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: | ) | |
| APPLICATION OF COG OPERATING, LLC, FOR APPROVAL OF A WATERFLOOD PROJECT AND TO QUALIFY THE PROJECT FOR THE RECOVERED OIL TAX RATE, EDDY COUNTY, NEW MEXICO | ) | CASE NO. 13,898 |

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

May 10th, 2007

Santa Fe, New Mexico



This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, May 10th, 2007, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South Saint Francis Drive, Room 102, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

* * *

# I N D E X

May 10th, 2007
Examiner Hearing
CASE NO. 13,898



* * *

## E X H I B I T S

| Applicant's | Identified | Admitted |
|---|---|---|
| Exhibit 7A | 6 | - |
| Exhibit 8 | 8, 9 | - |
| Exhibit 9 | 8 | - |
| Exhibit 11A | 7 | 11 |
| Exhibit 11B | 8 | 11 |
| Exhibit 12 | 10 | 11 |

* * *

A P P E A R A N C E S

FOR THE DIVISION:

DAVID K. BROOKS, JR.
Assistant General Counsel
Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

FOR THE APPLICANT:

JAMES G. BRUCE
Attorney at Law
P.O. Box 1056
Santa Fe, New Mexico 87504

* * *

WHEREUPON, the following proceedings were had at 8:55 a.m.:

EXAMINER CATANACH: At this time I'll call Case 13,898, the Application of COG Operating, LLC, for approval of a waterflood project and to qualify the project for the recovered oil tax rate, Eddy County, New Mexico.

Call for appearances.

MR. BRUCE: Mr. Examiner, Jim Bruce of Santa Fe, representing the Applicant. I have one witness.

EXAMINER CATANACH: Any additional appearances?

Will the witness please stand to be sworn in?

(Thereupon, the witness was sworn.)

MR. BRUCE: Mr. Examiner, this case was presented four weeks ago, but there were several issues which needed to be resolved.

First, COG had identified four wells that were potentially problem wells, and we didn't have enough data at the time so the hearing was continued to resolve that.

There was also an issue as to whether this project was more properly classified as a pressure maintenance or a waterflood project, and the witness will address that.

And then one of the companies had not received their notice, so I renotified everyone, and we'll get into that today.

EXAMINER CATANACH: Okay.

GAYLE BURLESON,

the witness herein, after having been first duly sworn upon her oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. BRUCE:

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

A. Gayle Burleson.

Q. And where do you reside?

A. Midland, Texas.

Q. Who do you work for and in what capacity?

A. I work for COG Operating, LLC, as a reservoir engineer.

Q. Have you previously testified before the Division as a reservoir engineer?

A. Yes, I have.

Q. And were your credentials as an expert accepted as a matter of record?

A. Yes, they were.

Q. And are you familiar with the matters involved in this Application?

A. Yes, I am.

MR. BRUCE: Mr. Examiner, I'd tender Ms. Burleson as an expert reservoir engineer.

EXAMINER CATANACH: She is so qualified.

Q. (By Mr. Bruce) Ms. Burleson, let's go through the exhibit package. First of all, Exhibit 7A, which is from the original hearing in this matter, is it not?

A. Yes, it is.

Q. Is that simply the exhibit that identified the potential problem wells that you identified in this matter?

A. Yes.

Q. Now the first one is listed as P-and-A'd. Even though that was a problem well, it was properly P-and-A'd, correct?

A. Actually, the records that I had, it was the fourth well was P-and-A'd --

Q. Oh, the fourth --

A. -- 30-015-04222 --

Q. Okay, so that --

A. -- and that one was included in the AOR --

Q. Okay, so --

A. -- as one of the original plugged wells.

Q. -- so -04222 is the well that was P-and-A'd --

A. Yes.

Q. -- and it was properly P-and-A'd?

A. Yes.

Q. And that information was included in Exhibit 7, which is the --

A. That's right.

Q. -- the C-108.

A. Right.

Q. And then the last well is a COG well?

A. It is.

Q. And you will testify about that briefly?

A. Yes.

Q. And then the other three wells were Marbob wells, and you have obtained additional information on those wells?

A. Yes, I have.

Q. Okay. Let's skip over a couple of exhibits and move to Exhibit 11A. What does Exhibit 11A represent?

A. Exhibit 11A is a sundry notice, and then also a wellbore schematic that I have prepared for the COG well that we identified as a potential problem well. API Number is 30-015-22216, the Loco SW Number 1.

Q. And after the last hearing did you go back and check COG's internal files regarding this well?

A. We did. We have obtained well records from the prior operator, and when we researched this well we noticed that there was a remedial squeeze cementing job done in November of 2000. That information had not been reported by sundry, by the prior operator, and so we have subsequently filed a sundry notice to this effect.

Q. And that sundry notice is the first page of 11A?

A. Yes.

Q. And then the second page is simply a wellbore schematic of COG's well?

A. Yes.

Q. And so that well is properly cased and cemented so that it complies with Division Rules?

A. Yes.

Q. Okay. The next exhibit, Exhibit 11B, does that package contain information on all of the Marbob wells?

A. Yes, these are wellbore schematics of the three Marbob wells that I prepared, but from information that I received from Marbob Energy.

Q. Okay. And do these wellbore schematics show that these wells are properly completed or plugged and abandoned so that they will prevent movement of fluid between zones?

A. Yes.

Q. And so the long and the short of it, from the data you have is, from all the wells that are in the C-108, there are no problem wells?

A. Yes, that is correct.

Q. And so no remedial work is required upon any of the wells within the area of review before injection is commenced?

A. Yes.

Q. Next let's move to your Exhibits 8 and 9, which

again are from the original hearing, are they not?

A. Yes.

Q. And could you just briefly describe what the production is in the pool and why this is either a pressure-maintenance or a waterflood project?

A. Exhibit 8 is a production graph of the historical performance of this lease. It started in very early '97, and subsequently through the end of '06 we have 16 producers in this 160 acres.

And originally, four weeks ago when I testified, we were wanting to apply for a waterflood project, and there was some question as to the advanced state of depletion of this lease. And we were mainly going by the bottomhole pressure and how much it has reduced since '97.

When we go back, we do have two recent wells. The Number 17 and Number 18 were drilled in late '05, early '06, and there are a few wells on this 160-acre lease that do not qualify as stripper oil wells, which would, you know, definitely show as an advanced state of depletion. And so we would like to amend that Application to a pressure maintenance project. We feel that it better suits a pressure maintenance project than a waterflood project.

MR. BRUCE: And Mr. Examiner, for a pressure maintenance project you're supposed to recommend a project area. If you'll look at the other exhibits presented in

this matter, which I didn't present today, but in particular the Exhibit 1A which was previously presented, every quarter quarter section in this project, in this 160 acres, has a producing well or an injection well, and I believe under the Division Rules that would qualify the entire quarter section as the project area.

Then finally, Mr. Examiner, submitted as Exhibit 12 is a re-sent notice to all of the pertinent parties, the BLM, which is the surface owner, and all offset operators in this zone.

In the first go-around, Cimarex Energy Company had not received their notice. I have no idea why, but -- since it was sent to the correct address, but I did re-send notice of an amended Application to institute a pressure maintenance project to all of these people, and they did receive it, and no objections have been received.

Q. (By Mr. Bruce) Ms. Burleson, in your opinion is the granting of this Application in the interests of conservation and the prevention of waste?

A. Yes.

Q. And were Exhibits 11A and 11B prepared by you or under your supervision?

A. Yes, they were.

MR. BRUCE: Mr. Examiner, I'd move the admission of COG Exhibits 11A, 11B and 12.

EXAMINER CATANACH: Exhibits 11A, 11B and 12 will be admitted as evidence in this case.

Well, I'm kind of at a disadvantage since I didn't hear the first go-around in this case, so I guess -- Was there testimony in the first go-around about the ownership of the project area?

MR. BRUCE: Yes, there was, Mr. Examiner. This is a lease pressure maintenance project. COG is 100-percent working interest owner in this project, and it's a federal lease, a single federal lease with common ownership in the injection zone.

EXAMINER CATANACH: Okay. The case is still advertised as a waterflood, but I don't think it makes any material difference.

MR. BRUCE: Well, I did submit a new -- I don't think it does either, but I did submit a new ad to Ms. Davidson, and I think she's -- it's published for the May 24th docket --

EXAMINER CATANACH: Okay.

MR. BRUCE: -- to name it a pressure maintenance project.

EXAMINER CATANACH: Okay, so that's being corrected, and so then we continue it two more weeks?

MR. BRUCE: Two more weeks.

EXAMINER CATANACH: Okay, just one question.

EXAMINATION

BY EXAMINER CATANACH:

Q. Your Exhibit Number 7A listed five wells?

A. Right, and one of those wells was actually one of the plugged wells that was included on the C-108.

Q. The -04222?

A. Yes, and it has been properly plugged.

Q. Okay. And was the first well, the -32971 -- was that addressed in your new --

A. Yes, it is the Burch Keely Unit Number 27.

Q. And that's on Exhibit --

A. No, I'm sorry, it's the Burch Keely Unit Number 362. It's the third page of Exhibit 11B.

Q. Third page. I'm sorry, what number?

A. I may have a typo on this wellbore sketch. It's the Burch Keely Unit Number 362.

Q. And it's got the wrong API number on it.

A. Yes.

Q. Yeah. Is that just a typo on that page?

A. Well, let me check. Yes, it is a typo, and I apologize.

Q. Okay, so I just can scratch out the -74?

A. It's -32971.

EXAMINER CATANACH: -971.

All right. Anything further?

MR. BRUCE: Nothing further.

EXAMINER CATANACH: There being nothing further, Case 13,898 will be continued to May 24th.

(Thereupon, these proceedings were concluded at 9:09 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 13898, heard by me on May 10, 2007.

David R. Catanach, Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

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

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; 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 May 12th, 2007.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 16th, 2010

# DOCKET: EXAMINER HEARING - THURSDAY – MAY 10, 2007
## 8:15 A.M. - 1220 South St. Francis
## Santa Fe, New Mexico

**Docket Nos. 16-07 and 17-07 are tentatively set for May 24, 2007 and June 7, 2007. Applications for hearing must be filed at least 30 days in advance of hearing date. OCD Rule 1211.B requires parties who intend to present evidence at an adjudicatory hearing to file a pre-hearing statement no later than the Thursday before the hearing, and serve a copy on opposing counsel of record. If the OCD does not receive a pre-hearing statement from the applicant by the close of business on the Thursday before the hearing, the hearing may be continued or dismissed by order of the examiner. If a protesting party fails to submit a timely pre-hearing statement, the hearing may be continued at the applicant's request. The following Cases will be heard by an Examiner.**

CASE 13873: ***Amended Application of LCX Energy, LLC for compulsory pooling and unorthodox well location, Eddy County, New Mexico.*** Applicant seeks an order pooling all mineral interests from the surface to the base of the Wolfcamp formation underlying the E/2 of Section 10, Township 17 South, Range 24 East, NMPM, Eddy County, New Mexico, to form a standard 320-acre gas spacing and proration unit for any and all formations and or pools developed on 320 acres, including but not necessarily limited to the Wolfcamp formation. Said unit is to be dedicated to Applicant's proposed 1724 Osbourn No. 101 Well to be drilled from an unorthodox surface location 200' from the North line and 1880' from the East line of Section 10, penetrating the Wolfcamp formation 661.15' from the North line and 1880' from the East line, to a bottom hole location 660' from the South line and 1880' from the East line of the section. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of LCX Energy, LLC or its designee as operator of the well and a charge for risk involved in drilling said well. The proposed well location is approximately 1.5 miles west of Artesia, New Mexico.

CASE 13898: **(Continued from the April 12, 2007 Examiner Hearing.)**
***Application of COG Operating LLC for approval of a waterflood project and to qualify the project for the Recovered Oil Tax Rate, Eddy County, New Mexico.*** Applicant seeks approval to institute a waterflood (secondary recovery) project in the Loco Hills-Paddock Pool by the injection of water into eight wells located on federal lands covering the NW/4 of Section 20, Township 17 South, Range 30 East, N.M.P.M. Applicant further seeks to qualify the project for the recovered oil tax rate pursuant to the "New Mexico Enhanced Oil Recovery Act" (Laws 1992, Chapter 38, Sections 1-5). The project is located approximately 1 mile west of Loco Hills, New Mexico.

CASE 13911: ***Application of Apache Corporation to amend the special rules and regulations for the South Eunice-San Andres Pool, Lea County, New Mexico.*** Applicant seeks an order amending the special rules and regulations for the South Eunice-San Andres Pool to allow two wells to be located on each quarter-quarter section. The current pool rules, established by Order Nos. R-3706 and R-4193, as amended, provide for (i) 80-acre well units, (ii) wells to be located no closer than 330 feet to a quarter-quarter section line, (iii) one well per quarter-quarter section, and (iv) a limiting gas:oil ratio of 6000 cubic feet of gas for each barrel of oil produced. The pool includes all or parts of Sections 2, 10, 11, 12, and 14, Township 22 South, Range 37 East, NMPM. The pool is centered approximately 2-1/2 miles southeast of Eunice, New Mexico.

CASE 13912: ***Application of EOG Resources, Inc. for compulsory pooling, Lea County, New Mexico.*** Applicant seeks an order pooling all mineral interests from the surface to the base of the Bone Spring formation underlying the SW/4 NW/4 of Section 17, Township 18 South, Range 34 East, NMPM, to form a standard 40-acre oil spacing and proration unit for any and all formations or pools developed on 40-acre spacing within that vertical extent. The unit is to be dedicated to the Cimarron "17" State Well No. 1, to be drilled at an orthodox location in the SW/4 NW/4 of Section 17. Also to be considered will be the cost of drilling and completing the well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a 200% charge for the risk involved in drilling and completing the well. The unit is located approximately 12-1/2 miles southeast of Maljamar, New Mexico.

CASE 13913: ***Application of OGX Production Ltd. for compulsory pooling, Eddy County, New Mexico.*** Applicant seeks an order pooling all mineral interests from the surface to the base of the Morrow formation underlying the E/2 of Section 21, Township 24 South, Range 28 East, NMPM, Eddy County, New Mexico, forming a standard 320-acre gas spacing and proration unit for any production for any and all formations/pools developed on 320-acre spacing within that vertical extent, including but not limited to the Malaga-Morrow Gas Pool. This unit is

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APR 24 2007
Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, NM 87505

**BEFORE THE NEW MEXICO OIL CONSERVATION DIVISION**

**APPLICATION OF COG OPERATING LLC FOR APPROVAL OF A PRESSURE MAINTENANCE OR WATERFLOOD PROJECT AND TO QUALIFY THE PROJECT FOR THE RECOVERED OIL TAX RATE, EDDY COUNTY, NEW MEXICO.**

**Case No. 13,898**

**AMENDED APPLICATION**

COG Operating LLC ("COG"), whose address is Suite 1300, 550 West Texas, Midland, Texas 79701, applies for an order approving a lease pressure maintenance or waterflood project, and qualifying the project for the recovered oil tax rate. In support thereof, COG states:

1. The lands involved in this application are as follows:

   Township 17 South, Range 30 East, N.M.P.M.
   Section 20: NW¼

   Eddy County, New Mexico, containing 160.00 acres of federal lands.

2. The NW¼ of Section 20 is covered by the "Jenkins B Federal Lease" (United States Oil and Gas Lease LC 054988-B).

3. COG is the operator OF the Paddock member of the Yeso formation in the Jenkins B Federal Lease.

4. The above-described lands are in the Loco Hills-Glorieta-Yeso Pool. Under Division regulations, the pool is developed on statewide rules, with 40 acre well spacing, and wells to be located no closer than 330 feet to a quarter-quarter section line.

5. COG proposes to institute a pressure maintenance or waterflood (secondary recovery) project on the above-described lands.

6. COG proposes to inject water into the Paddock member of the Yeso formation from approximately 8 existing wells located on the above-described lands. The initial project

area will comprise the above-described lands. A plat outlining the project area is attached hereto as Exhibit A.

7. Pogo requests that the project be qualified for the recovered oil tax rate, pursuant to the Enhanced Oil Recovery Act (L. 1992, ch. 38) and Division regulations. Project data includes:

| | | |
|---|---|---|
| (a) | Initial number of producing wells: | 8 |
| (b) | Initial number of injection wells: | 8 |
| (c) | Capital cost of additional facilities: | $650,000.00 |
| (d) | Estimated total project cost: | $2,500,000.00 |
| (e) | Estimated value of incremental production: | $6,000,000.00 |
| (f) | Estimated $CO_2$ injection commencement date: | July 2007 |
| (g) | Type of injected fluid: | Produced water |
| (h) | Anticipated injection volumes: | 500 BWPD/well |

8. The Form C-108 for the project has previously been submitted to the Division and all interested persons.

9. Approval of this application will prevent waste and protect correlative rights.

**WHEREFORE**, COG requests that, after notice and hearing, the Division enter its order approving the injection application and the Jenkins B Federal Lease Project, and qualifying the project as an Enhanced Oil Recovery Project.

Respectfully submitted,

James Bruce
Post Office Box 1056
Santa Fe, New Mexico 87504
(505) 982-2043

Attorney for COG Operating LLC

VERIFICATION

STATE OF TEXAS )
) ss.
COUNTY OF MIDLAND )

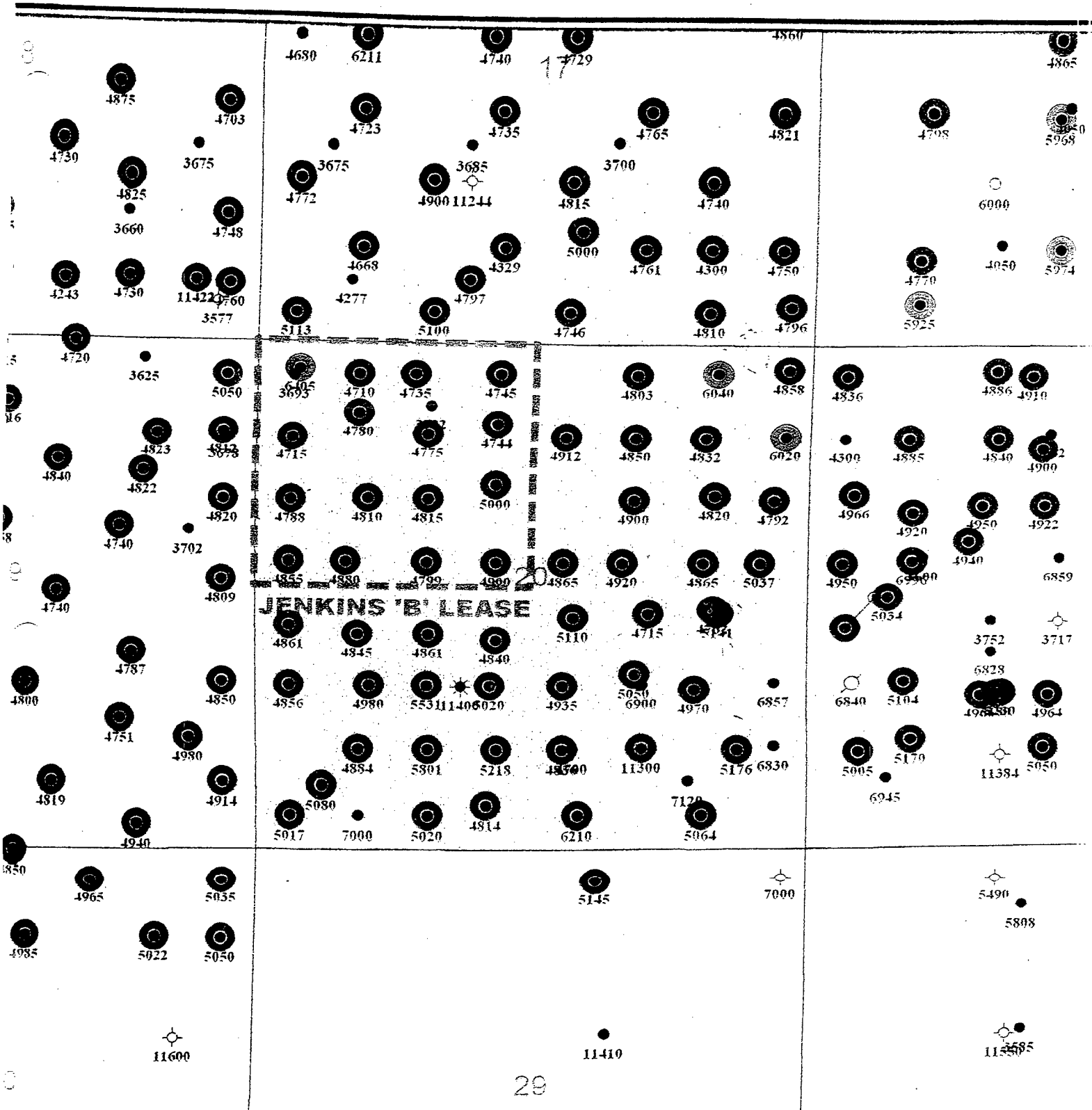
Gayle Burleson, being duly sworn upon his oath, deposes and states that: She is a petroleum engineer for COG Operating, LLC; she is authorized to make this verification on its behalf; she has read the foregoing application, and knows the contents thereof; and the same is true and correct to the best of her knowledge, information, and belief.

_____
Gayle Burleson

SUBSCRIBED AND SWORN TO before me this _____ day of April, 2007 by Gayle Burleson.

My Commission Expires: _____

_____
Notary Public




**LEGEND**

- Paddock Producer
- Blinebry Producer

EXHIBIT A

CONCHO

Project: SENM AOI: KP_Longhorn
Eddy Co., NM

**JENKINS 'B' LEASE**

**Production Map**

| Author | Scale | Date |
|---|---|---|
| K. Perez for R. Cox | Fit to Page | 22 January, 2007 |

MAP FILE PATH: \SENM\KP_LONGHORN\MAP FILES\
KP_JENKINS B LEASE_PRODUCTION.mxd

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: | ) | |
| APPLICATION OF COG OPERATING, LLC, FOR APPROVAL OF A WATERFLOOD PROJECT AND TO QUALIFY THE PROJECT FOR THE RECOVERED OIL TAX RATE, EDDY COUNTY, NEW MEXICO | ) | CASE NO. 13,898 |

ORIGINAL



REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: RICHARD EZEANYIM, Hearing Examiner

April 12th, 2007

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, RICHARD EZEANYIM, Hearing Examiner, on Thursday, April 12th, 2007, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South Saint Francis Drive, Room 102, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

* * *

I N D E X

April 12th, 2007
Examiner Hearing
CASE NO. 13,898



* * *

E X H I B I T S

| Applicant's | Identified | Admitted |
|---|---|---|
| Exhibit 1A | 6 | 10 |
| Exhibit 1B | 7 | 10 |
| Exhibit 2 | 8 | 10 |
| Exhibit 3 | 13 | 20 |
| Exhibit 4 | 14 | 20 |
| Exhibit 5 | 16 | 20 |
| Exhibit 6 | 18 | 20 |
| Exhibit 7 | 23 | 38 |
| Tab A | - | 38 |
| Tab B | 28 | 38 |
| Tab C | - | 38 |
| Tab D | - | 38 |
| Tab E | - | 38 |
| Tab F | 28 | 38 |
| Tab G | 30 | 38 |
| Tab H | - | 38 |
| Tab I | - | 38 |
| Tab J | - | 38 |
| Exhibit 7A | 32 | 38 |
| Exhibit 8 | 35 | 38 |
| Exhibit 9 | 36 | 38 |
| Exhibit 10 | 37 | 38 |

* * *

A P P E A R A N C E S

FOR THE DIVISION:

DAVID K. BROOKS, JR.
Assistant General Counsel
Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

FOR THE APPLICANT:

JAMES G. BRUCE
Attorney at Law
P.O. Box 1056
Santa Fe, New Mexico 87504

* * *

WHEREUPON, the following proceedings were had at 9:06 a.m.:

EXAMINER EZEANYIM: At this point, after a brief pause, we call Case Number 13,898. This is the Application of COG Operating, LLC, for approval of a waterflood project and to qualify the project for the recovered oil tax rate, Eddy County, New Mexico.

Call for appearances.

MR. BRUCE: Mr. Examiner, Jim Bruce of Santa Fe, representing the Applicant. I have three witnesses.

EXAMINER EZEANYIM: Any other appearances?

May the witnesses stand up to be sworn, please?

(Thereupon, the witnesses were sworn.)

EXAMINER EZEANYIM: You may proceed, Mr. Bruce.

BRENT ROBERTSON,

the witness herein, after having been first duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. BRUCE:

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

A. Brent Robertson.

Q. Where do you reside?

A. Midland, Texas.

Q. Who do you work for and in what capacity?

A. I work for COG Operating, LLC. I'm a senior

landman working southeast New Mexico.

Q. Have you previously testified before the Division?

A. Yes, sir.

Q. And were your credentials as an expert petroleum landman accepted as a matter of record?

A. Yes.

Q. And are you familiar with the land matters involved in this Application?

A. Yes, I am.

MR. BRUCE: Mr. Examiner, I'd tender Mr. Robertson as an expert petroleum engineer -- I mean -- "petroleum engineer" -- petroleum landman.

THE WITNESS: Careful.

EXAMINER EZEANYIM: Mr. Robertson is qualified.

Q. (By Mr. Bruce) Mr. Robertson, could you refer to your Exhibit 1A, which is entitled "Jenkins B Federal Lease", and just very briefly for the Examiner, what does COG seek in this case?

A. COG seeks approval to conduct a waterflood of the Paddock formation and proposes to utilize eight injection wells and eight producing wells to conduct the waterflood in a pilot phase.

Exhibit 1A depicts the fivespot injection pattern that we propose to utilize in this waterflood.

Q. Okay, and what is the acreage description?

A. The acreage involved would be the northwest quarter of Section 20, Township 17 South, Range 30 East, in Eddy County.

Q. Is that covered by a single federal lease?

A. Yes.

Q. And therefore unitization or any cooperative agreement is not necessary for this waterflood?

A. That's correct.

Q. Now for purposes of notice, what is Exhibit 1B?

A. Exhibit 1B is a map depicting the offset acreage and operators --

Q. Now the first page --

A. -- of record.

Q. -- is a Midland Map Company plat?

A. Yes, sir.

Q. And that just -- and cross-hached is the northwest quarter of Section 20?

A. That's correct.

Q. And there's a lot of junk on this map because there's so many wells. On page 2, what does that depict?

A. Page 2 is a topographic map depicting -- the cross-hached area is, again, the northwest quarter of Section 20, and the associated numbers surrounding that particular tract of land correlate to the offset operators

of record.

Q. And all the leases within a half a mile of the injectors are other federal leases, are they not?

A. That's correct.

Q. And what is page 3?

A. Page 3 depicts the offset operators and the corresponding acreage and lease federal register numbers.

Q. And it gives the lessees in the Paddock zone, does it not?

A. That's correct.

Q. And was notice given to all of these offset operators?

A. Yes, sir.

Q. And is that reflected in Exhibit 2?

A. Yes.

Q. And in addition to the offset lessees, is the surface owner the federal government?

A. That's correct.

Q. And so notice was also given to the federal government of this Application?

A. Yes, sir.

Q. And that is also reflected in Exhibit 2?

A. That's correct.

MR. BRUCE: Mr. Examiner, one thing to note here is that if you turn to the last page of Exhibit 2 --

EXAMINER EZEANYIM: Exhibit 2 --

MR. BRUCE: Yeah, the notice affidavit. Everybody received notice. There was -- I meant to ask the Cimarex people before they left, but the one green card we did not get back is from Cimarex Energy Company, and I would request permission to track that down or to get a letter from Cimarex because they informed me that they did not object to this Application. Everybody -- Notice was received by everybody else, and I don't know why the green card didn't come back on this one.

EXAMINER EZEANYIM: Now you said they verbally told you they don't object?

MR. BRUCE: Yes.

EXAMINER EZEANYIM: But they still have to put it in writing.

MR. BRUCE: I will -- I will -- Just for the record, if I don't get the green card back, I will get a letter from them that they don't object.

EXAMINER EZEANYIM: Okay. But you've got all the green cards back from the rest of them?

MR. BRUCE: Everybody else.

EXAMINER EZEANYIM: So when do you hope to get one from Cimarex?

MR. BRUCE: And this is their correct address, so I don't know why it did not -- the green card didn't come

back.

EXAMINER EZEANYIM: They're not opposing this -- They are not opposing this project, they're not -- I mean, it's not a case of opposing this project?

THE WITNESS: No, sir.

EXAMINER EZEANYIM: Well, we still need to get out the green card or their concurrence that they want this project to be --

MR. BRUCE: I will take care of that.

EXAMINER EZEANYIM: Okay.

Q. (By Mr. Bruce) Mr. Robertson, were Exhibits 1A, 1B and 2 prepared by you or under your supervision, or compiled from company business records?

A. Yes, sir, they were.

Q. And in your opinion is the granting of this Application in the interests of conservation and the prevention of waste?

A. Yes, sir.

MR. BRUCE: Mr. Examiner, I'd move the admission of Exhibits 1A, 1B and 2.

EXAMINER EZEANYIM: Exhibits 1A, 1B and 2 will be admitted under evidence.

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

EXAMINER EZEANYIM: Do you have any questions?

MR. BROOKS: Yeah, I'm a little bit confused, trying to sort my way through the various parties that were notified in the -- an exhibit that you've got here. The notice was sent to the people shown on the third page of the affidavit here, that is, BP, BLM, Read and Stevens, and Marbob?

MR. BRUCE: There are two letters, Mr. Examiner.

MR. BROOKS: Okay.

MR. BRUCE: And the reason is this: The Form C-108 which will be submitted into evidence was submitted to these four parties before my notice letter --

MR. BROOKS: Okay.

MR. BRUCE: -- was sent. And so in this notice letter I gave them notice of the hearing, but I said you've already received the C-108, if you want another copy please contact me.

MR. BROOKS: Okay. And then --

MR. BRUCE: And then further on, there's another letter to Cimarex, ConocoPhillips and EOG Resources where --

MR. BROOKS: And where is that?

MR. BRUCE: The last --

MR. BROOKS: Oh, okay --

MR. BRUCE: -- four pages --

MR. BROOKS: -- I think I found it.

MR. BRUCE: -- and --

MR. BROOKS: Okay. So that takes care -- Yeah, that takes care of everybody.

MR. BRUCE: Yeah.

MR. BROOKS: Thanks.

EXAMINER EZEANYIM: You may be excused.

THE WITNESS: Okay, thank you.

EXAMINER EZEANYIM: I may have follow-up questions for you.

THE WITNESS: Okay, sure.

RICKY COX,

the witness herein, after having been first duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Please state your name.

A. My name is Ricky Cox.

Q. Where do you reside?

A. I live in Midland, Texas.

Q. And what is your job there?

A. I'm a senior geologist for COG Operating.

Q. Have you previously testified before the Division?

A. I have.

Q. And were your credentials as an expert petroleum

geologist accepted as a matter of record?

A. They were.

Q. Does your responsibility at COG include this part of southeast New Mexico?

A. It does.

Q. And are you familiar with the geology involved in this Application?

A. Yes, sir, I am.

MR. BRUCE: Mr. Examiner, I tender Mr. Cox as an expert petroleum geologist.

EXAMINER EZEANYIM: Mr. Cox is so qualified.

Q. (By Mr. Bruce) Mr. Cox, let's just briefly go over the geology of this particular quarter section of land. Can you first identify Exhibit 3 for the Examiner?

A. Exhibit 3 is a structure map on top of the Glorieta formation. It shows the quarter section of interest to be outlined in the heavy green line and labeled at the bottom as Jenkins B lease. The wells shown on this map are only those wells deep enough to penetrate the Glorieta or Paddock formation. The well number is on the upper left of the well symbol, and below the well symbol is the subsea structural depth of the Glorieta. As you can see from the map, it's relatively gentle structure from north to south, dipping to the south approximately 100 feet over that quarter section.

Q. Okay, and what does Exhibit 4 reflect?

A. Exhibit 4 is a set of isopach maps. The Paddock interval has been broken down into four sub-intervals. They are labeled, as we'll see from the cross-section, HSF0, -1, -2 and -3, and isopach maps were made of the net reservoir, being greater than 3-percent porosity. For each of those intervals there are separate isopach maps.

The first page of Exhibit 4 is a cumulative isopach of all four zones combined. It would be for the entire Paddock interval. And again, the value of that number is below the well symbol. And you'll see that the vast majority of those numbers are in excess of 150 feet, even over 300 feet, of net reservoir porosity over the entire quarter section.

Page 2 of Exhibit 4 is the first of the four individual interval isopachs. This isopach map represents the porosity zone from the top of the Paddock to the marker identified as HFS3. Again, you see the distribution of porosity across that quarter section is relatively continuous. There are some thicks and thins, but the porosity zone exists throughout that quarter section.

Pages 2, 3 and 4 of this exhibit show the same thing for each of the successive intervals of the Paddock.

Q. Let's then move on to your first cross-section, Exhibit 5, and then you can discuss these sub zones in the

Paddock a little bit more.

And before we begin with that, you referred to the Paddock and the Glorieta, and the advertisement for this case refers to the -- I think the Loco Hills-Paddock. Has there been a recent name change by the Division of that pool?

A. There has been a name change, to include all of the members of the Yeso formation. There is a Paddock member, there's a Blinebry member and a Drinkard member and a Tubb member, and all of those have been combined into one pool.

Q. And do you think there -- Has there been a pool name change?

A. Yes.

Q. So it's now the Loco Hills Glorieta-Yeso or something like that?

A. I believe that's correct.

MR. BRUCE: That was fairly recent, Mr. Examiner. It didn't -- hadn't shown up in my books yet, but I think -- probably have to readvertise the case to show the correct pool name.

EXAMINER EZEANYIM: Okay. What is the correct pool name now?

MR. BRUCE: I think it's the -- rather than Loco Hills-Paddock, I've been informed that it's Loco Hills

Glorieta-Yeso Pool.

EXAMINER EZEANYIM: That was -- So you say Paddock Glorieta -- What is that pool name now, that is correct name?

THE WITNESS: The Loco Hills Glorieta-Yeso.

EXAMINER EZEANYIM: Okay.

MR. BRUCE: And so if we could continue the case after this hearing, just because I think the advertisement needs to be corrected, and I may well send out a notice letter to everyone, just --

EXAMINER EZEANYIM: Yeah, to confirm the correct pool name.

MR. BRUCE: Yes.

Q. (By Mr. Bruce) Okay, let's move on to your Exhibit 5 here and discuss in a little more detail the various subzones in this pool.

A. Cross-section 5 is an east-west cross-section across the 160-acre lease. On each of these wells, well logs represented, there's a formation top mark for the Glorieta, which is the GLRT, the Paddock, PDCK, and then each of the four subzones within the Paddock are identified in red on your cross-sections, HFS3, -2, -1 and -0. Those subzones have been picked based on whole core analysis and petrophysical analysis of each of the wells, and they represent a top of a depositional interval that accumulates

with the grainstone facies, and the grainstone is where the greatest porosity is in most of these intervals.

As you can see from the cross-section, as you move from well to well, the porosity is indicated to the right of the depth track by primarily the green colors. That is a representation of the amount of porosity in the well, representative porosity units or percent porosity. The cutoff or the minimum for our reservoir is 3-percent porosity, which is what's represented on the isopach maps where those numbers are cumulative.

As you move from well to well across the cross-section, you can see that the porosity zones are continuous across the cross-section. There is some variation in the thickness of the porosity zone from well to well, but each of the porosity zones is present all the way across the cross-section.

To the left, the immediate left of the depth track, there are horizontal green lines. Those represent perforations, current perforations in each of the wellbores. As you can see, the perforations are indicated on the well in the same depth where the porosity is indicated. There are very few, if any, examples of porosity zones that do not have a perforation in them currently. Those that don't have a perforation in them currently will be perforated before we begin water

injection, so that we can ensure water through all the pay zones across the 160 acres.

Also to the right of the depth track, in wells 2, 3 and 4 from the left, you'll see annotations with a small green triangle and the words "core", and then a depth value. Those are positions in each of those wellbores where sidewall cores have been taken. Those sidewall cores have been described and analyzed and correlated to the whole core in order to identify and correctly correlate these porosity zones from well to well.

Q. And what does Exhibit 6 reflect?

A. Exhibit 6 is another cross-section. This is the north-south cross-section across this 160-acre lease. It is a structural cross-section that, number one, enables you to see the degree of dip across the 160 acres from north to south. Not a great amount, 100 feet of dip from north to south.

Also, the very last well on the right, to the right of the depth track, you see an elongate, light-blue bar colored solid. That is the interval that we have whole core through the Paddock on. As you can tell, other than the bottom 50 or 60 feet of the Paddock, we have whole core throughout the porous pay interval of the Paddock. That core has been described in detail and has enabled us to break down the Paddock into four internal divisions, those

labeled in red on the cross-section and the isopachs.

And again, correlations are carried north to south across this cross-section. You see the perforations are at the horizontal green bars to the left of the depth track. There are additional wells on this cross-section that have sidewall cores taken in them to help with the correlation of porosity zones and reservoir.

Q. Based on your set of exhibits here, is the Paddock reservoir continuous across the northwest quarter of Section 20?

A. It is.

Q. And therefore, at least from a geologic basis, it is susceptible to your waterflood?

A. Yes, sir.

Q. One final question. Is there any geologic faulting in this area which would connect the injection zone with any source of fresh water?

A. There's -- I'm not seeing any indication of faulting at this depth in this quarter section.

Q. Were Exhibits 3 through 6 prepared by you or under your supervision?

A. They were.

Q. And in your opinion, is the granting of this Application in the interests of conservation and the prevention of waste?

A. Yes, sir.

MR. BRUCE: Mr. Examiner, I'd move the admission of Exhibits 3 through 6.

EXAMINER EZEANYIM: Exhibits 3 through 6 will be admitted under evidence.

MR. BROOKS: No questions.

EXAMINATION

BY EXAMINER EZEANYIM:

Q. Could you explain again what you are indicating by HFS0, -1, -2, -3? Can you -- I know you explained it, but could you explain it once more for me?

A. The HFS is an abbreviation that we assign to these markers. That stands for high frequency sequence. It's a depositional environment indicator. It is for more detailed work of correlating the environment of deposition across a larger area than just this quarter section. The purpose of that is to be prepared in the future. If this waterflood is successful, we can spread or expand the waterflood to a larger area. And by identifying individual high-frequency sequences, we can better predict waterflood performance over a larger area. That is their intent. It probably does us more good internally than for the Commission.

Q. Okay. How did the wells -- when were they drilled?

A. I'm not familiar with the drilling date for all of these wells, but I know our engineer --

Q. Okay, yeah. Okay.

MR. BRUCE: And Mr. Examiner, some of that data will be in the next set of exhibits the next witness discusses.

EXAMINER EZEANYIM: Okay. Yeah, that's why I figured I have a couple of questions here.

Okay, you may be excused. Thanks.

GAYLE BURLESON,

the witness herein, after having been first duly sworn upon her oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Would you please state your name and city of residence?

A. Gayle Burleson, Midland, Texas.

Q. And who do you work for?

A. I work for COG Operating, LLC.

Q. What is your job with COG?

A. I'm a senior reservoir engineer.

Q. Have you previously testified before the Division?

A. Yes, I have.

Q. And were your credentials as an expert reservoir

engineer accepted as a matter of record?

A. Yes, they were.

Q. Does your area of responsibility at COG include this area of Eddy County?

A. Yes, it does.

Q. And are you familiar with the waterflood proposal of COG Operating?

A. Yes.

MR. BRUCE: Mr. Examiner, I'd tender Ms. Burleson as an expert reservoir engineer.

EXAMINER EZEANYIM: Ms. Burleson is so qualified.

Q. (By Mr. Bruce) Ms. Burleson, I think we'll start off with Exhibit 7. Maybe first, just to reiterate what the landman said, what does Exhibit 1A reflect?

A. Exhibit 1A reflects the 16 wells in the Jenkins B Federal Lease that are currently perforated in the Paddock formation. The green triangles depict the wells that we converted to injection. Those are the eight wells that are also in Exhibit 7. And then the black circles are the wells that will be producers. And basically it just shows that we're implementing a fivespot injection pattern.

Q. Okay. And in addition there are two plugged and abandoned wells on this quarter section?

A. There are, and those are shown, a black open circle with a diagonal through them.

EXAMINER EZEANYIM: Are those wells COG's? There are three of them that --

THE WITNESS: Yes, sir, they were actually Mack Energy's, who were the prior operator of this lease.

EXAMINER EZEANYIM: Okay.

THE WITNESS: We did not plug those wells.

EXAMINER EZEANYIM: But they are plugged and abandoned?

THE WITNESS: Yes, I think that is right. They might be producers in the Grayburg San Andres, which is a shallower formation. I can check.

EXAMINER EZEANYIM: Okay.

THE WITNESS: They're not in the Paddock formation.

Q. (By Mr. Bruce) Let's move on to Exhibit 7. And there's a lot of data here, and let's just hit some of the main points. And then if the Examiner has questions we can go back over it in detail.

Now this is the -- Exhibit is the C-108 for this proposed waterflood, is it not?

A. Yes, it is.

Q. And it states that it was prepared by Permits West, Inc., of Santa Fe. Was that done at your request?

A. Yes, it was.

Q. And did you supervise the preparation of this

exhibit?

A. Yes, I did.

Q. And do you approve of the contents of this exhibit?

A. Yes.

Q. And again, there are 16 wells involved in this project; eight are to be injectors and eight are to be producers?

A. Yes.

Q. Those specific 16 wells, do you have just a rough idea of when they were drilled?

A. Most of the wells were drilled from 1997 to 2001, 2002. There are two wells, the Jenkins 1 and Jenkins 2, that I believe were older original wellbores, but they were deepened to this Paddock formation in '97, '98.

Q. There has been production in this area around Loco Hills for decades and decades, has there not?

A. That is correct.

Q. With respect to the waterflood, what type of injection volumes are you anticipating?

A. We are requesting 500 barrels per day per well, which for eight wells would be 4000 barrels of water per day.

Q. Where is the injection water coming form?

A. It will be our produced water from this area.

Q. And there have been analyses run of the produced water and the formation water, have there not?

A. Yes, there has.

Q. Is there any compatibility problems between the injection water and the formation water?

A. Not that we know of, from the analysis.

Q. Now with respect to injection pressures -- now initially you'll be limited to the .2 p.s.i. per foot under Division general rules; is that correct?

A. Yes.

Q. In the future, would -- is it likely that COG will seek an increase in the injection pressures?

A. Yes, we will probably do that, knowing that we will do that through the district through step-rate testing, after we've started injection.

Q. But you anticipate a need for an increase in injection pressures?

A. Yes.

EXAMINER EZEANYIM: You say you do with the District?

THE WITNESS: I think that is right.

MR. BRUCE: Well, I mean if -- Obviously it's the District and this office, but step-rate tests -- get approval to do step-rate tests.

EXAMINER EZEANYIM: Oh, okay, before you can

submit your idea --

THE WITNESS: Right.

EXAMINER EZEANYIM: Okay.

Q. (By Mr. Bruce) And what is the approximate depth of the injection zone?

A. Average depth is about 4400 foot. That's to mid-perf.

Q. Okay. And the entire interval that is shown on Mr. Cox's exhibits will be -- there will be injection in that entire interval, will there not?

A. Yes.

Q. Now in looking at the tabs in Exhibit 7, there are initially eight tabs marked 1, 4, 10, 12, 13, 14, 17 and 18. What do those represent?

A. Those represent the well numbers, the Jenkins B Federal 1, 4, and so on.

Q. And those are the injection wells?

A. That is correct.

Q. And so a separate C-108 cover sheet was done for each of those wells?

A. Yes.

EXAMINER EZEANYIM: Let me get it. The -- 10, it starts with number 10, right? Is the number tab number 10 --

THE WITNESS: No, number 1 --

MR. BRUCE: Number 1 --
EXAMINER EZEANYIM: Oh.
THE WITNESS: -- is the first injection well.
MR. BRUCE: At the very top --
THE WITNESS: Right.
EXAMINER EZEANYIM: Okay, you have 1, 4, 10, 12 --
THE WITNESS: Yes, those are the eight wells that we're proposing to convert to injection --
EXAMINER EZEANYIM: Okay, and you have --
THE WITNESS: -- and there's a separate C-108 for each well.
EXAMINER EZEANYIM: Okay, good. With all your area of reviews?
THE WITNESS: That comes later.
MR. BRUCE: Yeah, that will be later on the numbered exhibits -- I mean the lettered exhibits, Mr. Examiner.
THE WITNESS: Right.
Q. (By Mr. Bruce) And does each of these C-108s -- Let's go to the Number 1 well --
A. Uh-huh.
Q. -- show how the well will be completed as an injector?
A. Yes.

Q. And are each of these wellbores in good shape?

A. Yes, they are.

Q. All right, so you foresee no problem with using each of these wells as an injector?

A. No, no problem at all.

Q. Okay. Well, let's go to the area of review, and starting with -- oh, maybe the easiest thing would be to go to Tab B. What does Tab B show?

A. Tab B shows our quarter section, the northwest quarter of Section 20. The Jenkins B Federal Lease is outlined in black. That's the square. And then the circle around it is a one-half-mile radius from the lease boundary.

Q. And compiled in this Exhibit 7 is data on all the wells in the area of review?

A. Yes.

Q. Let's move on to Tab F. Does Tab F contain data on all of the plugged and abandoned wells in the area of review?

A. Yes, there were three plugged and abandoned wells within that half-mile radius.

Q. And have all of these wells been plugged and abandoned in a manner sufficient under Division regulations?

A. Yes.

Q. And they will not cause any -- they will not allow any movement of fluid between zones?

A. No.

Q. What is behind Exhibit G?

EXAMINER EZEANYIM: Before we leave the plugged and abandoned wells, first of all, how many are there? Two of them?

THE WITNESS: Three.

EXAMINER EZEANYIM: Three?

THE WITNESS: Uh-huh.

EXAMINER EZEANYIM: Were they plugged and abandoned by you or somebody else?

THE WITNESS: Not by COG, no. These records are from the state --

EXAMINER EZEANYIM: Okay --

THE WITNESS: -- records that --

EXAMINER EZEANYIM: Okay, so three wells, but none of them was plugged and abandoned by COG?

THE WITNESS: No, sir.

EXAMINER EZEANYIM: Okay. But you got the information from, you know, general public --

THE WITNESS: Yes.

EXAMINER EZEANYIM: Okay, go ahead.

MR. BRUCE: And the well files from the Division, and they're included in this tab.

THE WITNESS: Right.

Q. (By Mr. Bruce) Okay, let's move on to Exhibit G -- or I should say Tab G. What is shown behind this tab?

A. Tab G contains one sheet for every well that's within that half-mile radius. I think it was 109 wells, is what it came up to be. And this was taken, again, from district records. We list the API number, the operator, the lease, and then the pertinent information of where casing and tubing is set, the cementing records, top of cement if it was reported, and then where the well might have been tested or produced.

Q. And in going -- There's a lot of data here, and rather than going through each and every one, are there any problem wells that will require or may require remedial action before injection commences?

A. Out of all of these wells we've reviewed, from what we can estimate either from their records or from the amount of cement that they pumped, there may be four wells that need some further review. Two of these wells are over 2000 foot away from the nearest injector. They're pretty far out on the circle.

I actually have maybe a subsequent exhibit showing these four wells, where they're located within our quarter section.

EXAMINER EZEANYIM: Yeah, please could you show

me those --

THE WITNESS: Okay.

EXAMINER EZEANYIM: -- as well? I'll need to know.

THE WITNESS: Actually, I need to keep one copy.

EXAMINER EZEANYIM: So out of 109 wells, you have -- you think there's only four proven wells?

THE WITNESS: Right.

EXAMINER EZEANYIM: Okay. Do you have --

THE WITNESS: Four that --

EXAMINER EZEANYIM: Have you --

THE WITNESS: -- that need further review.

EXAMINER EZEANYIM: Okay. Do you have --

THE WITNESS: Yeah, we just don't have the records or --

EXAMINER EZEANYIM: -- the information?

THE WITNESS: Right.

EXAMINER EZEANYIM: Okay. Do you have those four wells in the --

THE WITNESS: Yes, they are.

MR. BRUCE: Let me mark the exhibit, Mr. Examiner.

EXAMINER EZEANYIM: Okay.

THE WITNESS: Yeah, this exhibit will show on the front page -- Hold on just a second.

EXAMINER EZEANYIM: Okay.

MR. BRUCE: I've marked this Exhibit 7A, Mr. Examiner.

EXAMINER EZEANYIM: Okay.

Q. (By Mr. Bruce) And Ms. Burleson, could you go through Exhibit 7A and discuss those four wells that may be at issue?

A. The first sheet, we're listing it by API number.

EXAMINER EZEANYIM: Okay.

THE WITNESS: And you see five wells there. Actually the fourth one, the 04222, is one of the three plugged wells. So it is really not an issue because it's been properly plugged.

EXAMINER EZEANYIM: It's plugged, maybe it's not properly plugged.

THE WITNESS: It is, it's one of the three that's in this -- behind Tab F.

Q. (By Mr. Bruce) So what you're saying is, it was a problem well, but it was --

A. But it was --

Q. -- properly plugged?

A. -- properly plugged.

EXAMINER EZEANYIM: Okay.

THE WITNESS: Right. So really, it is not at issue.

The first three wells, 32971, 04188, 04189, those are the last five digits of the API number --

EXAMINER EZEANYIM: Uh-huh.

THE WITNESS: -- those three wells are operated by Marbob. They're to the north and west of this lease, and they're shown on the second page.

EXAMINER EZEANYIM: What is it indicating? Whether they are -- Are these wells active? Of course I will find out, you know --

THE WITNESS: Yes --

EXAMINER EZEANYIM: -- active?

THE WITNESS: -- I believe they are active --

EXAMINER EZEANYIM: Okay.

THE WITNESS: -- and the only reason why I might even have a concern about those, they didn't report a top of cement, and the amount of sacks that they pumped --

EXAMINER EZEANYIM: Yeah, I want to know that.

THE WITNESS: Right, I would just want to see if Marbob may have a cement bond log or if they did get a top of cement. It just was not reported to the district or the state.

EXAMINER EZEANYIM: Okay.

THE WITNESS: Right.

EXAMINER EZEANYIM: Then what is the last well?

THE WITNESS: The last well, the 22216, is

actually operated by COG, but it is a disposal well. So really, I don't think there's an issue, but I want to investigate that just a little further. It was just brought to my attention yesterday. It's a deep disposal well. It's actually inactive at the time. It's called the Loco SW Number 1. And I want to review our records a little bit more. I don't think it will be an issue either. We just wanted to let you know that we've reviewed the 109 wells, and of those 109 these four probably need a little further review.

EXAMINER EZEANYIM: Do you have the well construction for these four that we can look at?

THE WITNESS: Well, I have this one review sheet behind Tab G.

MR. BRUCE: We can prepare that. Since the matter --

THE WITNESS: Right.

MR. BRUCE: -- has to be continued, Mr. Examiner, we could present that at the next --

EXAMINER EZEANYIM: Yeah, I would like to see if you can get the -- you know, whatever information you can get on these wells, the -- you know, the well construction --

THE WITNESS: Okay.

EXAMINER EZEANYIM: -- this may be, you think it

needs to -- you know, it might help along, since you are -- five wells, for these wells. I still have to look at the other 105 and see how they are doing. And those 105, they have the well construction that I can look at?

THE WITNESS: Yes.

EXAMINER EZEANYIM: Okay. So if we can get this one, that will be helpful.

THE WITNESS: Okay.

Q. (By Mr. Bruce) But other than these -- really, the four wells which have question marks, all of the other wells, 100-plus wells in the area of review, are properly cased and cemented such that they will prevent the movement of fluid between zones?

A. Yes, from the records that I have.

Q. Okay. One question. Assuming this project is approved, approximately when would COG like to commence injection?

A. Our timeline right now is kind of midsummer. We're looking at hopefully July.

Q. Now, what does -- Let me move on to our next exhibits, 8 and 9. What does COG hope to accomplish with the injection of water into the Paddock zone?

A. Exhibit 8 is a historical performance production plot of the Paddock formation, of these 16 wells. And as you can see, it began in 1997, and this is 2006.

Then when you go to Exhibit 9, this is what we predict as our waterflood response. This is our best engineering projection at this point with the data that we have. There is no Paddock analogy that we could look at, and no other Paddock waterflood has been done in this area.

So what we have, basically, is, in June or July of 2007 -- you see the oil is in green, and you see the daily oil production dropping, and that's because we're converting eight of the wells to injection. And then there's a response time. This is to fill up the reservoir, because it is pressure-depleted. The water will displace gas saturation and build up the pressure.

We're proposing that we would have an injection response by -- the first response being seen in January of 2009, about 18 months later, with a peak really coming in 2011. So we're looking at five years -- four years of response time, and then basically going back on our current decline.

Q. You say you have no Paddock analogy yet, so it's kind of hard to maybe answer this question. Is an 18-month response time -- Do you think that's slow in comparison to other types of waterfloods in other zones, or is it --

A. I think that's pretty typical. And basically that response time, we've calculated a -- basically what we had is an original oil in place, our voidage, and how much

volume we've taken out of the reservoir since 1997, and, based on the 4000 barrels of water injected per day, how long it would take to get a lot of that voidage filled up.

Q. What was the original pressure in this zone?

A. The original bottomhole pressure is estimated to be around 1800 pounds.

Q. What is the current pressure?

A. We feel like the current reservoir pressure is around 800 pounds.

Q. So you'll have to pressure up the reservoir?

A. Right. Exhibit 10 kind of basically shows what we feel is our project cost to do this work. We do not have to do any drilling, because we already have all 16 wells drilled. So basically our capital cost is converting these eight wells to injection and then putting in facilities to take the produced water, clean it up, and put it back to only eight injectors. And we're looking at a total project cost of just under $2.5 million.

We're projecting the incremental oil, and that's based off of this forecast in Exhibit 9. It takes into account the lost oil initially from those eight wells, and then what we gain over the next 20 years. It's 639,000 barrels. And this 639,000 barrels would not be recovered otherwise. This is secondary recovery.

We are not projecting any increase in gas

production.

And then we ran cash-flow economics based on this response projection. At an oil price of $57, the incremental value to this lease is just over $23 million, when we take into account increased operating expenses.

Q. So in your opinion, the project will pay the project expenses, plus a reasonable profit?

A. Yes.

Q. In your opinion is the granting of this Application in the interests of conservation and the prevention of waste?

A. Yes.

Q. And were Exhibits 7 through 10 prepared by you or under your supervision?

A. Yes, they were.

MR. BRUCE: Mr. Examiner, I'd move the admission of Exhibits 7 through 10.

EXAMINER EZEANYIM: Exhibits 7 through 10 will be admitted under evidence.

Do you have any questions?

MR. BROOKS: Yeah.

EXAMINATION

BY MR. BROOKS:

Q. The wells in the green triangles, the green triangles on Exhibit 1A, those are to be the injectors?

A. Yes, sir.

Q. And the black circles are the wells that are being -- producing?

A. Right.

Q. Now all these wells are currently on production --

A. Yes, they are.

Q. -- is that correct?

The OCD's Rules make a distinction which I think is historical and not very accurate between a waterflood project and a pressure-maintenance project, and they define a waterflood project as being in an area where -- that is in a -- that has reached an advanced state of depletion.

Looking at your production curves, I'm not sure it would be accurate to characterize this as being in an advanced state of depletion. Would you comment on that?

A. What has happened over -- I guess really over the last 10 years, is that there's been additional drilling on this lease --

Q. Yeah.

A. -- as we've gone. Actually, in '05 to early '06, that little increase in production where the drilling of the last two wells, the 17 and 18 --

Q. So you've had --

A. -- with the bottomhole pressure being originally

probably a little over 1800 pounds and now being 800 pounds, I mean, we feel that we have seen significant depletion in these wells. They're all pumping. The GOR has risen, as you can see on the historical performance plot. This is -- Oh, actually I don't have the GOR on here.

Q. Well, it looks like you've got -- you have GOR indicated --

A. Yes, it's the light-blue --

Q. Right.

A. -- line. So initial GOR in these wells is usually about 1500. And you have to take kind of -- the last two wells that were drilled, 17 and 18, lowered that GOR there at the end of '05. But as you can see, we were up over 4000 and approaching 5000 GOR.

Q. I find it a little hard to read graphs that have this much information.

A. I know.

EXAMINER EZEANYIM: But they're interesting.

THE WITNESS: With that indication of the GOR rising from 1500 to 5000, there is a lot of gas in this reservoir that -- We feel like if we wait any longer, that it's going to take too long for fill-up.

Q. (By Mr. Brooks) So you would then describe the primary production as being in an advanced state of

depletion, despite the fact that these projected curves indicate that they've got quite a long way further down to go?

A. Yes.

Q. Okay --

EXAMINER EZEANYIM: Let me explore that, because this one --

MR. BROOKS: Go ahead.

EXAMINER EZEANYIM: -- this is my first question here, since we are here, instead of coming back to it --

THE WITNESS: Okay.

EXAMINER EZEANYIM: -- now, because it's really why start -- you know, we're starting this secondary recovery, so that's a good question.

We don't start secondary recovery until you have reached advanced state of depletion. That is, you know, you -- just bare minimums. Because as you know, we are here to prevent waste, and we want you to do the secondary recovery anyway. If the primary process could give you more, we're jumping the gun now by starting just right away.

Of course, I still have to look at some of these data to determine whether you are either very close or not even close to being at the advanced state of depletion, because we want you to be at that state so that we can

benefit by using your secondary recovery to recover more.

THE WITNESS: Uh-huh.

EXAMINER EZEANYIM: Assuming that you are in an advanced state of depletion and you're going to get around -- almost 640,000 barrels of oil with the projected cost, that would be very valuable.

But we have to look at whether you've reached that state of depletion, so that we are not wasting any due to primary recovery. That's really what we're looking at. I mean, I still have to analyze some of this information. This is very good information for me. I'm going to look at this and see.

You indicated that your initial pressure was 1800, and currently it's now 800 --

THE WITNESS: Uh-huh.

EXAMINER EZEANYIM: -- so with that, I can do basic calculation and see whether you are at that point or not, you know. So it's one thing we have to look at, you know, so you are --

THE WITNESS: Right.

EXAMINER EZEANYIM: -- you will be authorized to start doing it right now. Or are you just starting it very early in the stage of depletion?

That's why I asked you initially, when were these wells drilled, and when were they put on production? And

the range I got is, they were drilled between 1997 and 2002 or something.

THE WITNESS: Right.

EXAMINER EZEANYIM: Okay.

THE WITNESS: Right.

EXAMINER EZEANYIM: So we need to make sure that they are -- Of course, we want you to do that. I mean, benefit everybody, you know, but we need to make sure you are doing this right. And basically that's why we are here anyway, so --

THE WITNESS: This lease, the total oil production to date is just over 1 million barrels for these 16 wells --

EXAMINER EZEANYIM: Uh-huh --

THE WITNESS: -- in the Paddock --

EXAMINER EZEANYIM: -- yeah.

THE WITNESS: -- and we project that the primary recovery will be just over 1.5 million --

EXAMINER EZEANYIM: And this is what --

THE WITNESS: -- so it has produced --

EXAMINER EZEANYIM: Yeah.

THE WITNESS: -- probably two-thirds to three-fourths of the primary production that we would produce at this point.

EXAMINER EZEANYIM: Yeah. Well, one could easily

project your -- if you -- let's assume you don't do any secondary recovery. For your graph there, you are going to project, you know, the economic limit here. We could take a look at it --

THE WITNESS: Uh-huh.

EXAMINER EZEANYIM: -- and see what we can come up with.

Okay, we'll withdraw that further.

Q. (By Mr. Brooks) The only other question I had was about the plugged wells. Of these 109 wells, all but three are still active wells?

A. As far as I know, yes.

Q. Have you checked the production and injection reports to see if they're actually active at present, or -- you said they haven't been plugged, or --

A. I haven't checked, no.

Q. Okay. And the three that are plugged and abandoned, when were they plugged and abandoned?

A. I would have to refer back to this data.

The McIntyre Federal 8, which is 30-015-23265, was plugged in 1980, November of 1980.

And then the second well --

Q. And that was plugged by ARCO, I assume? It looks like on the C-103.

A. Yes, that is correct.

The next well, the McIntyre A10, 30-015-23382, was plugged in September of 1996. I think this was by Mack Energy.

Q. What well is this?

A. The McIntyre A10.

Q. The McIntyre A10, okay. Yeah. Okay, and --

A. And then the third well is the McIntyre A4, 30-015-04222, and it was plugged in November of 2002, and it was also plugged by Mack Energy.

MR. BROOKS: Okay, thank you. That's all my questions.

EXAMINER EZEANYIM: Okay.

EXAMINATION

BY EXAMINER EZEANYIM:

Q. Form C-108, you have all your well construction diagrams?

A. Yes.

Q. Very, very important.

A. Those are all the number tabs, the 1 through 18.

Q. Yeah. I have a couple of questions, and -- answered that. Okay. And all the cement work is only three days?

A. Yes.

Q. Okay. Are there any gas-bearing zones around this pool? Any gas-bearing zones that you're aware of in

this --

A. Gas-bearing zones? I'd probably have to go back to my geologist. Not that I know of.

Q. If I could -- You know, I don't know whether you have any gas-bearing zones productive, this is oil zone. Because you are going to be doing waterflooding, and we don't want the -- some of the gases around.

A. Right. I don't know --

Q. Could you give me that information?

A. Yeah, I don't think there are any.

Q. Are you saying that you don't -- Who can -- because I need to know --

MR. BRUCE: Yeah --

THE WITNESS: Yes, we can do that.

EXAMINER EZEANYIM: -- gas-bearing zones, any of this information, where you are going to be injecting. Is there something I need to get --

MR. BRUCE: No -- What was that question, Mr. Examiner?

EXAMINER EZEANYIM: The question is, I need to know if there are any gas-bearing zones around the --

MR. BRUCE: The geologist could answer that, if you want to --

EXAMINER EZEANYIM: Okay, is he here?

MR. BRUCE: Yeah.

EXAMINER EZEANYIM: Okay, yeah, if you could answer that question for me?

MR. COX: There is no gas-bearing zones other than the Morrow.

EXAMINER EZEANYIM: What do you say?

MR. COX: There is some Morrow gas --

EXAMINER EZEANYIM: Uh-huh.

MR. COX: -- not nearby the -- not within the half-mile radius, and it's at approximately 11,000 feet.

EXAMINER EZEANYIM: Okay, so it's about 2000 feet away -- or 1500 feet away. And you are saying that your project, waterflood project, would not affect those gases in the Morrow; is that what you are saying?

MR. COX: Yes.

Q. (By Examiner Ezeanyim) But you understand -- you understand why I'm asking --

A. Right.

Q. -- this question here?

A. The Paddock is -- averaged up, is like 4500 foot --

Q. Uh-huh.

A. -- and the Morrow is at 11,000 foot.

Q. Okay.

A. So there's --

Q. So where is --

A. -- 6500 foot --

Q. -- the perforation? Is it -- Where are your perforations in these wells?

A. From like 4200 to 4600 foot --

Q. Okay.

A. -- on average.

Q. Okay. And the only gas-bearing zone is in the Morrow; is --

MR. COX: Correct.

Q. (By Examiner Ezeanyim) You are also asking us to qualify this project as recovered -- for -- you know, for recovered tax rate under the Enhanced Oil Recovery Act?

A. Yes.

Q. Could you discuss the criteria under which you qualify for -- you know, for you to get that tax break? Is there anybody here who can describe why? Because under the Act, there are criteria that you need to meet so that you can be qualified for the --

MR. BRUCE: Mr. Examiner --

THE WITNESS: Right.

MR. BRUCE: -- I think there's a couple of things, but -- Certainly the witness can go back to Exhibits 8 through 10, but 8 through 10 are the main exhibits which show the qualification for the recovered oil tax rate, that there will be hydrocarbons recovered that

would otherwise not be recovered, and, number two, that they will make a reasonable profit on the project.

THE WITNESS: Right.

MR. BRUCE: And from a legal standpoint I believe that as of right now, even though you may qualify for the project, I think there are certain price levels in that act.

MR. BROOKS: Right, it would not apply --

THE WITNESS: It would not --

MR. BRUCE: It would not apply at this --

MR. BROOKS: -- at price levels --

MR. BRUCE: -- today, at --

MR. BROOKS: -- so --

MR. BRUCE: -- today's price --

MR. BROOKS: -- you have to --

MR. BRUCE: -- levels --

MR. BROOKS: -- get a qualification --

EXAMINER EZEANYIM: -- mention it, because I was expecting you to say you want to qualify that recovered tax rate. Then --

MR. BRUCE: Well, we'd like to qualify -- You never know what prices are going to do, and if prices drop then they would be liable -- I mean, they would be benefiting from that recovered oil tax rate.

EXAMINER EZEANYIM: Is that --

MR. BROOKS: I believe Mr. Bruce is correct. Again, I don't have my rule book and I haven't dealt with one of these in a while, but I believe Mr. Bruce is correct that he's covered the essentials of that qualification that can be done now. Of course, then they have to come in subsequently and demonstrate the positive response, but --

THE WITNESS: Right.

MR. BROOKS: -- that can be -- that can only be done after you've --

MR. BRUCE: Unless you --

MR. BROOKS: -- this operation --

MR. BRUCE: -- an administrative --

EXAMINER EZEANYIM: Okay, yeah. Yeah --

MR. BRUCE: -- application --

EXAMINER EZEANYIM: -- we --

MR. BRUCE: -- without --

EXAMINER EZEANYIM: Uh-huh --

MR. BRUCE: -- without hearing.

MR. BROOKS: Right.

EXAMINER EZEANYIM: So are you still asking for us to -- if we approve this Application, to still put it in the order when the oil price -- I don't know, I may be wrong, when the oil price goes below 28 bucks you can come in to ask for that or --

MR. BRUCE: Well --

EXAMINER EZEANYIM: -- what do you --

MR. BRUCE: -- we would --

EXAMINER EZEANYIM: -- want me to --

MR. BRUCE: -- ask that -- for approval of this project for the recovered oil tax rate, and then we have to get a certification that is signed by the Division and sent to the Taxation and Revenue Department. That's done after the --

EXAMINER EZEANYIM: Yeah.

MR. BRUCE: -- order comes out. And then, depending on prices -- I mean, it might never happen, but if -- you know, prices have fluctuated in the past, and if so, and if we showed a positive production response, then COG could benefit from the Act.

MR. BROOKS: As I recall, the price is twenty- -- like twenty-something.

MR. BRUCE: I --

MR. BROOKS: Hopefully it will --

THE WITNESS: That's right.

MR. BROOKS: Hopefully it will never happen.

EXAMINER EZEANYIM: Yeah, that's right.

(Laughter)

MR. BRUCE: Just covering the bases, Mr. Brooks.

EXAMINER EZEANYIM: But after five years we can still approve your --

MR. BRUCE: Within five years, yes.

EXAMINER EZEANYIM: -- we can still approve it, and if the price is not below 28 --

MR. BRUCE: Yeah.

EXAMINER EZEANYIM: Okay, so we could still have it in the order, you know. But I hope you are not hoping that -- for it to go to 23, to get a tax break --

THE WITNESS: No.

(Laughter)

EXAMINER EZEANYIM: We want the oil price to be where it is. I don't know. Okay.

Q. (By Examiner Ezeanyim) I was wondering why -- you know, your -- our Rule says -- you know, when you -- it's .2 p.s.i. per foot?

A. Uh-huh.

Q. But you testified today that you might request for an increase. Why is that? Why do you know you are -- How do you know you are going to -- we haven't even done it --

A. Well, we don't know. Just from past waterflooding experience and how waterfloods go, you know, for a long time those wells will probably take water without hardly an pressure at all, probably on a vacuum. This reservoir is very tight. Average permeability is less than 1 millidarcy --

Q. Uh-huh.

A. -- and so I feel like once we fill up that near-wellbore region around each injector, that we will start to see pressure at surface. You know, of course we would run the step-rate test and ensure that we were not injecting above parting pressure before we did ask for that increase.

Q. What is the range of permeability? That was one of the questions I wanted to ask. You mentioned --

A. The range of --

Q. Yeah --

A. -- permeability?

Q. -- you said that range is less than 1. Do you have a range --

A. The range is probably like .3 millidarcies up to -- I'm not really sure what the high might be. Probably over 1, 1.5 millidarcies. That would be very high. The average is like .69, and that's based off of the core and the sidewall core studies that we've done in these wells.

Q. Okay. And porosity is a range from --

A. The average porosity is like 9 percent, and I think it ranges from 3 to 12.

EXAMINER EZEANYIM: Okay, you may be excused. Thanks.

MR. BRUCE: That's all I have in this matter, Mr. Examiner.

EXAMINER EZEANYIM: Thank you, Mr. Bruce.

At this point, Case Number 13,898 will be taken under advisement.

And I think we have about five minutes', ten minutes' break, and come back and continue.

(Off the record)

MR. BRUCE: -- the last case, the COG case.

EXAMINER EZEANYIM: Oh, okay, I forgot -- Yeah, we're going to continue that case for four weeks, Case Number 13,898, so we can correct the pool name.

(Thereupon, these proceedings were concluded at 10:10 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 13898 heard by me on 4/13/97

Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

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

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; 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 April 15th, 2007.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 16th, 2010