayes, referring to Exhibit 1, does the dotted line accurately reflect the

proposed unit outline that has been approved or preliminarily approved by the Bureau of Land Management?

A. Yes, it does.

Q. And is all the land in the unit federal land?

A. Yes, it is.

Q. Federal minerals, that is?

A. Yes.

Q. As part of this order, would you request -- would Mewbourne request administrative approval for expansion of the -- expansion of the injection program?

A. Yes, we would.

Q. Let me hand you what's been marked Exhibit 8, and would you identify that for the Examiner?

A. Yes. Exhibit 8 is a grid diagram with well locations on it that is obtained from the computer simulation we're running on the field.

Q. What are the two wells that you are here asking for approval here today and what numbers are they?

A. That would be Well No. 5 and Well No. 30.

Q. And this indicates the future expansion of the injection system for this unit?

A. Yes, sir. It's kind of hard to see on this exhibit, but the arrows would be designated the injectors in the full flood, and the circles would be the producers.

Q. And the waterflood, as I think we've already stated, for both the injection program would be into both Bone Springs sands?

A. Be both what Mewbourne has designated the green and the blue, yes.

Q. And would you ask for administrative approval, not only for expansion, but to convert certain of these wells to injection wells if necessary?

A. Yes, sir, we would.

Q. Does Mewbourne anticipate drilling any additional injection wells, or would they mainly just be conversion of existing wells?

A. Conversion of existing wells at this time.

Q. Okay. And I think the Examiner asked you this, what kind of timetable does Mewbourne have in mind for this program?

A. We plan on testing the injectivity of

the Bone Springs for approximately two to three months and then taking those results, putting it into the computer simulation, and if everything is still positive for the flood, we would implement it at that time. So a two- to three-month time period.

Q. So once you get approval it could be within four or five months that you would commence converting additional wells to injection providing necessary approvals were obtained?

A. Yes, sir.

Q. Just very briefly, I think you've already mentioned the recoverable secondary reserves. Could you just briefly mention the economics of this project?

A. Yes. It will take -- to implement the entire flood including pre-unitization costs to date and converting these two test injectors would cost $2.8 million. The calculated present worth of the incremental reserves when discounted at 10 percent would be approximately $6 million with an internal rate of return of 53 percent.

Q. One follow-up question. In checking with the land people, is it your understanding that at this time there is not 100 percent

approval of the proposed unit, is that correct, from the working interest owners?

A. That is correct. In our meetings we are negotiating a few topics.

MR. BRUCE: Mr. Examiner, I move the admission of Exhibit 8.

EXAMINER STOGNER: Are there any objections?

There being none, Exhibit 8 will be admitted into evidence.

MR. STOVALL: "Objections to what?" he says.

FURTHER EXAMINATION

BY EXAMINER STOGNER:

Q. Do you know what the average production in this area is in this Bone Springs pool?

A. Cumulative production?

Q. Yes. Average monthly -- I mean the average daily per barrel?

MR. STOVALL: Not cumulative.

Q. (BY EXAMINER STOGNER) I'm sorry. Just the average daily rate.

A. Currently?

Q. Yes.

A. Average daily rate currently is

probably on the order of 7 or 8 barrels a day.

Q. So it is considered stripper, and it would be a waterflood under our classification?

A. Yes, sir.

Q. Has there been a name given to this proposed unit?

A. Yes, the Querecho Plains Bone Springs Sand Unit.

Q. And you covered the freshwater sands and zones, didn't you?

A. Yes. Both the freshwater zone at a depth of approximately 270 feet is covered by two strings of casing with cement circulated behind both strings.

Q. I want to refer to Exhibit No. 4, fifth page, talking about the Federal E No. 1. This is the "problem" well. What well -- where is the location of that well?

A. Which map would you like to refer to?

Q. 3-B. I like the big maps.

A. All right. It is in the northwest quarter of the northeast quarter of Section 27.

Q. And this is a present gas producer?

A. Yes, sir, it is from the Morrow zone.

Q. Who's the operator?

A. Mewbourne Oil Company.
Q. And the Bone Springs is behind the five-and-a-half inch?
A. Yes, sir, that's correct.
Q. And the calculated top of cement is 10,327 in the production zone; is that correct?
A. That is correct. The Bone Springs is going to be at approximately 8500 feet.
Q. Do you know what formation is correspondent to that 10,327 top of cement?
A. The top of the Atoka is at --
Q. Approximately.
A. -- approximately 11,900 feet. And I would have to check logs for the second and third Bone Springs. I don't know what depths they might be at.
Q. How about the Wolfcamp, is it present?
A. Again I'd have to check some logs for the Wolfcamp.
Q. Well, we're talking about 1,500 to 2,000 feet of open area between the proposed injection zone and the top of the cement; is that correct?
A. That sounds about right.
Q. Okay. Would you anticipate a problem

if this well had to be repaired, shut down, killed --

A. Yes, sir.

Q. -- squeezed?

A. We see a lot of risk involved with doing that, a lot of risk to that Morrow gas production if we would have to reenter this well.

Q. Now, this well is within the area of review for which?

A. For the E No. 11 application.

Q. And how far away is this well?

A. It is the direct west offset approximately 1,323 feet away.

Q. Okay. Now, looking at Exhibit No. 8, I've got your No. 11 well --

A. Yes, sir.

Q. -- marked. Do you have another proposed injection well, should it become a full-blown waterflood, and that would be the E-13? I show -- it's marked as an injection well No. 2?

A. No. 2. Yes, sir, that's correct.

Q. Is that E-14 well, which is directly south of the E-1 well, is that presently

producing?

A. No, that's not an existing well. That's a proposed location. I apologize.

Q. There again if this is a full-blown waterflood, that would be the Bone Springs producing well?

A. Yes. If it gets drilled, that would be the Bone Springs producing well.

Q. Is the E-1 completed in such a way that possibly that could be a dual completion?

A. I'm not the authority to answer that question.

Q. You'd have to kill it anyway if you were going to do that. And is that the problem on that Morrow producing well if you would kill it?

A. Right. Its current reservoir pressure is approximately 3,000 pounds. And the hydrostatic head of that potential kill fluid would be 6,000 pounds, a very large differential pressure into the zone. And putting fluid on that Morrow gas formation is something that could definitely be detrimental to that gas production.

Q. Can you think of any other way in which

this well could be monitored or repaired in such a way as to get cement or --

A. My experience with a similar situation is we would, in order to get that mud column to move behind that annulus, we would most likely exceed frac gradient.

To get cement across that Bone Springs Formation, we would end up just pushing cement out into a fracture and not get any cement into the annular area anyway.

We would really like to just monitor the annulus pressure at the surface and if necessary run an occasional temperature log or noise log to try to detect any movement behind that five-and-a-half inch pipe versus reentering the well.

Q. Now, if you ran a temperature survey, wouldn't you have to shut it down?

A. No, sir. Well, we would shut it down, but we would not have to kill the well.

Q. Okay. How long has that well produced from the Morrow Formation, offhand or approximately?

A. Approximately since 1978. It's a very nice zone. I might also add, in calculating that

top of cement, it's a very conservative calculation in that we took 25 percent of the volume to compensate for any washouts that might be in the borehole.

And after reviewing the caliper log of that hole, it was fairly much to gauge. It doesn't have very many washouts in it. And the maximum wash out was nine-and-a-half inches. It's my belief that we're under-calculating that top of cement.

But even if we do include 100 percent of cement volume and assume the hole is gauged and take into account the casing collars, which are not taken into account with that calculated number in Exhibit No. 4, I don't believe we would get cement across the Bone Springs.

But without having a bond log to refer to, you know, that top of cement could be a lot higher and could be covering the Bone Springs.

Q. Could you submit that subsequent to today's hearing?

A. There is apparently no bond log or temperature log in existence. I don't believe that we ran one. After checking all of our files, I did not find one. And to run a bond log

in a gas filled wellbore could be difficult to interpret.

So like I say, I would recommend that we monitor it pretty much with the annular pressures at the surface and then if necessary with periodic noise logs or temperature logs to monitor for movement behind pipe.

Q. What kind of time frame are we looking at, injectivity, full-blown waterflood, and this well being one of the original two injectors in the waterflood area? When would the E-14 well be drilled?

A. We would have to evaluate flood response before we'd be willing to drill the E-14. Fill-up is anticipated to be on the order of eight months, and peak production is in three years. So I would think if we were going to drill the E-14 well, it would be sometime within a three-year time period.

Q. We will take that under consideration of this Morrow producer.

A. I appreciate it.

EXAMINER STOGNER: Mr. Bruce, can you think of anything further in this case?

MR. BRUCE: Not at this time, Mr.

Examiner.

EXAMINER STOGNER: Let me recheck the notifications. Who all was notified? And I believe that is Exhibit No. 7; is that correct, Mr. Bruce?

MR. BRUCE: Yes, Mr. Examiner. I think if you refer to Exhibits 4 and 5 and go to page 9 of each exhibit, it gives the people who were notified. And then Exhibit 7 contains the certified return receipts.

EXAMINER STOGNER: Okay. I show -- I'm looking at page 9, Exhibit No. 4, offset operators. But it appears that Mewbourne is the offset operator.

MR. BRUCE: I think we notified everyone.

EXAMINER STOGNER: Are these interest owners or -- Certificate of Service, landowner?

THE WITNESS: There are some of these leases that are horizontally severed, and there are shallower wells operating in the area. And we notified the operators of the shallow wells as well as the deeper wells.

EXAMINER STOGNER: I see. I have nothing further of this witness.

Mr. Stovall?

EXAMINATION

BY MR. STOVALL:

Q. You have applied for or you have requested in this process for an administrative approval to expand and take it from a pilot, looking at injectivity tests really just to make sure the reservoir accepts water; right?

A. Yes, sir.

Q. The anticipation is you will develop a secondary recovery unit --

A. Yes, sir.

Q. -- or waterflood project? Is it safe to assume that Mewbourne would probably come in and want to get the tax credit when it became available for this type of flood?

A. Yes, sir.

MR. STOVALL: As you may or may not be aware, the Division has not yet written the rules to specify the procedure, but I think -- oh, gee, I'm sorry Mr. Carr is not here at the moment since he's the expert on that bill.

But my interpretation of the bill, and I'm telling you this more for information so

you're aware, is that the approval of the project by the Division is this type of C-108 approval. And they can approve administrative expansion in terms of adding additional wells or converting additional wells to the flood.

What will be necessary in order to get the tax credit certifications from the Division is you will have to come back in and identify the specific project area. I suggest that what you may want to do is wait until you figured out where you are in unitization and done your injectivity tests, because I think the real critical timing is that you get this approved after March 6, 1992, and it appears that we've accomplished that, assuming you're given approval.

But you then will have to come back in, and I would anticipate that what that would require is you'd have to say, "Okay, here's our unit area and here's what we anticipate doing." And it would be a fairly complete and comprehensive development of the unit area, which would then be a specifically defined area which would be certified to the Taxation & Revenue Department and then of course get your positive

production response after that time.

THE WITNESS: Okay. We appreciate that information.

MR. STOVALL: That is the process that you -- again it's still in the formulation stage, but I think that's essentially correct as to what you'll have to do in order to get the tax credit or reduced tax rate, I guess, it really is for this as an EOR project under the Division's rules.

THE WITNESS: Yes, sir.

MR. STOVALL: Or under the statute, I guess. And with that caveat and advice and since your landman is sitting back there and understands all this, he also can explain it in those terms, I assume, to management.

If there are any questions, please feel free to call the Division but I think that's what you'll have to do.

EXAMINER STOGNER: As far as the waterflood goes, if an order is issued from today's hearing, Mr. Bruce, I would also like to request at this time that once unitization gets authorized, assuming we don't see it back in here for statutory unitization, that we receive

supplemental information showing the unit agreement and the unit bounds.

MR. BRUCE; Okay.

MR. STOVALL: I think that will have to be done as part of the --

THE WITNESS: Administrative approval.

MR. STOVALL: -- approval -- Well, not the administrative approval because that really goes to approving the injection, but as far as getting the certification of the area, I think you can come back in and supplement the record in this case, or reopen the case, or a new case, however we do it. I think we can accomplish that at the same time.

MR. BRUCE: We'll get it one way for the other.

EXAMINER STOGNER: I think that we're going to save you from coming in and presenting the C-108 at this process.

MR. STOVALL: That's not a promise. That we may have to, because we're in the early stages of this EOR bill, we may have to come in and get some additional information, not the details of the well and area review and all that, but in terms of the details of the anticipated

benefits from the project and the time schedule and plan of development for the project.

THE WITNESS: We appreciate the intention.

MR. STOVALL: Welcome to a test case.

EXAMINER STOGNER: Thank you. If there's nothing further in this case, I will take Case No. 10497 under advisement at this time.

[And the proceedings were concluded.]

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 10497, heard by me on 9 July 1992.

, Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

STATE OF NEW MEXICO)
) ss.
COUNTY OF SANTA FE)

I, Debbie Vestal, Certified Shorthand Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I caused my notes to be transcribed under my personal supervision; and that the foregoing is a true and accurate record of the proceedings.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL JULY 13, 1992.

Debbie Vestal

DEBBIE VESTAL, RPR
NEW MEXICO CSR NO. 3