NEW MEXICO OIL CONSERVATION DIVISION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date NOVEMBER 6, 1997 Time 8:15 A.M.

NAME	REPRESENTING	LOCATION
Paul Owen	Campbell, Carr, Berge & Sheridan	Santa Fe
W. Perkins	Yates Petroleum Corp.	Santa Fe
Jim Bruce	Campbell, Carr, Berge & Sheridan	Santa Fe
Michael Pierce	ME-TEX O&G	Hobbs NM
[illegible]	Yates Petroleum Corp.	Artesia NM
[illegible]	"	"
Brent Mack		
James Bruce	—	SF
Berry Simpson	Great Western	Midland, Tx
[illegible]	Stevens & Tull Inc.	Midland, Tx.
George Ulmo	Stevens & Tull, Inc	Midland, Tx
H.E. Huntington	HANCO LP	Roswell, NM
R. Moore	Mewbourne Oil Co	Midland, TX
Roy C. Williamson, Jr	Mewbourne Oil Co	Midland, TX
Paul Haden	Mewbourne Oil Co.	"
J. M. GAHR	V-F Petroleum	—
G. M. Hon[illegible]	—	—
M. [illegible]	—	—

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. 11,842
APPLICATION OF MEWBOURNE OIL COMPANY FOR AN UNORTHODOX GAS WELL LOCATION, LEA COUNTY, NEW MEXICO	)	ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

November 6th, 1997

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, November 6th, 1997, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

* * *

I N D E X

November 6th, 1997
Examiner Hearing
CASE NO. 11,842

(Continued...)

* * *

E X H I B I T S

Applicant's	Identified	Admitted
Exhibit 1	8	10
Exhibit 2	9	10
Exhibit 3	9	10
Affidavit	17	18
Exhibit 4	20	38
Exhibit 5	20	38
Exhibit 6	21	38
Exhibit 7A	22	38
Exhibit 7B	22	38
Exhibit 7C	23	38
Exhibit 7D	23	38
Exhibit 8	24	38
Exhibit 9A	28	38
Exhibit 9B	30	38
Exhibit 9C	31	38
Exhibit 9D	31	38
Exhibit 9E	31	38

(Continued...)

E X H I B I T S (Continued)

Applicant's	Identified	Admitted
Exhibit 10	32	38
Exhibit 11	32	38
Exhibit 12	127	131

* * *

V-F Petroleum	Identified	Admitted
Exhibit 1	66	68
Exhibit 2	67	68
Exhibit 3	72	87
Exhibit 4	74	87
Exhibit 5	77	87
Exhibit 6	78	87
Exhibit 7	80	87
Exhibit 8	82	87
Exhibit 9	101	119
Exhibit 10A	102	119
Exhibit 10B	102	119
Exhibit 11A	103	119
Exhibit 11B	103	119
Exhibit 12A	105	119
Exhibit 12B	105	119
Exhibit 13A	105	119
Exhibit 13B	105	119
Exhibit 14A	106	119
Exhibit 14B	106	119
Exhibit 15	108	119
Exhibit 16	110	119
Exhibit 17	111	119
Exhibit 18	93, 99	99
Exhibit 19	93, 99	99

* * *

A P P E A R A N C E S

FOR THE APPLICANT:

JAMES G. BRUCE, Attorney at Law
612 Old Santa Fe Trail, Suite B
Santa Fe, New Mexico 87501
P.O. Box 1056
Santa Fe, New Mexico 87504

FOR V-F PETROLEUM, INC.:

CAMPBELL, CARR, BERGE and SHERIDAN, P.A.
Suite 1 - 110 N. Guadalupe
P.O. Box 2208
Santa Fe, New Mexico 87504-2208
By: WILLIAM F. CARR

FOR KAISER-FRANCIS OIL COMPANY:

KELLAHIN & KELLAHIN
117 N. Guadalupe
P.O. Box 2265
Santa Fe, New Mexico 87504-2265
By: W. THOMAS KELLAHIN

* * *

WHEREUPON, the following proceedings were had at 1:05 p.m.:

EXAMINER CATANACH: At this time we'll call the hearing back to order, and I'll call Case 11,842, which is the Application of Mewbourne Oil Company for an unorthodox gas well location, Lea County, New Mexico.

Call for appearances in this case.

MR. BRUCE: Mr. Examiner, Jim Bruce representing the Applicant.

I have two witnesses to be sworn.

EXAMINER CATANACH: Additional appearances?

MR. CARR: May it please the Examiner, my name is William F. Carr with the Santa Fe law firm Campbell, Carr, Berge and Sheridan.

We represent V-F Petroleum, Inc., and I have three witnesses.

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of the Santa Fe law firm of Kellahin and Kellahin, appearing on behalf of Kaiser-Francis Oil Company.

We're appearing in support of the Mewbourne Application. I have no witnesses, sir.

EXAMINER CATANACH: Okay. Will the witnesses please stand to be sworn in at this time?

(Thereupon, the witnesses were sworn.)

EXAMINER CATANACH: Mr. Bruce?

D. PAUL HADEN,

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

DIRECT EXAMINATION

BY MR. CARR:

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

A. My name is Paul Haden. I live in Midland, Texas.

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

A. I work for Mewbourne Oil Company as their senior landman.

Q. Have you previously testified before the Division?

A. Yes, I have.

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

A. Yes, they were.

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

A. Yes, I am.

MR. BRUCE: Mr. Examiner, I tender Mr. Haden as an expert petroleum landman.

EXAMINER CATANACH: Mr. Haden is so qualified.

Q. (By Mr. Bruce) Mr. Haden, briefly what is it Mewbourne seeks in this case?

A. Mewbourne Oil Company seeks approval for an unorthodox location for its ETA State Number 3 well to be drilled in the Townsend-Morrow Gas Pool in the north half of Section 8 of Township 16 South, Range 35 East, in Lea County, New Mexico. This is in the Unit H.

Q. Okay. What is Exhibit 1?

A. Exhibit 1 is a land plat of the area which depicts Mewbourne Oil Company's proposed proration unit, which consists of the north half of this Section 8. It also shows a red circle, which is Mewbourne Oil Company's proposed well, which is located 1980 feet from north and 660 feet from the east line of this Section 8.

Q. Okay. And there's a unit outlined in green. What does that depict?

A. That depicts V-F Petroleum, Inc.,'s proration unit for their well in the southeast quarter -- or, excuse me, southwest quarter of Section 9 of Township 16 South, Range 35 East.

Q. And that's a standup unit?

A. That's a standup unit.

Q. What is the ownership of the north half of Section 8, very briefly?

A. Okay, the north half is owned 35 percent by Mewbourne Oil Company, 31 percent by Louis Dreyfus Natural Gas Corporation, Kaiser-Francis Oil Company has 20 percent,

and the Prospective Investment and Trading Company, Ltd., has the balance, which is 14 percent.

Q. Now, based on your Exhibit 1, the only offset operator in the Morrow, Townsend-Morrow Pool, is V-F Petroleum; is that correct?

A. That's absolutely correct.

Q. There's some shallower wells up in the north part of that section that are operated by JFG Enterprises or Charles Gillespie; is that correct?

A. That's correct.

Q. What is Exhibit 2, Mr. Haden?

A. Exhibit 2 is Mewbourne Oil Company's AFE for the proposed ETA State Number 3 well. It has dollar amount, completed well cost, at $861,900 --

Q. Okay.

A. -- for a 12,000-foot test well.

Q. Okay. And finally, just very briefly, just identify Exhibit 3 for the Examiner.

A. Exhibit Number 3 is a summarization of the contacts regarding this proposed unorthodox location. It starts with the well originally being proposed by Kaiser-Francis Oil Company, wherein Mewbourne Oil Company eventually took over the sponsorship of this Application.

It describes various proposals made to V-F regarding our proposed unorthodox location.

Q. But you've been unable to come to terms with V-F?
A. I have not been able to come to terms with V-F.
Q. Were Exhibits 1 through 3 prepared by you or under your supervision or compiled from company business records?
A. Prepared by me.
Q. In your opinion, is the granting of Mewbourne's Application in the interest of conservation and the prevention of waste?
A. Yes, it is.
MR. BRUCE: Mr. Examiner, I tender Mewbourne's Exhibits 1 through 3 into evidence.
MR. CARR: No objection.
EXAMINER CATANACH: Exhibits 1 through 3 will be admitted as evidence.
Any questions, Mr. Carr?

CROSS-EXAMINATION

BY MR. CARR:
Q. Mr. Haden, let's go to your Exhibit Number 1. What pool will these wells be completed in, is your proposed ETA Number 3 to be completed in?
A. It would be completed in the Townsend-Morrow.
Q. And what is the spacing in that pool?
A. 320 acres.
Q. And do you know what the well location

requirements are in that pool?

A. It's standard.

Q. It would be 1650 from the end line?

A. 1650 from the end line.

Q. And 660 from the side line?

A. Yes, sir.

Q. Are you aware that the west half of Section 9, V-F Petroleum has a well?

A. In the west half?

Q. Yes.

A. Yes, sir, I am.

Q. And do you know where that well is located?

A. At a standard location.

Q. And that would be 660 off the side line?

A. It appears to be so.

Q. And that's the well spot -- It's kind of hard to see, but it's right above the "V-F Petroleum Humble-Townsend" writing; there's a spot there?

A. Yes, sir, it appears to be. That's the correct location for the V-F well.

Q. Okay. Now, I believe you indicated that Mewbourne now has 35 percent of the working interest in the north half of 8; is that correct?

A. That's correct.

Q. You in August of this year acquired additional

interests from various other interest owners; is that not correct?

A. That's right.

Q. And how much did you acquire?

A. Twenty percent.

Q. So prior to that time you had 15?

A. Right, that's correct.

Q. You have 35 percent in the north half of the section at this time?

A. Right.

Q. How much of the working interest do you have in the south half of Section 8 at this time?

A. We have 15 percent. I don't know what bearing that has on this case.

Q. I'm sorry, I couldn't hear you.

A. I don't understand what bearing that has on this case.

Q. My question is, how much working interest do you have in the south half of Section 8?

A. We have currently 15 percent.

Q. Do you have an option to acquire an additional 20 percent in that acreage?

A. Not necessarily.

Q. Not necessarily?

A. Not necessarily.

Q. Do you potentially have an option to --
A. We have not offered to purchase.
Q. Louis Dreyfus has 31 percent in the north half?
A. Yes, sir.
Q. And Louis Dreyfus has what percent in the south half? Do you know?
A. Thirty-one percent.
Q. Kaiser-Francis has 20 percent in the north half?
A. And south half.
Q. And the south half. And this Prospective Investments has 14 percent in the north half as well as the south half?
A. Yes, that's correct.
Q. So we have basically the same working interest owners in the north half --
A. Right.
Q. -- as we do the south half of the section?
A. Yes, sir, that's correct.
Q. And that south half is also dedicated to a Morrow well, is it not?
A. Yes, sir.
Q. And that --
A. Actually, that's an Atoka well.
Q. An Atoka-Morrow? Same zone --
A. Atoka-Morrow, yeah.

Q. Same zone we're talking --

A. Same pool, same pool.

Q. -- about?

When we talk about the wells, the ETA 3 that you're proposing, the V-F Petroleum Humble Townsend well, and the well in the south half of Section 8, we're talking about the same pool; whether we call it Morrow or Atoka, it's one reservoir?

A. Yes, sir, yeah.

Q. Now, there is a well in the south half of Section 8, is there not?

A. There are several wells in the south half of Section 8.

Q. And we're talking about the Atoka-Morrow formation --

A. Atoka-Morrow.

Q. -- you understand that, don't you?

A. Yes, sir. That's the ETA State Number 2 well.

Q. Is that the well that is 660 feet off the end line of that Section 8?

A. Yes, sir, that's correct.

Q. It's the direct west offset to the V-F Petroleum well in Section 9; is that not correct?

A. That is correct.

Q. And so what we have is basically three wells

that, if yours is drilled, would be on an effective 40-acre spacing pattern; isn't that right?

A. Forty-acre spacing pattern?

Q. Well, they would be 1320 feet apart, would they not?

A. Yes.

Q. All the way around?

A. Appears to be.

Q. And if you drilled wells on 40-acre spacing in the center of the 40s, they'd be thirteen hundred and --

A. Well, although they are -- The Atoka-Morrow is spaced on 320 acres.

Q. And we're clustering the wells all right together, even though the spacing is 320, right?

A. Based on geological reasons, yes.

Q. Could you consider the ETA Number 3 a wildcat well?

A. In my opinion, all wells of this depth are wildcat wells.

Q. I'm sorry?

A. All wells of this depth are wildcat wells.

Q. And is your testimony that Mewbourne is in the business of drilling Wildcat wells?

A. We're in the business of drilling wells.

Q. Are you an exploration company?

A. Exploration and production.

Q. And do you call yourself an exploitation company?

A. We don't call ourself that, but essentially I guess we could describe ourselves as being an exploitation company.

Q. And what would that mean to you, an exploitation company?

A. To get as much value, I assume, as you could out of a particular reservoir.

MR. CARR: That's all I have.

EXAMINER CATANACH: Mr. Kellahin, do you have any questions?

MR. KELLAHIN: No, sir.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Haden, you mentioned -- These wells are in the Townsend-Morrow Gas Pool?

A. Yes, sir.

Q. But you said the well in the south half of Section 8 is producing from the Atoka?

A. All of them are.

Q. Oh, they're all Atoka wells?

A. Yeah, but they're called -- it's called -- it's -- for whatever reason, it's in the -- filed in the Townsend-Morrow.

EXAMINER CATANACH: Okay, that's all I have.

MR. BRUCE: Mr. Examiner, I would also tender Mr. Kellahin's affidavit regarding notice of this case. This case was originally filed by Kaiser-Francis via Mr. Kellahin. I tender his affidavit of notice into the record.

EXAMINER CATANACH: Mr. Bruce, this case was originally filed by Kaiser-Francis?

MR. BRUCE: Yes, sir.

EXAMINER CATANACH: When did Mewbourne assume --

MR. BRUCE: We filed an amended Application just changing -- simply changing the name of the Applicant, on September 17th.

EXAMINER CATANACH: Okay, that was before the docket was published? Is that --

MR. BRUCE: It had been published and then it was readvertised.

EXAMINER CATANACH: Okay. And this is the notice that went out for this case?

MR. BRUCE: Yes.

EXAMINER CATANACH: Under the name Kaiser-Francis?

MR. BRUCE: Yes.

EXAMINER CATANACH: Are all these parties to whom notice was sent to, are they aware that Mewbourne is now

the operator of this well?

MR. BRUCE: I know V-F Petroleum is. I -- Mr. Carr had already filed an entry of appearance, and the amended Application was sent to him. Actually, I believe, because we're looking at the Townsend-Morrow Pool, the only operator, offset operator, is V-F Petroleum, and therefore they're the only company that really needs notification.

EXAMINER CATANACH: Gillespie or J&G doesn't have the deep rights or anything?

MR. BRUCE: Well, let me -- depending on what you call deep, but they're not -- They might have Strawn rights, but they don't have these Atoka-Morrow rights.

EXAMINER CATANACH: All right.

ROY C. WILLIAMSON, JR.,

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. My name is Roy Williamson.

Q. What is your occupation?

A. I'm a consulting petroleum and geological engineer, and I'm president of Williamson Petroleum Consultants, and I live in Midland, Texas.

Q. What is your relationship to Mewbourne in this

Application?

A. I have been hired as a consultant by Mewbourne to present testimony regarding the nonstandard location that's the subject of this hearing.

Q. Have you previously testified before the Division as an expert engineer?

A. Yes, I have.

Q. And have you reviewed the data regarding this Application and are you familiar with engineering matters pertaining to this Application?

A. Yes, I have, and I am.

Q. And have you prepared certain exhibits for presentation today?

A. Yes.

MR. BRUCE: Mr. Examiner, I tender Mr. Williamson as an expert petroleum engineer.

MR. CARR: We'll stipulate as to Mr. Williamson's qualifications.

EXAMINER CATANACH: Mr. Williamson is so qualified.

Q. (By Mr. Bruce) Mr. Williamson, would you refer to what's been marked Mewbourne Exhibit 4 and discuss its contents and the zones of interest that you're looking at?

A. Right. Pardon my sinus. Midland has got more pollen, I think, than they have up here.

Exhibit 4 is a structure map around the wells of interest. It is contoured on top of the Morrow limestone, and the producing wells that are now producing out of the Atoka zone but carried in the Townsend-Morrow field are in red.

You'll notice out to the west there is a fault, and that fault has been defined by past seismic work. In the Sections 8 and 9 there is a fault there that has not been defined by a seismic line, but it is inferred, and we will discuss why we think a fault is likely there. Also in Sections 16 and 17 there is another fault inferred there between those two producing wells.

Q. The four wells that you have marked in red, are those the four producing wells in this particular pool?

A. That is correct.

Q. Okay. Let's move on to Exhibit 5 and discuss what the zone is. There's been some questions already about whether it's Atoka or Morrow.

A. Well, Exhibit 5 is a cross-section through the four wells in question here, and you can see that there are correlation intervals. The Morrow lime that is shown there is the basis upon which the structure map was prepared, and above that is the Atoka sand pay that is the pay in all four of these producing wells.

Q. And somehow this was designated a Morrow pool; is

that correct?

A. Right. I don't know what the history is, why it was called Morrow, but it seems to be a misnomer.

Q. Okay. And this zone shows up in all of the wells; is that correct?

A. That is correct.

Q. Do you have anything else you'd like to say on this map?

A. Nothing other than we do have scout tickets on here that show the completion intervals and some of the early test data for each of these wells.

Q. Some of these wells were initially capable of producing to the 6, 7 million a day; is that correct?

A. That is correct.

Q. Let's move on to your Exhibit 6, and if you could identify that for the Examiner.

A. Exhibit 6 is a gross Atoka sand isopach, and really "gross" is kind of a misnomer because in my opinion gross and net are basically the same here. But it is a contouring of the intervals that have been identified on the cross-section as the pay thickness in the Atoka. The Section 8 well, 16 feet; Section 9 well, 22 feet; Section 16 well, 10 feet; and the Section 17 well, 22 feet.

Q. Now, looking at -- Well, let's keep this exhibit in front of us, Mr. Williamson, and discuss what these

wells have produced or are capable of ultimately producing. And I'd refer you to your Exhibits 7A through 7D --

A. Right.

Q. -- and could you identify those and then match those up with each particular well and discuss their ultimate recoveries?

A. Yes. Exhibit 7A is a production plot, monthly production versus time for the Tom Brown Humble State A Number well [*sic*] that is located in Section 16.

There is an extrapolation there that is my opinion of what the production will accomplish in the future.

Q. And what will that well ultimately recover?

A. This well has a cumulative as of October 1, 1997, of 2,547,611 MCF of gas, about 2.5 BCF of gas. The reserves are about 1.275 BCF, for an estimated ultimate recovery of 3.823 BCF.

Q. And that's the well in the northwest quarter of Section 16?

A. That's correct.

Q. Okay. What about Exhibit 7A?

MR. CARR: 7B?

THE WITNESS: That was 7A.

Q. (By Mr. Bruce) Excuse me, 7B.

A. Okay, 7B is the V-F Petroleum Humble Townsend

Number 1 well, and it's located due north in Section 9. Again, historical production with an extrapolation based on past performance. That well has a cumulative as of 10-1-97 of approximately 10.4 BCF and reserves, based on this extrapolation, approximately 3.7 BCF, for an ultimate recovery of approximately 14 BCF.

Q. Okay. Now, let's move on to the next one, Exhibit 7C. Now, this is for the well in the northwest quarter of Section 17?

A. That is correct. It is the Great Western Lowe State Com Number 1, and again the same depiction of historical production with an extrapolation. The prior cum is approximately 8.3 BCF. Reserves, based on this extrapolation of this decline curve, are 4.3 BCF, for an ultimate recovery of 12.6 BCF.

Q. And finally, Exhibit 7D.

A. Okay, 7D is the production plot for the State ETA Number well, Number 2 well, in Section 8. Again, the historical performance and extrapolation of the expected decline. It has a prior cum of 11.4 BCF, reserves of 2.8 BCF, for an ultimate of approximately 14.2 BCF.

Q. Okay. So what you have, at least in the immediate area of the proposed well is, you have two offsetting wells that are 1320 feet apart that will cumulatively produce about 28 BCF; is that correct?

A. That is correct.

Q. Now, looking at Exhibit 6 again, approximately -- Well, all of these wells are productive. The least productive one is the Tom Brown well in Section 16 with 10 feet. Would you like to have more than 10 feet of sand in the proposed well?

A. Absolutely.

Q. It appears that the better production comes with the thicker sand?

A. That is correct.

Q. Okay. Now, approximately what is the total gas that will be produced from these four wells?

A. The summation of the ultimate recoveries that I've just discussed are approximately 44.7 BCF from these four wells.

Q. Okay. That's quite a bit of gas.

A. Yes, it is. Very nice field.

Q. Let's move on to your Exhibit 8, and if you could discuss the areal extent of this reservoir.

A. Right. My objective with Exhibit Number 8 is to describe how big this reservoir would have to be to contain this 44.7 BCF of gas.

And up at the top there I've got for the four wells, I've got the maximum recovered -- recorded temperature. It says "recovered" but that's supposed to be

"recorded". And we have an original shut-in bottomhole pressure.

And you'll notice that the bottomhole pressure, even at the beginning -- and I guess, without having a buildup curve for each well I can't really define that this is a true buildup, but it is a buildup at the time the well was tested or a drill stem test. But the Lowe State Number 1, 4600 pounds; Humble A State, 4500; the Townsend, 5600; and the Number 2 ETA State, 6200.

Averaging those pressures and averaging those temperatures, I was then able to calculate the information necessary in order to calculate a Z factor. By going through the calculation of a gas formation volume factor, pseudocritical pressure and temperature and pseudoreduced pressure and temperature, I come up with a Z factor at those conditions of 1.01.

The gas formation volume factor then, through calculations, is 290 standard cubic feet per reservoir cubic foot.

Now, then, my next problem is to decide how many reservoir cubic feet are required to contain the 44.7 BCF. I have estimated that that recoverable gas represents about 85 percent of the gas in place. Therefore by dividing by .85 I get 52.6 BCF original gas in place. I divide that by 290 standard cubic feet per reservoir cubic foot, and I

come out with a reservoir volume of 181.4 million reservoir cubic.

Now, then, taking the next line, I've taken 43,560 cubic feet for each acre-foot. I averaged the porosity in the Atoka zone; I came up with 10.3 percent. Water saturation about 20 percent. So we have about 3589 reservoir cubic feet for each acre-foot.

Therefore, if we divide the 181 million reservoir cubic feet by the 3589 reservoir cubic feet per acre-feet, I come up with a number of 50,552 acre-feet.

I took the average net pay from the four wells, which is probably not correct because obviously any reservoir is going to probably thin toward the edges, but I just assumed it was a square box, and I took the average of the net pay as shown on the isopach map, Exhibit 6, and come up with an average net pay of 15.25 feet.

Therefore, the acres that are needed to contain this original gas in place are the acre-feet of 50,552 divided by the average thickness of 15.25 feet, resulting in a calculation of 3315 acres, or about 5.2 sections that are required to contain this much gas.

Q. Now, when looking at, say, Exhibit 6, these four wells are basically in a one-section area, are they not?

A. That's roughly correct.

Q. Now, what does this 5.2-section reservoir areal

extent tell you about this?

A. Well, that tells me that there's obviously a storage capacity somewhere besides where we have got these four wells drilled.

And if you'll notice, going back to Exhibit 6, I have the isopach map actually open-ended to the north and really open-ended to the south. I can't tell you where that additional reservoir volume is, but I do know there's additional reservoir volume, and we'll talk about that a little bit later looking at the P/Z cum curve.

But you would have to vary the net pay thickness or the porosity or all of the factors that have to be varied by a factor of four five in order to fit that much gas in what is apparently the developed area at this time.

Q. So the wells that are producing are receiving gas or pressure support from somewhere?

A. It's pretty obvious that they are, yes.

Q. Okay. And once again, you said that your calculation is conservative because you used a constant thickness?

A. That's right. If you took some sort of a thinning toward the edge and had a lesser thickness than 15.25 feet, well, obviously, it would be a bigger area required to encompass that volume.

Q. Okay. Well, let's talk about the pressures a

little bit more. Could you move on to your Exhibit 9A and discuss that for the Examiner?

A. Okay, Exhibit 9A a composite of the bottomhole pressure over Z for each of the wells with all of them plotted as a function of the total production from the field. In other words, all four wells' production were added together, and each individual well's P/Z data was plotted.

You will note that the V-F Petroleum well is the pink -- the little circles. And the well that is due east of it, the ETA Number 2, American Exploration well or Mewbourne well, is -- There are boxes, they're yellow boxes.

And I might point out that if you look at the end point, the last data points that we have available, that between those two wells there is an approximate 700-pound pressure difference. And that is between two wells that have been producing now for roughly 25 years. These were drilled in either 1970 or 1972.

So we've got quite a long production life of these wells, and yet we still see a 700-pound pressure difference.

Q. Now, Mr. Williamson, let's maybe refer back to your Exhibit 4, which is the structure map. Now, these two wells you're talking about are the wells in the southwest

quarter of Section 9 and the southeast quarter of Section 8, correct?

A. That is correct.

Q. And so there's a pressure difference of what? About 700 pounds --

A. About --

Q. -- between those two wells?

A. Yes, there are.

Q. And that is why you put in this fault line?

A. That is correct.

Q. There's got to be something there, a fault or a permeability barrier between those wells?

A. There's got to be something that is causing less than perfect communication, because I would think with both wells having to produce roughly the same amount of gas -- they've been producing for 25 years -- I would think that that pressure should be normalized by this point in time, or at least closer than what we have here.

Q. So both of those wells to date have produced 10, 11, 12 BCF, and there's still quite a substantial pressure differential?

A. That is correct.

Q. Does the same thing show up to the wells in the south?

A. That is correct. The little green triangles, the

Great Western well over in Section 17, and then the blue well, the blue diamond, is the Tom Brown well in Section 16. And you can see the difference in the end points of those pressures of probably, oh, around 1100 or 1200 pounds.

Q. And again, those two wells have produced substantial quantities of gas and have been producing for 25 years?

A. That is correct.

Q. Would you expect that if there was no type of pressure separation between these wells?

A. No, I wouldn't. I would expect the pressures to be much closer than what we've seen here.

Q. Okay. What are Exhibits 9B through 9E, Mr. Williamson?

A. Okay, 9B -- and these are basically the individual P/Z plots for each of the wells, and 9B is the one for the Tom Brown Humble A State well.

And I'll call your attention to the fact that, starting at a cumulative of around, oh, 1.5 to 2 BCF, we see a flattening of that pressure, which intimates to me that we're getting -- even though this is not as good a well as the other wells in the area, there is apparently some feed-in to cause that P/Z to deviate from a straight line.

Exhibit 9C is the same plot, P/Z versus cum, for the V-F Humble Townsend Number 1 well. And you'll notice there that at a cumulative of a little over 6 BCF there is a marked change in the slope of that pressure cumulative curve, which again indicates that there is some additional feed-in from an additional reservoir that is causing that to flatten.

The only other thing that might cause that -- and we see this, obviously, in a water-drive reservoir -- but these wells produce essentially very little water, and I have seen no evidence that there would be any pressure support from a water encroachment.

Exhibit 9D is the Great Western Lowe State Com Number 1. This well does not appear to have any effect on the flattening. The line, the P/Z-versus-cum line, is pretty straight. It might be that the last points there could be turning, but I don't have enough evidence to really show that at this time.

Exhibit 9E is the American Exploration or Mewbourne State ETA Number 2. Again, we see that same phenomenon at a cum of around 6 BCF, you see a change in the slope of that line, which says we're getting energy from another portion of the reservoir.

Q. Okay, Mr. Williamson, let's move on to your final two exhibits. You might just want to refer to them

together, Exhibits 10 and 11. Will you identify those exhibits for the Examiner and discuss what they show?

A. Right, Exhibit 10 is some assumed economic input data that resulted in the production and cash-flow projection shown on Exhibit 11. And the assumptions that went into this cash-flow projection were an operating cost of $1500 per month, which that includes direct and indirect charges, a net revenue interest of 77 percent, a BTU factor of 1.1, a gathering charge of 25 cents per MCF, and a mainline gas price of $2.10 per MMBTU.

The initial rate was assumed to be 30 million per month, or essentially one million per day, declining 25 percent exponentially for the first three years, and then 8.5 percent exponentially thereafter.

And I might point out that that is a much more severe decline than we're seeing, particularly in the final stages, because the final decline rates on these four producing wells are in the 4- to 6-percent range.

The oil rate, 100 barrels per month, declining 13 percent exponentially.

So crank that into the economics program, and you can see in the lower right-hand corner there is a present-worth calculation. This projection results in a present-worth calculation, PW, 25 percent approximately, and returns roughly $3 for each dollar expended on drilling

this well. The drilling cost was assumed at -- or was indicated to be $861,900.

And I consider these to be minimum economics that would need to be attained in order to expend that much money in order to drill a well.

Q. And this economic scenario you show would meet with the company's economics, would it not?

A. That's correct.

Q. Now, really just one final question, Mr. Williamson. You're talking about a rate of a million, a million and a quarter a day. Looking at your Exhibits 7B, -C and -D, except for the Tom Brown well, these wells were capable initially of producing substantially higher than a million a day, were they not?

A. Absolutely.

Q. Looking at these, what approximate -- What were the initial approximate rates for these wells?

A. We can look either there or on the cross-section, either way. Of course, the Tom Brown well was not that great a well. It was probably around 18,000 a month in its early life.

Q. And that is the poorest well in the field?

A. Absolutely.

The V-F Petroleum well was capable of producing around 100,000 MCF per month.

Q. That would be about three-and-a-third million a day?

A. Correct.

The Great Western well was right there, about the same rate, a little over 3 million a day.

And the ETA Number 2 well was essentially at that same rate, about 100 million a month.

So these wells, if indeed what we have projected here happens, i.e., there is additional reservoir to be penetrated and drained, then the rate for this new well could be considerably more than the 1000 MCF per month that I have used in these economics.

Q. An unpenalized rate?

A. An unpenalized rate, yes.

Q. Mr. Williamson, in your opinion is the granting of Mewbourne's Application in the interest of conservation and the prevention of waste?

A. Yes, it is.

Q. And were Exhibits 7 through 11 prepared by you or under your direction?

A. Yes, they were.

Q. And Exhibits 4, 5 and 6, were they prepared by Mewbourne?

A. 4, 5 and 6 were prepared by Mewbourne under my direction. These were on their system, so they went ahead

and prepared them.

Q. Have you reviewed the data, and do you agree with their interpretation?

A. I have reviewed the data and participated in setting the lines that are on these maps.

MR. BRUCE: Thanks.

Mr. Examiner, at this time I'd move the admission of Mewbourne's Exhibits 4 through 11.

MR. CARR: May it please the Examiner, may I examine this witness on Exhibits 4, 5 and 6?

EXAMINER CATANACH: Yes.

VOIR DIRE EXAMINATION

BY MR. CARR:

Q. Now, Mr. Williamson, you did not prepare Exhibits 4, 5 and 6; is that correct?

A. I didn't actually draw them. I went to Mewbourne's office, sat down with the data, sketched out the isopach contours, the structural contours, and the correlation on the cross-section, and in the interest of time, rather than trying to get that into our system, I asked them to prepare this, and they did.

Q. What were these exhibits prepared from? Well-control information?

A. Yes.

Q. Did they have seismic information integrated into

these exhibits?

A. The only seismic information that was integrated was the establishing of the -- back to Exhibit 4, would be the west fault that's depicted there.

Q. When we look at, say, Exhibit Number 6 and we go -- Well, it's the section north of Section 8. That would be what? Section 5. -- and we look at a well in the -- the southernmost well shown on this map, you've got five feet indicated below that well symbol; do you see that?

A. Correct.

Q. Did you check the log?

A. Yes.

Q. And you could find five feet of pay in that well?

A. It's questionable. It's five or less. It was a dry hole, so let's -- I was trying to be as correlable as I could.

Q. Was five feet already on the map when you saw it?

A. I don't believe so. I don't recall that.

Q. And you looked at that log. Could it have been the zero?

A. It could have been. And I --

Q. And so --

A. -- may have changed it to this after looking at the map.

Q. So we had five -- zero to five in that well. We

go due north and you have a zero shown north of that in the well in Section 5, correct?

A. Correct.

Q. If we go, moving to the right on the exhibit, there are a number of wells over there that show zeros. You looked at those logs and they had no pay?

A. That's correct.

Q. And we have a well that says "NLA". What does that mean?

A. No log available --

Q. Okay.

A. -- for that depth.

Q. The contouring, as it comes through Sections 8 and 9 --

A. Uh-huh.

Q. -- that was, in fact, the interpretation of Mr. Moore; is that not right?

A. No, that was my interpretation, and I took Mr. Moore's map, drew these lines and had him prepare this map.

Q. Are you the individual that actually placed the contours on this map?

A. Yes.

Q. And when it says it was prepared by Ralph Moore at the bottom, that isn't true, then, is it?

A. The drawing of the map and the graphical

representation was done by Ralph Moore.

Q. Did you draw the five-foot contour traversing Section 9?

A. I'm sorry, say again?

Q. Did you draw the five-foot contour as it comes across Section 9?

A. Yes.

Q. And you placed the five-foot contour going north-south through Section 8?

A. Section 8, yes.

Q. When you look at the structure map, Exhibit Number 4, this, in fact, is your structural interpretation, or is this Mr. Moore's work?

A. This again was a map, a base map, that Mr. Moore had, and I put this interpretation on it. Again, I will say that the two faults between 8 and 9 are not defined by any seismic lines. I would not disagree with that being called a permeability barrier. I just think there's something there that obviously separates those two wells.

Q. Did you actually place those faults separating the wells in 8 and 9 on this map?

A. Yes.

MR. CARR: Okay. I have no objection to the admission of these exhibits.

EXAMINER CATANACH: Okay, Exhibits 4 through 11

will be admitted as evidence.

And it's your witness.

CROSS-EXAMINATION

MR. CARR:

Q. Mr. Williamson, why don't we start with Exhibit Number 6?

A. Okay.

Q. If we look at Section 8, the section in which Mewbourne owns its interest, you would agree with me, would you not, that only a small portion of the north half of the section is actually productive?

A. At least according to the interpretation that I can make at this point in time with no additional data points, that's correct.

Q. And if you placed a well at a standard location in the north half of that section, it would be, in fact, outside the reservoir; isn't that right, as mapped?

A. That is correct.

Q. If we look at the south half of Section 8, again we find that only a small portion on the eastern side of this tract is actually productive in this Atoka-Morrow sand; is that correct?

A. According to this interpretation, yes.

Q. And this is your interpretation?

A. Yes.

Q. So that's how you see it?

A. Well, with no data points, yes, that's how I see it.

Q. If we look at Section 9, based on your interpretation, most of the west half of Section 9, in fact, is productive in this Atoka sandstone?

A. That is correct.

Q. The reason that Mewbourne is seeking an unorthodox location in the north half of 8 is for geologic reasons; isn't that fair to say?

A. That is true.

Q. And what we're going to have if that well is drilled is two wells 660 feet from the east line of Section 8, in Section 8, correct?

A. That would be correct, yes.

Q. And the same working interest owners in both of those wells?

A. Yes.

Q. And then if we go to the west half of Section 9 we have a well -- we'll have one well 660 off that lease line; that's correct, is it not?

A. Yeah, unless V-F chooses to offset the well that Mewbourne might drill.

Q. We would then have, if V-F decided to do that, four wells on what is in effect a 40-acre spacing pattern,

wouldn't we?

A. Well, the spacing is 320, but effectively they are four 40-acre spacing apart, yes.

Q. And they'd be just 1320 feet across if we did that?

A. That's correct.

Q. And we would do that because we -- because of what you believe to be some sort of a barrier or a restriction between the current wells in 8 and 9?

A. That is correct; based on the pressure difference of 700 pounds, there is something there that separates those two wells.

Q. Now, is it your opinion that there is a separation between the two wells?

A. There is a separation or a permeability restriction. I don't -- of course, cannot tell you for sure. There is obviously, perhaps, some communication there, but after 25 years I would expect the pressures to be almost identical.

Q. Is it your opinion that the well in 8 and the well in 9 are not competing for the same reserves?

A. From what I can see on the pressure data, I don't think they are. Apparently that spacing that we see there, which are two wells 660 apart -- I mean 660 from the lease line -- apparently have not affected each other.

Q. In looking at the data you have available, have you seen any evidence of communication between those two wells?

A. Not really. Referring back to my Exhibit 9A, we see a difference early on in how the two wells produce, and that difference has maintained throughout the life. So looking at the initial pressures, the initial pressures were different. So something there is separating those two wells to some degree.

Q. Now, the initial pressure in the ETA Number 2 was 6354; is that about correct?

A. Well, I had the pressure p.s.i. of 6243.

Q. Okay. And then the offsetting well in Section 9 was drilled about how much later? Eighteen months, something like that?

A. Let me look to make sure. The V-F well started producing, it looks like, in February or so of 1972.

Q. So maybe twenty- --

A. So it looks like it would be a year and a half --

Q. Okay.

A. -- something like that.

Q. What was the initial pressure in the Townsend well that you had?

A. The Townsend well was 5622.

Q. Okay. So we have how much of a difference

between the initial pressure you have in the ETA Number 2 and the offsetting Townsend well?

A. Approximately 600 pounds.

Q. So the Townsend well was 600 pounds lower, correct?

A. Yes, at that time.

Q. And it was 18 months later; isn't that right?

A. That --

Q. And how much --

A. -- is correct.

Q. -- had been produced in that 18 months?

A. Let's see I don't have that tabulation of production. I can estimate it here.

Roughly 1.5 B's. I don't have the production, but something like that.

Q. Isn't it possible that production of 1.5 BCF in 18 months out of the well in 8 could have caused about a 600 pressure decline in the well in Section 9?

A. I haven't made that calculation, but even if it did, I would have expected production through the next 25 years to normalize, and it hasn't. It hasn't normalized throughout the life of the well, nor is it normalized today.

Q. You would agree with me, however, if you don't have this pressure restriction that production from the

well in 8 could result in a decline in the initial pressure in Section 9?

A. I don't know that, because I see a production decline in two wells that, in the extreme, could be in two different reservoirs, and they're going to decline at some rate. What their communication is, I cannot say.

Q. Well, let's just suppose -- you're an expert -- that we're not in the extreme, that we're looking at a common reservoir --

A. Uh-huh.

Q. -- and let's just ask you to assume for the purpose of this question that there isn't a barrier between the two wells.

Q. Okay.

Q. Isn't it reasonable to assume that when you have wells 1320 feet apart and one produces 1.5 BCF over 18 months, that you would expect to see a lower pressure in the offsetting well?

A. Possibly, if the source of the gas came from the offsetting well, as opposed to some area to the north.

Q. All right. Let's talk about the area to the north. If we look at your Exhibit Number 4 -- this is the structure map -- when you pick a well in this reservoir are you trying to maximize your structural position? Is it important to be upstructure?

A. In most cases it is, yes.

Q. Would it be if you were trying to pick a well in this reservoir?

A. I think so.

Q. If you moved from the proposed location further to the north and got off your minus-7600-foot contour, isn't it logical to assume you would be slightly higher moving to the north?

A. If that structural interpretation is correct. But I'll refer back to the isopach map, which the further you get away from known production, the greater the uncertainty is. So...

Q. Aren't we really trying to get just as close as we can to known production with this well? Isn't that our objective?

A. Well, I think that would be the objective of any well you drill. And also at the same time trying to develop information that tells us where this additional reservoir is.

Q. And we're trying to be as close as we can to the ETA Number 2; is that right?

A. Correct.

Q. How much has been produced from the ETA Number 2 to date? 11.2 BCF, close?

A. ETA Number 2 has cum'd about 11.4 BCF.

Q. If you're picking a well and you have a higher structural position north, do you really want to be only 1320 feet from a well that's produced over 11 BCF?

A. If I'm uncertain as to where that reservoir is going, I would prefer to stay as close as I can to known production while I step out and do some investigation as to where this reservoir is going.

Q. If we look at the isopach map, this mapping of the reservoir shows it running off to the north and branching off to the north, correct?

A. And that is pure speculation on my part, because I don't know. I have no points up there.

Q. So we really don't know what happens up there, because we don't have any control, really?

A. No control. All I know is that we've got pressure support from somewhere. The volumetrics that I can calculate will not support the gas that's going to be produced from these wells.

Q. Our only control up there is a bunch of zeros and maybe one five-foot --

A. That's correct.

Q. Okay. And we don't want to move to the north on the structure map, because again we don't now what we're getting; is that right?

A. Well, I think the isopach map, to me, is more the

control factor. Structurally, yes, I'd like to get high, but also want to be in the best part of the reservoir.

Q. Now, we have a permeability restriction between the Wells in 8 and 9, according to the mapping, Exhibit Number 4, correct?

A. Correct.

Q. And we also have some sort of a restriction between the other two wells that are relatively close to one another in Sections 16 and 17; is that right?

A. Correct, correct.

Q. When you drill a well in the north half of 8, may you not see some sort of a restriction between those two wells?

A. It's entirely possible.

Q. And you just don't know, do you?

A. Not at this point, no.

Q. But if that isn't there, you're only going to be 1320 feet from a well that has produced 11 to 11.5 BCF?

A. That is correct.

Q. And you're not concerned about pressure depletion in that area?

A. Obviously, you're going to get some pressure depletion if there is communication there.

Q. Well, if you have produced 11.5 BCF with that well, tucked up against some sort of a barrier, aren't you

concerned with being only 1320 feet away? You're going to be in a reservoir that's pressure depleted and drained.

A. Not necessarily, because, as I say, the mysterious part of this is, I know what kind of gas I'm going to get out of this reservoir, and I can't find geologically where it's coming from. So there's got to be some other source.

Q. You're uncertain about the existence of the reservoir, if we move farther north in Section 8; is that fair to say?

A. Well, obviously, the further you get from production, the more uncertain you are with no control points.

Q. The further you get from an area that's been drained, though, you might get into a better reservoir; isn't that also a possibility?

A. That is possible.

Q. If we look at your proposed location as reflected on your isopach map, Exhibit Number 6, and we compare that to the barrier that you've portrayed on the structure map, Exhibit Number 4, isn't it fair to say that the bulk of the reservoir available to a well at your location is really a cross-section 9?

A. If the reservoir is truly depicted as I have it here.

Q. Now -- And assume with me for a minute that we don't have a pressure barrier. If we can show that later, this question becomes valid at that time.

A. Okay.

Q. But if you don't have it, what we do have is, looking at your isopach map, a partially productive east half of Section 8 --

A. Okay.

Q. -- an almost fully productive west half of Section 9, two wells in it on your side of the line and one well on ours, right?

A. Uh-huh.

Q. Is that right?

A. If this new well is drilled, yes.

Q. And if that new well is drilled and that is the situation, wouldn't you think that the guy with two wells on a partially productive tract would have an advantage on the guy with one well on a fully-productive tract?

A. If I were the guy with one well on the productive tract and Mewbourne had taken the risk and proven the reservoir, I would say, Hooray, I've got a location that I can go drill that's pretty sure, and there would be nothing to prevent V-F from drilling that well.

Q. So you would think that we should be thanking you for wanting a second well 660 from our line, instead of

opposing?

A. I would think that would be a pretty nice present if you get a good reservoir outlined with very little risk.

Q. If we look at the well in 8 compared to the well in 9 and look at both of them, in the last 25 years they maintained some disparity, but they're both down about 5000 pounds, are they not?

A. That is correct.

Q. You're expecting a well that will have a gas rate of about 30 MMCF per month; is that right?

A. That is correct.

Q. And that's about twice as good as either of the current wells in that area?

A. That's correct.

Q. And that's what you would expect, and factoring in that the well to the south of you has produced 11 BCF?

A. That is correct.

Q. When we look at your Exhibit 9A, we look at how the points have kind of bunched up, especially as to -- oh, a number of the wells as we get toward the end. Have you taken into account that any of these wells may be loading with condensate?

A. Only to the extent that I can check, and I don't -- if production isn't reported, then I can't report it, can't take it into account.

Q. There was a bottomhole pressure test run on the ETA Number 2 in August. Have you presented the results of that test anywhere? Did I miss that?

A. No, I haven't. I do have that data, but that was a 72-hour test --

Q. Yeah.

A. -- and all of these other tests were primarily 24-hour, so it would -- I do have the results there.

Q. And what did it actually show you?

A. It showed a bottomhole pressure of 1462 pounds, which, again, points up that there's some feed-in, because leaving a well shut in the 72 hours as opposed to 24 we do see an increase. So there is some pressure available in some part of the reservoir.

Q. Is it your opinion that if a second well is actually drilled as proposed, that in fact the reserves that will be drained will be primarily from Section 8 or from Section 9?

A. I can't say that at this point in time until we get the well drilled and see what happens to the formation north of the ETA Number 2 well.

Q. And when you drill that well you're still not going to have data that's going to really tell you how far north that reservoir is going to go, are you?

A. No, but I will have additional data on the

reservoir, I'll have data on the pressure, and I'll have, obviously, a log to understand what the quality of the pay is, to see if indeed that is improving or staying the same or decreasing.

Q. And when you drill that well, you'd then be able to tell us whether or not the well was really draining primarily from 8 or from Section 9?

A. Oh, I don't know that we'd be able to tell at the immediate completion of that well what it's draining from.

Q. And you would agree with me that the well will, in any circumstance, be draining substantial reserves from 9?

A. I can't say that, because I don't know what kind of separation might be there, as we see between the two existing wells.

Q. So it might not be?

A. It might not be.

Q. It might be?

A. It could be.

Q. And we won't know till we drill the well?

A. That's right, but in order to prevent underground waste, I think you've got to drill some wells.

Q. Would you recommend no penalty be assessed at all?

A. I would recommend that -- Depending on what this

well comes in at, whatever its rate is, I would recommend that it not be reduced below 1000 MCF.

Now, if it comes in at 3000, that would be a penalty. But I think the economics -- and I know economics are not a factor, other than a company investing this kind of money has got to have some return on their investment in order to try to determine where these additional reserves are.

But looking at the economic factors that Mewbourne says they would need in order to invest these kind of dollars, that's the rate that I would recommend the well be allowed to produce at --

Q. In any circumstance?

A. -- if it is capable. If it's not capable, then Mewbourne has made a mistake, they've spent money on a well that will not produce maybe even a payout.

Q. And if it produces many times out, it should be allowed to do that unrestricted; is that right?

A. At 1000 MCF per day.

Q. Is that a maximum, or is that a floor that you're recommending?

A. That's a floor.

Q. Now, you understand that in New Mexico setback requirements and spacing requirements are designed to protect correlative rights, to set wells apart so that

you're not just on top of one another?

A. That's correct.

Q. And you understand that in New Mexico under correlative rights, you're given an opportunity to produce the reserves under your tract; that's what that means?

A. Correct.

Q. And you understand that in New Mexico correlative rights is defined as giving you an opportunity to produce your share, and it defines that share as the recoverable reserves under your tract compared to the recoverable reserves under -- Do you understand that?

A. Correct.

Q. Mewbourne here is not here today seeking authority to -- or trying to put itself in a position to drain reserves from the neighboring properties; is that fair to say?

A. That is correct.

Q. They want to produce what's under their tract?

A. Correct.

Q. And if their well can't make 1000 a day without draining their neighbor, that would run in the face of correlative rights, would it not?

A. Well, it would be unless V-F chooses to offset that well.

Q. If they have a very poor well, would V-F want to

offset it, do you think?

A. Well, if they have a poor well they're not going to be draining anybody.

Q. But if we're setting a floor of 1000 a day, and the only way you get that 1000 is draining it from somebody else, do you think that is an appropriate conservation measure?

A. I do, because a 1000-a-day well is a pretty good well. If you get a poor of 100 MCF a day or something, then that says the reservoir quality has gone away and this gas is coming from somewhere else besides north of the ETA Number 2.

Q. Do you know of any place where an operator is entitled to drill a well and drain his neighbor just to be assured of a pretty good well?

A. Well, that's not the intent here, no. The intent here is to develop additional reserves and not drain your neighbor.

Q. But you recommend a 1000-a-day floor, even if it comes from offsetting property?

A. Well, I will not -- I can't tell you whether it's going to come from an offsetting property. If all of the gas came from an offsetting property, that would not be protecting correlative rights. But I don't think we know where that's coming from, and we do know that there is some

separation between these two wells. In fact, the --

Q. Do you think if --

A. Excuse me. -- the fault that I have drawn here in 8 and 9, I've got it angled. For all I know, it's vertical. I mean, it could be laying right down the fenceline. I mean, that's probably not the case, but it could be.

Q. And we don't know, do we?

A. Until we get this other well drilled and we understand what the pressures are and where the drainage of the additional gas, that we know has got to be here somewhere, is coming from.

Q. You wouldn't recommend that Mewbourne be permitted to drill this well and then we come back and look at it and then impose a penalty, would you?

A. Well, I would think not. If Mewbourne develops a well that's capable of 1000 MCF a day and the reservoir quality, pay thickness, et cetera, is as we project here, I would think that would be a green light for V-F to go and offset that well. So I would think that would -- They have the right to protect themselves.

Q. If there is a penalty set, you would agree with me it needs to be set now so everybody knows before they put their money in the ground what they're going to deal with when they get their well down. Would you agree with

me on that? We need to set a penalty if we do now?

A. That is probably true. Mewbourne needs to know what it is they're facing in drilling this well.

Q. And we're doing it now, not knowing how far the reservoir extends in the north half of Section 8 to the north --

A. But I --

Q. -- isn't that right?

A. That is --

Q. And so we'd set it now and not know how far the reservoir goes to the north at this point in time?

A. But if you allow the well to produce 1000 MCF a day and the well is capable of producing several, then that, in a sense, is going to be a penalty.

Q. Well, not if it's a floor, it won't penalize it ever. It will only give it more -- assure it of at least 1000 a day; isn't that right?

A. Well, I know, but I mean if the well would make 3000, 4000 without any floor, then that would be precluded, that well would be precluded from making that 3000 or 4000 a day; it would --

Q. So are you saying there should be a 1000-a-day cap on what it can produce?

A. I'm saying that I think, in my opinion, it would be a floor of 1000, and it would not be allowed to produce

more than 1000.

Q. Oh, okay. Now, if we set a penalty today, we're going to be doing that not knowing how far the reservoir goes to the north, correct?

A. Uh-huh.

Q. Is that correct?

A. Well, that's correct.

Q. And we're not going to know -- we're going to set it, not knowing where or if this permeability barrier actually exists or not; isn't that right?

A. Well, that's correct.

Q. And we're not going to know, if there's a barrier, if it is a barrier that creates separation or a sealing fault or whatever? We're not going to know that, are we?

A. No, but Mewbourne needs to know what the rules are if they're going to spend $870,000 to try to find more reserves for both Mewbourne and possibly V-F, they need to understand that they can produce that well to make a return on their investment.

Q. And you understand the rules are 660 feet from the sideline of a spacing unit, do you not?

A. Well, that is correct, it's --

Q. All right.

A. -- it's kind of ludicrous, in my opinion, to

worry about the spacing depending on how the proration unit is set up, but I understand that's the history, and so there we go.

Q. So if we had a stand-up spacing unit, we could be 660 to that side, couldn't we?

A. That's right.

Q. But then we'd only be allowed one well, wouldn't we?

A. Right.

MR. CARR: Thank you, that's all I have.

EXAMINER CATANACH: Mr. Bruce?

MR. BRUCE: Just a couple of follow-up questions, Mr. Examiner.

REDIRECT EXAMINATION

BY MR. BRUCE:

Q. Mr. Williamson, I think you've said there's really been no development from this pool since 1972; is that correct?

A. That's correct.

Q. Will this well help in the definition of the pool's boundaries?

A. Very definitely.

Q. And might it assist in further development?

A. It certainly could. If we get adequate sand development and pressures, then that would encourage other

drilling to be done.

Q. At this point do you think the well in the south half of Section 8 will recover all of the reserves in all of Section 8?

A. No, I do not.

Q. And finally, you know, Mr. Carr was asking you questions about the well location. You really can't afford to move further west, can you?

A. No, not until we learn more about the reservoir.

Q. You'd risk moving out of the trend of the Atoka sand and perhaps getting a dry hole?

A. That is correct.

MR. BRUCE: Thank you. That's all I have, Mr. Examiner.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Williamson, you drew that five-foot contour line that traverses Section 8 in a north-south direction; is that correct?

A. Yes.

Q. Can that line be moved further to the west in your opinion, or is that the --

A. It probably could. Just looking at the spacing that is indicated by the four wells -- that's the same spacing I took here -- it indeed could be a wider channel

through here. But I know it can't be -- I don't think it can be five and a half sections wide. I mean, I don't think it would cover an area of five and a half sections.

Q. I believe Mr. Bruce just asked you about whether the well in the south half of Section 8 can drain the reserves in Section 8, and you said you didn't think that was --

A. Well, that's correct. There's two things that are happening here. One, if you try to drain the reserves that are that far away, you're well over a half mile away, and the drainage rate is going to be so low that, in my opinion, the ETA Number 2 well very likely could reach its economic limit.

Or more importantly, which I haven't really discussed, these wells are already 25 years old, approximately, and you could have a casing problem, you could have downhole problems. I mean, that's just conjecture. But to think that that well is capable of draining all the reserves that are apparently feeding in here is not very believable.

Q. So it's your opinion that the well in the north half of Section 8 is necessary in order to drain reserves from that north half?

A. That is correct, and it's a step-out that hopefully we'll learn more about the reservoir, and we'll

learn more about the pressure, and we'll learn more about what separation might exist in this reservoir, as indicated by our P/Z cumulative data.

Q. Now, you haven't done any projections on drainage areas for these well, have you not?

A. No, I haven't because if I -- If I did a drainage area, it would be outside of my mappable isopach so...

I started out to do that, and when I made the calculations I said, Whoa, I don't have enough reservoir here, because these decline curves are pretty stable. You know, maybe -- They may change their slope a little bit, but I think we've got a pretty good handle on what the ultimate recovery is likely to be from these wells.

In fact, if we just take the cumulatives that we have to date, we don't have enough reservoir.

Q. Do you have the current producing rates on these wells?

A. Yes, I do not in -- It's in graphical form here.

For instance, the Tom Brown Humble State Number 1 well is making roughly 6000 MCF a month. I'm just reading that off the graph, so I may be a little bit off on that.

The ETA Number 2 well is making just shy of 20,000 a month, maybe 18,000 a month.

The Great Western Lowe State Com Number 1 is making about 15,000 a month.

And the V-F Petroleum Humble Townsend Number 1 is making about 18,000 a month, roughly the same as the Mewbourne well.

Q. Okay. I just want to verify what you said with regards to a penalty. Are you suggesting that the ET Number -- Is it Number 3, new well?

A. Right, ETA Number 3.

Q. Should that be not allowed to produce more than 1000 MCF per day?

A. That's right, I probably misstated that badly. I say that should be a -- it should not be penalized below 1000, but it could also be pegged at 1000. In other words, 1000 would be the maximum rate that it would be allowed to produce, but it would not be penalized below that rate. And the only reason it would be producing below 1000 would be if it just were not capable.

Q. So if it came in at 4 million a day, you would recommend that it only be allowed to produce 1 million a day?

A. Well, that's what we're proposing, yes.

EXAMINER CATANACH: I think that's all I have of this witness. Yes.

Are you done, Mr. Bruce?

MR. BRUCE: I have no further witnesses.

EXAMINER CATANACH: Okay, so -- Yeah, let's break

for a few minutes.

(Thereupon, a recess was taken at 2:25 p.m.)

(The following proceedings had at 2:42 p.m.)

EXAMINER CATANACH: Go ahead.

MR. CARR: May it please the Examiner, at this time we call Jerry Gahr, G-a-h-r.

JERRY M. GAHR,

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

DIRECT EXAMINATION

BY MR. CARR:

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

A. Jerry M. Gahr.

Q. Where do you reside?

A. Midland, Texas.

Q. And by whom are you employed?

A. V-F Petroleum, Inc.

Q. What is your current position with V-F Petroleum?

A. Landman and general manager.

Q. Have you previously testified before the Oil Conservation Division?

A. I have not testified.

Q. Could you briefly summarize for Mr. Catanach your educational background?

A. I was awarded a bachelor of science in business

and a master of business administration from the University of Missouri in 1977. I carry the certified professional landman certification designation.

Q. Since graduation, for whom have you worked?

A. I was a landman for Olex Industries from 1978 to 1981. Olex Industries is a publicly held oil and gas and mining company headquartered in Midland, Texas. Commencing in 1981 to present, I've been a landman and the general manager at V-F Petroleum, Inc., located in Midland, Texas.

Q. Mr. Gahr, are you familiar with the Application filed in this case on behalf of Mewbourne?

A. I am familiar.

Q. Are you familiar with the status of the lands in the area?

A. I am familiar.

MR. CARR: Mr. Catanach, we tender Mr. Gahr as an expert witness in petroleum land matters.

EXAMINER CATANACH: Mr. Gahr is so qualified.

Q. (By Mr. Carr) Mr. Gahr, would you summarize what V-F Petroleum seeks in this case?

A. V-F Petroleum, Inc., seeks a denial of the Application or the imposition of a severe penalty, based on encroachment of 990 feet on the proposed Mewbourne well, to offset the advantage it is gaining by producing reserves from the V-F Petroleum, Inc., tract.

Q. Could you refer to what has been marked for identification as V-F Exhibit Number 1 and review that for the Examiner?

A. Exhibit 1 is a location map showing the Townsend-Shoe Bar area in Lea County, New Mexico. It is prepared on a commercial land ownership map from the Midland Map Company.

In the orange outline are the proration units assigned to the producing wells in the Townsend-Morrow field. There are five of them producing, and the wells are circled and colored in red.

Q. And the north half of Section 8 has been designated as a spacing unit for the proposed ETA Number 3?

A. That is correct. The unorthodox well location is in Unit H, and the south half of Section 8 is dedicated to the State ETA well, which we have discussed earlier.

Q. The two wells in Section 8 are at unorthodox locations, correct?

A. That is correct.

Q. And the well in the west half of Section 9 is at a standard location?

A. That is right, it's a standard location in Unit L.

Q. What is the current status of the development in each of these tracts in the Atoka formation?

A. There are two wells in the Morrow formation at present. One is in Section 8, in Unit I, and there is the V-F well in Section 9, which is in Unit L.

Q. Each of these are 660 from the common lease line?

A. That is correct.

Q. They are completed in the same formation, the Atoka-Morrow formation?

A. That is correct.

Q. Let's go to Exhibit Number 2. Would you identify this, please?

A. Yes, Exhibit Number 2 is a letter from the Permian Basin Land Associates. It is a firm composed of certified professional landmen.

This letter shows that the operating rights are common throughout Section 8 of Township 16, Range 35 East, as it relates to the Atoka-Morrow formation. This search of the public record was performed by Charles House, a certified professional landman, effective as of August 1, 1997.

Q. Is V-F Petroleum's concern, in fact, that the proposed Application will result in two wells in Section 8 offsetting one well they have drilled as a standard location on a standard unit in Section 9?

A. That is correct. Unit I is already there, and Unit H is where their proposed well is.

Q. Is it V-F's concern that, in fact, drainage will occur that cannot be reasonably offset with counter-drainage?

A. That is correct.

Q. Will V-F call geological and engineering witnesses to review the technical portion of this case?

A. Yes, they will.

Q. Were Exhibits 1 and 2 either prepared by you or compiled at your direction?

A. They were.

MR. CARR: Mr. Catanach, at this time we move the admission into evidence of V-F Petroleum Exhibits 1 and 2.

EXAMINER CATANACH: Exhibits 1 and 2 will be admitted as evidence.

MR. CARR: Pass the witness.

MR. BRUCE: Just a couple.

CROSS-EXAMINATION

BY MR. BRUCE:

Q. Mr. Gahr, what is the -- Does V-F own a hundred percent of the operating rights in the west half of Section 9?

A. V-F Petroleum, Inc., and its working interest partners own a hundred percent of the operating rights in the west half of Section 9.

Q. Who are its working interest owners?

A. There are numerous investors that regularly invest with V-F Petroleum.

Q. Okay. So of record, in the county records, does V-F own a hundred percent?

A. Negative. The county records of Lea County should reflect the actual working interest ownership.

Q. Okay. And who are the interest owners?

A. Well, to be more specific, Redstone Petroleum or Redstone Energy from Dallas, Texas, owns a large percentage; J.M. Fulenwider owns a percentage; V.F. Vasicek owns a percentage. There are numerous other investors, which I can't recite, but they are of record.

Q. Okay, and it's common throughout the west half?

A. That is correct.

MR. BRUCE: Okay. I don't have anything else, Mr. Examiner.

EXAMINER CATANACH: I have no questions of this witness. He may be excused.

MR. CARR: At this time we call Mr. George Koss.

GEORGE M. KOSS,

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

DIRECT EXAMINATION

BY MR. CARR:

Q. Mr. Koss, would you state your name for the

record, please?

A. George M. Koss.

Q. And how do you spell your last name?

A. K-o-s-s.

Q. Where do you reside?

A. Midland, Texas.

Q. By whom are you employed?

A. I'm on a full-time retainer with V-F.

Q. And what is your position with V-F?

A. A geological consultant.

Q. Have you previously testified before the Oil Conservation Division?

A. One time in the late Seventies. I'm not exactly sure which year.

Q. Would you summarize your educational background for Mr. Catanach?

A. Okay. I graduated from the University of Southern California, 1969, with a BA in geology. I graduated *cum laude*. I took my master's at the University of Wisconsin in Madison; I graduated in 1973 with an MS in geology. I also minored in water resources management.

I went to work for Mobil Oil in Houston in 1972. I finished my master's thesis while I was with Mobil. Mobil transferred me out to Midland in 1974 as a production geologist. At that time I went to work for Enserch, then I

worked for Southland Royalty, then in 1977 I went to work for Superior Oil, and I was with Superior Oil from 1977 through early 1985 when Mobil bought Superior out.

I was with Mobil for five years in Midland. I left Mobil in 1990; I went to work for V-F in 1990. In 1994 I went to work for the Bettis Brothers in Midland. I was with them two and a half years, and then in March of this year I went back to work for V-F.

Q. And in all of these jobs you were employed as a petroleum geologist?

A. Yes, sir.

Q. Are you --

A. I've had 23 years of continuous exploration and production in the Permian Basin.

Q. Are you familiar with the Application filed in this case by Mewbourne?

A. Yes, I am.

Q. Have you made a geological study of the area which is the subject of this case?

A. Yes, I have.

Q. Are you prepared to share the results of that work with Mr. Catanach?

A. Yes, I am.

MR. CARR: We tender Mr. Koss as an expert witness in petroleum geology.

EXAMINER CATANACH: He is so qualified.

Q. (By Mr. Carr) Mr. Koss would you identify what has been marked as V-F Exhibit Number 3 and review that for Mr. Catanach?

A. Yes, sir. Exhibit Number 3 is a structure map on top of the reservoir sand in the Townsend-Morrow field. I believe it's the lower Atoka sand, but I'm calling it the lower Atoka-Shoe Bar, quote, unquote, sandstone.

The structure map is on top of that lower Atoka-Shoe Bar sandstone, and I have honored all the control that is available in the mapped area, with one exception. I'll get to that later.

I have a north-south fault upthrown to the east, downthrown to the west, with about 500 feet of throw. That well is controlled by four downdip wells that are basically between minus 8200 and 8500 subsea.

The upthrown side is controlled by the four wells that produce the bulk of the reserves in the Townsend field. They range from minus 7700 to minus 7800 in a rough sense. This fault will detach and definitely eliminate drainage across the fault in any Morrow or Atoka sand in the area.

The first well that was drilled that encountered Atoka gas was drilled by Avance and was completed in October of 1969. That turned out to be the high well of

the five wells that produce from the Shoe Bar sandstone.

V-F completed the Humble Townsend in November of 1971. That well came in 54 feet low to the Avance well.

In 1972 --

Q. And the Avance well is the well in the southeast of Section 8?

A. Yes.

In 1972, Great Western deepened an upper Penn oil well. They diagonally drilled it. The bottomhole location is as shown on the map, 1977 from north line, 898 from the east line. And they also encountered the Shoe Bar sand.

Several months later, Tom Brown offset them to the east, in the west half of Section 16, and that well came in 100 feet low to the V-F Humble Townsend.

South of the Tom Brown well is a well-defined northeast-to-southwest fault that has about 250 feet of throw. The Exxon well in the southeast quarter of Section 16, the 1 EQ, was drilled vertical and then was drilled diagonal toward the southeast corner of Section 16. I have the vertical logs on that wellbore, and it came in at minus 8213. And you can see that the Amoco wells in Section 21, south of the Exxon well, came in at 8300 to 8400, basically.

So we have a definite subsurface control for placing a northeast-to-southwest fault at that position.

Q. This map has been prepared from well control only; is that correct?

A. Yes.

Q. And it shows that Section 8 is structurally higher than Section 9?

A. Yes. And the well logs that didn't have the lower Atoka sandstone, I basically picked a shale marker that was very close to that interval to basically estimate the structure elevation.

Q. All right, let's move to Exhibit Number 4, the isopach net sand thickness in the lower Atoka-Shoe Bar sandstone.

A. Okay, this is an effective porosity isopach of the lower Atoka-Shoe Bar sand. I used a 6-percent porosity cutoff, a 10-foot contour interval. All of the logs that I worked that had zero feet of sand, I have colored in the orange with the green zero beneath them. Okay.

I also show the line of section that's behind the Examiner on the wall. It starts with the Read and Stevens well in the southwest corner of Section 17.

Q. Are you going to review that now, Mr. Koss? Do you want to go to the cross-section?

A. No, sir, just a minute later. But it does show the wells that are in the line of section.

Q. All right.

A. The Avance ETA Number 2 in the south half of Section 8 has 17 feet of effective porosity.

The V-F Humble Townsend in the west half of 9 has 36 feet effective porosity.

I computed a 24-feet effective porosity in the Great Western well, 10 feet in the Tom Brown well, and 18 feet effective porosity in the Amoco 1-GH.

The Amoco -- Amoco Exploration drilled the GH in 1979. Shortly afterwards they offset it due south and drilled the 1-HC. That well did not have a single foot of sand in the wellbore.

I would like to point out that in the Read and Stevens well in the southwest corner of Section 17, the first well on my cross-section, there was a massive marine limestone, about 14 feet thick, that correlated with this lower Atoka-Shoe Bar sand.

Also, the Amerind well, the northernmost well in Section 5, that well was recently -- well, drilled through the Atoka in April of 1997. They were not able to -- We just got the logs in on that well. They didn't have any Atoka sand in that well, but they did have a thin marine lime in that well. There's a thin marine limestone in the well immediately southwest of it, and in the southernmost well in Section 5 it also has a five-foot-thick marine limestone that's time equivalent with our sand.

And that's very important to note that, because I believe this is part of a distributary channel. I believe what we're dealing with here is a -- one foot of a bird's foot delta, and we see these tight marine limes straddling this sand all the way up to a BTA well, which I have on my cross-section, that's about two miles north of my mapped area.

Q. Mr. Koss, when I look at this exhibit you have 36 feet in your well in the west half of 9; that's clearly the thickest portion of the reservoir, correct, compared to the other wells that you've shown?

A. Yes, sir.

Q. And if I look also at this map, you prepared this map from well control?

A. Yes, sir.

Q. Have you looked at the logs of all the wells shown or highlighted in red or orange on this map?

A. Yes, I have.

Q. Have you seen any of the Atoka-Morrow formation in any of the wells north of the proposed location?

A. No, sir.

Q. Have you seen any Atoka-Morrow sand west of this feature as you've mapped it?

A. Yes, I did. In Section 6, the westernmost well was -- It has a plugged gas symbol. It was drilled by HNG

in 1983, was re-entered by Enron in 1987, and they perforated a 34-foot lower Atoka sand that I believe is associated with a separate distributary channel in the Atoka.

Q. And will you review that later?

A. Let me just say this: They tried to complete out of that well, but they swabbed formation water with a slight show of gas. It was wet, basically.

Q. And if we look east at the structures mapped -- where the feature is mapped, again we see the absence of Atoka-Morrow sand; isn't that right?

A. Right, right.

Q. Let's go from Exhibit Number 4 to your Exhibit 5, the composite map.

A. Okay. This is a composite map. I have the effective porosity contours superimposed on the lower Atoka-Shoe Bar sand structure map.

You can see that by placing the north-south fault as far west as I could possibly place it, we basically -- The four wells in the guts of the Townsend field produce on the upthrown block. Okay?

We don't have any sand that's detached until you go to the south southeast and you cross over that fault and you see where the Amoco 1 GH is only draining about 168 or so of the southeast segment of our sandstone. And that, I

think, is responsible for the 1.7 BCF reserves that they've been able to produce out of it thus far.

Q. Are you ready to go to your production map?

A. Yes.

Q. Let's go to Exhibit Number 6.

A. Okay, this is kind of a busy map. It has the ownership on it, it has all of the wells that were drilled. What I did is, I highlighted all the wells that penetrated the Atoka-Shoe Bar sand, and I highlighted with the big black dryhole symbol.

I have bubbles on the five producing Shoe Bar wells. You can see the three large bubbles. Those were three outstanding wells. We've discussed already, the ETA Number 2 has produced over 11 BCF, plus 137,000 barrels of condensate -- we really haven't addressed the condensate -- and only 2000 barrels of water. That well is currently making 566 MCF per day, three barrels of condensate, trace of water.

You move east to the V-F well, that well has cum'd 10.2 BCF, 124,000 barrels of condensate, only 2000 water. It's currently producing at 530 MCF a day, two barrels of oil, no water.

We move due south of the V-F, the Tom Brown well has cum'd about 2.5 B's, 27,000 condensate, trace of water. It's producing at 213 MCF per day, trace of condensate, no

water.

These daily rates are calculated from the month of February, 1997. That's the latest daily production we could get.

The Great Western well has produced 8.2 B's, plus 137,000 barrels of condensate, 1000 barrels of water. It's currently producing 466 MCF per day, one barrel of condensate and no water.

Now, we move down to the south, we cross the fault to the Amoco 1-GH. That well has cum'd 1.7 B's plus 18 MCF per day, plus trace of water. It's currently making 33 MCF, no condensate, with a trace of water.

So, so far we have not found the water table yet in this V-F sand in the vicinity of the Townsend field.

One more item I'd like to bring up. There are three wells that are colored purple. These are wells that have recently been drilled. I mentioned the Amerind before. The northeasternmost well in Section 5 was a dry hole at the Shoe Bar; it had no sand in it.

The Rand Paulson Well, the southernmost well in Section 6, was TA'd in June of this year. We don't have the logs to that well, but I contacted Randy Smith, who was Rand Paulson's geologist. I worked with Randy back at Superior. Randy told me, word of mouth, that they did not have any sand in that well at all. And Randy is an expert

witness in New Mexico. He is their geologist.

Okay, I think that should do it.

Q. All right, let's go to Exhibit Number 7. Explain what this and why you have elected to include it.

A. Okay, this is a one-inch-equals-10-mile plan view of the Mississippi River delta. And I believe that -- and I have a gas symbol spotted on the thick trunk channel of the -- or the master channel of the Mississippi delta. This is clearly a bird's-foot delta. This is one extension out across the continental shelf that the main -- master channel has built, and it's flanked by the Gulf Coast marine waters.

You can see where the master channel will split into splay sands. Most of these sands are -- when they disconnect, the V is pointing downstream. And when the master channel splits the final time, it's -- the V formed by the spur channels is pointing downstream.

The sample logs in our mapped area in the Townsend field describe the sand as a fine- to medium- to coarse-grain, gray, gray-white sandstone, limey in part, with glauconite. Now, the fact that our Townsend Atoka-Shoe Bar sand has glauconite in it tells me that it was deposited in an environment that had salt water. It was either very near the marine environment, or it was in the delta distributary channel sand that had interfaced with

the salt water.

Also on the electric logs, on the cross-section, you're going to see where the gamma rays of the lower Atoka-Shoe Bar sand in the Avance well, the V-F well, Tom Brown and the Great Western well and Amoco wells, the gamma ray, very blocky. There's no upward fining or downward fining in our reservoir sand in Townsend, which is another indication it's a distributary channel sand not a fluvial -- a point bar and not an offshore bar. Okay.

And the importance of this is, I think this is a fact that Avance and V-F established communication with a major trunk distributary channel, has produced the reserves that we're seeing in those wells, those 10-BCF-plus reserves. We're dealing with an anomalously thick, continuous, porous, relatively well-sorted sandstone in the Townsend-Atoka reservoir.

Now, the one item I have to mention is, the scales are totally different. You see at the top of the map, the upper central, these brown teepee-looking things, well, that represents where the Pedernal uplift is with respect to our Atoka-Shoe Bar sand distributary channel.

The Mississippi River uplands is way the heck up in Minnesota. It's draining 1500 miles. The Atoka uplands or highlands is only 90 miles, north and northwest of our Townsend field. So our sands are going to be coarser-

grained than the sands in the Mississippi delta, and also they contain some carbonate sand mixed in with the quartz sand because of the proximity to the uplands.

Also, the Mississippi distributary channel has 500 feet of sand in it. It has a much higher load of sand that's needing to be moved out into the ocean. The lower Atoka-Shoe Bar sand has much less sand volume to transport, and consequently our thicknesses are basically zero to 40 feet, as opposed to 500 feet plus.

Q. Now, Mr. Koss, this is a present-day example of how sands like those we're talking about today are actually deposited?

A. Yes.

Q. Let's go now to the cross-section which is on the wall behind the Examiner. I'd ask you to go to the cross-section and review that for Mr. Catanach.

A. Okay. This is the Read and Stevens well that's just a near miss on the west side of our Shoe Bar sand.

And on the -- By the way, the wells out here drilled in 1969, 1970 -- I've got fantastic log control. I'm not working with these old late Forties, early Fifties electric logs. I've got constant neutron densities to almost all these wells.

After running these logs in 24 Morrow wells in the Delaware Basin that Superior operates and spent many

nights in the logging trailer pulling tension off the damn density neutron tool down in the Morrow and Atoka, before I make a thickness calculation I go to the sonic and the lateral logs, which are slicker tools and don't hang up as much as the density neutron. And these density neutron logs are on this cross section because they check with the dual lateral logs. We don't have any bogus thickness in here because of tension and pull on these curves.

Read and Stevens has a marine limestone that's right at the same time interval as our Shoe Bar sand. And move southeast to the Amoco dry hole, no sand. Okay? And again, I agree with Mewbourne's interpretation; this is top of Morrow lime. I think this is their marker that they mapped, this is the top of our Atoka.

Q. And that's shown on the exhibit?

A. Yes. Yes, it is.

This is Amoco 1-GH well that had the 18 feet effective porosity, a nice clean block of gamma ray, nice consistent porosity through the interval.

We move northward to the Tom Brown well, the sand thins slightly to 10 feet. A very good porosity, a water saturation of 30 percent in this well, 34 percent in the Amoco. As of February, 1997, both these wells are still producing water-free.

We move northwestward to the Avance ETA Number 2.

This well had 17 feet of porosity, very consistent, very nice, well-sorted medium-to-coarse-grained sandstone. Fantastic well, fantastic well. Flowed about -- almost 5 million cubic feet a day at a tiny choke.

Two years later, V-F did what Avance did. They deepened an existing upper Penn oil well, and they got 36 feet of sand. The resistivity curve broke back from 200 ohms to 30 ohms at the bottom, and it looked like we were approaching a water leg in this thing, so V-F only perforated the top ten feet of the reservoir. But because this is a distributary channel sand, they're draining the entire 36 feet of interval.

Now, we do have a four-foot -- what appears to be a tight streak in the midst of the sand, but I think that's just a carbonated sandstone. And if you adjust your porosity values to reflect the lime conglomerate or carbonate sand, only -- two feet is less than six percent. So this gross interval is 38 feet, and I took two feet off for that interval here.

So our water saturations range from the mid- to high teens at the top to 34 percent at the base. What we found by later drilling, that we didn't have water to worry about. I think this was the second highest well of the five wells.

Okay, we move due north. Williamson and

Williamson had a big disappointment. They thought they had the sand nailed, and they drilled this after the V-F, a well was drilled, and they perf'd everything, every dot, every little blip they could find, and were not able to find the sand in here. Zero feet of sand.

Okay, now we leave the map and we move about one mile north of the map, and I've got a BTA well here that was drilled in 1983. And that well goes back to a marine limestone. It's very similar to the Read and Stevens.

Okay, then I move about two miles farther north, I pick up a Yates well that was drilled in 1986, and that well had two feet of sand, or three feet or three and a half feet. A little bit of sand developed.

Then in late 1996 Yates drilled an Atoka sand wildcat here, and they encountered 12 feet of the -- of Shoe Bar sandstone. They perforated it and the well IP'd for about 500 MCF a day and ended up with some condensate.

But this well has lower porosity than the wells in Townsend field. It's a little closer to the source. Maybe it's not quite as clean as your sands and more distal from the source area.

Q. All right, Mr. Koss, do you want to --

A. One more point, if I could make it. There are 37 Atoka penetrations in the mapped area. The only five wells that I consider commercial produced out of this one sand.

So unfortunately, an operator that goes out there and expects to -- serendipity, find the sand, maybe one or two more sands up in the Atoka, maybe one or two or three sands in the Morrow, so far no one has been able to find a bail-out sand or any secondary-objective sands out there that will pay off a well. This is kind of the top banana and the only banana we've got out there.

Q. Mr. Koss, what conclusions can you draw from your geological study of this area?

A. Okay, it seems to me that the V-F well is ideally situated to drain the west half of Section 9. The unit is standup, and it subparallels the axis of our sandstone.

Section 8 has two items that worked against us. One is the existence of that fault that basically separates the west half from the east half. It has a well that I believe is ideally situated already in the ground, the Avance well. And we've concluded that a well in the northeast quarter of Section 8 will only drain 80 acres and will most likely encounter eight feet of our Shoe Bar sand reservoir.

I believe it has undergone a severe drainage, and almost definitely would be noncommercial. And at 660 feet from our lease line, in my mind there's no doubt that they'll be draining most of that gas off of our lease.

Q. Would a well at the proposed location, in your

opinion geologically, be necessary to produce the reserves that are under Section 8?

A. No, sir. I believe that when wells initially produce they get the gas closest to the wellbore. It's been 25 years, and I believe the gas that is entering these two wellbores is coming from afar off.

Q. Based on the information available to you, do you see any evidence of any faults or barriers between any of the four principal wells in this pool?

A. Not at all.

Q. Were V-F Exhibits 3 through 8 prepared by you or compiled at your direction?

A. Yes, sir.

MR. CARR: At this time, Mr. Catanach, we would move the admission into evidence of V-F Exhibits 3 through 8.

EXAMINER CATANACH: Exhibits 3 through 8 will be admitted as evidence.

MR. CARR: And I pass the witness.

EXAMINER CATANACH: Mr. Bruce?

EXAMINATION

BY MR. BRUCE:

Q. Mr. Koss, looking at your Exhibit 3 structure map, on the well in the northeast quarter of Section 17 you don't have a top or -- of the Atoka there. Why not?

A. Right. That well -- The only log I was able to get from the log service is the log that was generated in the deviated hole. It has a tremendous amount of expansion to it.

So I decided rather than using trigonometry, I just -- I wasn't -- I don't have the Dynadrill inclination, so I really wasn't able to come up with an accurate subsea value for that, due to the stretch in the log and lack of a good control as to the slope of the wellbore.

Q. Do you have any data to dispute the minus 8089 figure that Mewbourne put forth?

A. No, but my guess is that they used the diagonal log and did not correct back, did not reduce the stretch.

Q. If that minus 8089 --

A. In other words, I would have a problem with a minus 80- -- 8088 or whatever it was that you --

Q. Minus 8089.

A. Right.

Q. If that figure is correct, wouldn't that change your structure map substantially?

A. Very definitely. In fact, I have the log in my possession. I'll be glad to calculate that top. We'll see if we had stretch or not.

Q. Just a second, Mr. Examiner.

Do you have any figures from Great Western

Drilling on the true vertical depth, as opposed to the measured depth?

A. No, they deepened an existing wellbore. They did not deepen it vertical; they immediately deepened it diagonal. So there is no actual vertical-drill deeper hole that they drilled. The only log we have on that is in the diagonal hole, which is all that they were able to drill.

Q. If the correction was 396 feet, would that make a difference in your depth that you proposed?

A. Well, I've got the log handy, and if you took your subsea top off the existing log, why then, it had not been corrected for stretch. But I think that -- that no, that if you correct for stretch, I think the 7800 would be the logical depth for the top of that sand.

Q. Okay, but the measured depth was around what? 12,525 feet?

A. The TD on that well?

A. Yes. I mean the top of the Morrow lime.

A. Okay, would I have your permission to get that log?

EXAMINER CATANACH: Yes.

THE WITNESS: Okay, the Great Western electric log has a driller's depth of 12,581, a KB of 4040, and our sand is at 12,442. Okay, that would -- 8402 would be the subsea depth off this log.

Okay, and I think that would -- Seeing as that the drilled a hole that essentially moved about 1600 feet horizontal, and they had to do that in about 2000 feet, that's almost a 90-45-45, so there's a heck of a lot of stretch in that, and my guess is that it would correct back to minus 7800.

Q. (By Mr. Bruce) Let's move on to your Exhibit 5, Mr. Koss.

A. Okay.

Q. Just a couple of things on this exhibit. You do have -- You have the main fault, and I think everybody fairly well agrees to that north-south fault. There's not a lot of difference between your placement of that fault and Mewbourne's, is there?

A. Well, I don't think that Mewbourne honored the Amerind control point, so their fault had a little bit of a tilt west of due north, but --

Q. Well, you have another fault that trends northeast off of that. What do you have -- What is that based on?

A. The fault that's south of the four producing wells?

Q. Correct, sir.

A. Okay, that would be based on a vertical hole that Exxon drilled, the 1-EQ in the southeast of Section 16,,

and it's based on the well in the northeast quarter of Section 20. Those are the two primary control points.

And then of course you have your two Amoco wells in the northwest quarter and the southwest quarter of 21.

Q. Okay. Now, looking at this map, just one final question on it, looking up at Section 8. Based on your mapping of the reservoir, if Mewbourne and Kaiser-Francis and the other parties drilled a well at a standard setback from the east line of the section, they wouldn't hit the reservoir, would they?

A. Exactly. And the possibility exists that they might come in on the downside of the fault. I can slide the fault quite a ways to the east, but it would throw our volumetrics off.

And so I think our -- the big reserves that these four wells have produced, basically, with a reservoir engineer's calculations in mind, I basically had to push that thing as far west as I could.

So I think that my fault placement is -- coincides with our volumetrics that our engineer will bring up later on.

Q. And looking to the north of the -- say the northwest quarter of Section 9 and the northeast quarter of Section 8, there's no well control there, so that's also conjecture, isn't it?

A. The northeast and the northwest --

Q. Northwest of 9 and the northeast of 8, you won't know until a well is drilled up there, will you?

A. No, I think that the reserves -- realizing that these four wells are near depletion, realizing that the sand, I think, is one homogeneous, continuous sand, you need to have that 40 feet, you need to have that extent to generate the reserves we came up with.

The one speculative -- where the contours are speculative might be in the west half of the northeast quarter of 9. I could possibly trim that up a bit.

But I maximized the contours in the northwest -- I didn't maximized them, but I don't think there's any way to really change that in the northwest quarter of 9. And also the northeast corner of 8, I pretty well, you know, jammed that zero contour as close to the Williamson well as I could in the southeast -- southwest of 9.

Q. Okay. Is there enough sand in the east half of Section 8 to account for 14 BCF of reserves?

A. Is there enough sand in the east half of Section 8?

Q. Yes, sir.

A. No, sir, I believe that when the reservoir engineer gets up here and shows you the bubble drainage areas of the four wells, you'll see that most of the

reserves in 17 came off of the west half of 9 and the northeast -- north half of the northeast quarter of Section 17.

MR. BRUCE: I have nothing further, Mr. Examiner.

MR. CARR: No redirect.

EXAMINER CATANACH: Just a couple.

THE WITNESS: Yes, sir.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Koss, on the isopach maps that you and V-F -- or, I'm sorry, Mewbourne have done, are you mapping the same things, as far as the amount of porosity?

A. Yes, sir. There's a big difference in the V-F wellbore. They had --

Q. Right.

A. -- 22 feet, we had 36 feet.

Q. How do you account for that?

A. We have an exhibit that -- I've blown up the resistivity and the sonic log across the V-F Hudson [*sic*] Townsend interval. I'd like for us to pass that out if we could.

V-F thought they drilled enough rathole to log the entire sand. They drilled basically 14 feet below the base of the sand, but they had fill, so some of the curves do not go all the way down through the sand.

V-F also did not have a mudlogger on this well when they deepened it. So this is going to be -- We'll pay attention to everything we have on here, because you need it to make the interpretation.

Okay, we'll go to the gamma ray on the borehole-compensated sonic. You can see the first reading of the gamma ray is at 11,815. Okay. So below that it's basically useless, although it looks to me the first reading is -- oh, let's see, 36, four, three -- the first reading might be at 27. Okay? But the logging engineer felt that it was at 15, so we'll give him that.

So our gamma ray does not see the bottom of this sand, one way or the other.

You move over to the right, to the sonic, and you can see the sonic is kind of rocking on here at 8.5 to 10 percent for about 12, 22, 24 feet.

Then you have what I think is a lime conglomerate or carbonate sand. Okay, I've got a "5" there. That would be -- If this was a sandstone that would be 5 percent, but if it's a carbonate sand it would be 8 percent. So I counted that -- the 2-foot interval from 28 to 30, and then the sonic picks back up. We've got about 11 percent on the sonic, down to the sonic first reading at 34, -834.

So that tells me that we have reservoir at least down to 34. If you take 98 to 34, would be a 34 feet. If

you throw out -- I'm sorry, let me get these numbers straight. 36 feet from 98 to 34. Throwing out the two feet would bring you back to 34. but then if you look at the lateral log, I think that two feet below the sonic first reading is also sand, so we're back up to 36 feet.

I go to the resistivity log, you'll see where our perforations are from -810 to -810. You drop down and you see on the deep induction there's no response to that four feet of tight sonic log. If that was a tight lime, that deep resistivity would have shot way to the right. Well, it didn't, so it tells me that that could still be pay through there.

But the resistivity does, you know, slowly slide out, going downscale here, slowly starts to migrate to the left. And it drops from 100 ohms to 60 ohms to 30 ohms, down to 28 ohms, where you have your pickup. And my thought is that you have sand all the way down to 836, but the sand water saturation is definitely increasing, from the mid-teens down to 34 percent.

So I don't see any evidence of shale break on this; I don't see any evidence of anything other than a sandstone in that overall 38-foot interval.

Now, the RXO/RT curve, something that I'm -- I very rarely see on a log because it's worthless, especially when you don't have a damn scale on it; you see RXO over RT

and there's absolutely no scale.

The RXO is the resistivity in the flush zone. RT, of course, is resistivity of your deep induction, and it is supposed to be a function of invasion, you know, invasion.

Well, you can see a separation between the medium and the deep curve, all the way down to -836. I think that's a better indication of invasion or flushing than your RX- -- or unscaled RXO/RT.

But bless their hearts, at that time I guess V-F was so anxious to get ahold of this sand they just didn't have a mudlogger on there. So we don't have the mud log; we just have the full suite of logs.

And they did TD the well at -850. The bottom of the log inter- -- of the TD, Schlumberger's TD, is -846, so that that four feet of fill, that was basically just enough to knock out the resolution on the curves right at the base of our sand.

But if we had 22 feet of sand or 18 or 17 in our wellbore, it would not satisfy volumetrics, so we'd have to look elsewhere for the reserves.

Q. Okay. As you have the reservoir mapped on Exhibit 5, that's the extent of the reservoir as you interpret it; is that correct?

A. Yes, sir.

Q. And the way you deal with volumetrics is the vertical thickness, you increase, as opposed to Mewbourne's interpretation?

A. Right. The engineer planimetered the contours to come up with these volumetrics, and what we're basically doing is trying to fit the recoveries to our sand, the storage capacity of our sand reservoir.

And everything seems to fit. Now the width, the length of the sand and the thickness all seems to fit the recoveries that the five wellbores were able to achieve.

There is a possibility that the sand does not terminate on the north side and the southeast side; it may keep going. But for our purposes, I shut the sand off.

My thought is that we have less sand to transport in this Atoka distributary channel, and it's possible the fact that it makes a swivel here might have created a depo center, and that's why we have this nice sand thick here. It might be a function of the turn in the channel. And the channel may have some gaps where you just didn't get sand deposited, some sand bypassing it.

Q. Okay. You don't believe that this sand moves off to the northwest as Mewbourne has it now?

A. No, sir, I sure don't. I think I gave you my sand isopach that I -- get far enough over there to retrieve it.

MR. CARR: Which number is it?

EXAMINER CATANACH: Yeah.

THE WITNESS: Two of those now.

EXAMINER CATANACH: This one?

THE WITNESS: Yes. Yes, two of those now, I'm sorry.

Yeah, I think that -- Well, I know that Randy Smith -- that Rand Paulson wanted to link this Atoka sand with the HNG well in the west half of Section 6 with the Avance and V-F. So he drilled this Atoka test the spring of this year, and -- at zero feet of sand.

Amerind was probably checking out the possibility that this sand might have slipped a little bit west of north and actually developed west of the Williamson well in the southwest corner of 4, and they drilled that well and they just had a few feet of tight lime, no sand.

And my thought is, golly Moses, this thing has just one direction left, and that's right up the corridor of the zero wells in the east half of 4 and the northwest corner of 3. There's really no other direction I can see this thing taking.

And if it is a distributary channel sand, it's going to be semi-linear; it's not going to be, you know, wiggle-wobble, like your -- the meandering fluvial channels that you get in the coastal plains and so forth.

So I don't think it's unreasonable to assume that this could just barrel right up to the northeast and continue up to the Yates well.

Q. (By Examiner Catanach) Okay. The well in the south half of Section 5, you don't believe that that has any sand in it?

A. No, sir, I have a real good 1982 sonic log on that thing, and the microseconds are way below 52 microseconds, which was my zero delta T for the Shoe Bar sandstone.

So it's a tight lime, 2-percent porosity.

EXAMINER CATANACH: Okay. I have nothing further.

MR. CARR: Mr. Catanach, at this time I'd like to move the admission into evidence of the resistivity log that Mr. Koss has been testifying to on the Humble Townsend Number 1 as V-F Exhibit 18 and the gamma-ray log as V-F Exhibit 19.

EXAMINER CATANACH: Okay, Exhibits 18 and 19 will be admitted as evidence.

Let me take a phone call.

MR. CARR: Can we take a five-minute --

EXAMINER CATANACH: Yeah, just a couple minutes.

(Thereupon, a recess was taken at 3:35 p.m.)

(The following proceedings had at 3:40 p.m.)

EXAMINER CATANACH: Let's go.

ROBIN VASICEK,

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

DIRECT EXAMINATION

BY MR. CARR:

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

A. Robin Vasicek.

Q. Would you spell your last name?

A. V, as in victory, -a-s-i-c-e-k.

Q. Where do you reside?

A. Midland, Texas.

Q. By whom are you employed?

A. Bessero Oil Company.

Q. What is the relationship between Bessero Oil Company and V-F Petroleum, Inc.?

A. I'm a consulting engineer for V-F Petroleum.

Q. Have you previously testified before the New Mexico Oil Conservation Commission?

A. Yes, I have.

Q. And at the time of that testimony, were your credentials as an expert witness in petroleum engineering accepted and made a matter of record?

A. Yes, they were.

Q. Are you familiar with the Application filed in

this case on behalf of Mewbourne Oil Company?

A. Yes, I am.

Q. Mr. Vasicek, have you made an engineering study of the area surrounding the proposed ETA Number 3 well?

A. Yes, I have.

Q. Are you prepared to share the results of your study with the Examiner?

A. Yes, I am.

MR. CARR: Are the witness's qualifications acceptable?

EXAMINER CATANACH: They are.

Q. (By Mr. Carr) Would you refer to what has been marked V-F Petroleum, Inc., Exhibit 9, which consists of a table and then, right behind that, a plat, and would you identify these and then review them for Mr. Catanach?

A. Yes, this is a -- Exhibit Number 9 s a tabular listing in chronological order of the wells that were drilled in the V-F Townsend-Morrow Pool. It also shows the IP dates, the bottomhole pressures of the wells as they were drilled and the initials of the wells.

The map is basically a posting of what's in a tabular form.

Q. And you'll refer to this as you work through the volumetric --

A. Yes.

Q. -- presentation?

A. For your references, we compare the decline in P/Z.

Q. All right, let's go to Exhibit Number A [*sic*], which consists of a decline curve and P/Z plot for the State ETA Number 2, and I'd ask you to review those and --

A. Okay.

Q. -- explain the information on them to the Examiner.

A. Exhibit Number 10A and 10B are decline curves and P/Z plots for the State ETA Number 2. The decline curves were projected out to 1000 MCF per month, economic limit, and the P/Z curve were projected to 1000 pounds bottomhole pressure.

I should note on all the P/Z curves, these are wellhead -- these are -- this data was taken from *Dwight's*, and what's recorded here are wellhead surface pressures. They are -- Most of these wells produce from condensate, and I think that some of these wellhead pressures reflect the -- are not actual bottomhole pressures, due to the buildup of condensate at certain periods of time when these pressures were taken.

So I've tried to honor the high points on the P/Z curve to get more of a static reading for that bottomhole pressure, and that's how the P/Z curves were generated.

The State ETA well is located in Section 8, Unit I, and we have a drill stem test report from that well that showed in July of 1969, that this well ran a drill stem test and the bottomhole pressure was 6354 pounds and still building; it was not static.

In October of 1969, that well was brought on production and IP'd for 6.89 million a day and 53 barrels of oil.

As of February of 1997, that well had made 11.2 BCF.

Our decline curve here shows that this is declining, we estimated -- that was computer-generated on a four-year -- I think I used about the last four years' worth of production and came up with an 11.5-percent decline curve, an estimated -- that came out to be 12.7 percent for an EUR.

The P/Z curve, as it's drawn here, you can see it at 1000 pounds, also estimates an EUR of 12.7. I think that data confirms itself.

And so I used in my drainage area calculations 12.7 BCF for the EUR for this well.

Q. All right. Let's go now to the decline curve and the P/Z for the Humble Townsend.

A. This is Exhibit Number 11A and 11B. This is the Humble Townsend, drilled by V-F Petroleum. It's in Section

9, Unit L.

I have a bottomhole pressure test that was run on 11-4 of 1971 that showed this to have a bottomhole pressure of 5622 pounds.

Note that at the time this well was drilled and completed, the State ETA had produced for 28 months -- well, from -- The time from the State ETA drill stem test to the time of this pressure test was 28 months, and the State ETA had produced 1.8 BCF, and that this well here reflects a 732-pound drawdown. We believe that's caused from that 1.8 BCF that the State ETA had drilled, and that this well has been in communication with the -- pressure communication, with the State ETA since inception.

The Humble Townsend potentialed in November of 1971 for 2.3 million a day and 30 barrels of oil. As of March it had made 10.3 BCF. I've projected the decline here of 11 percent. It's a computer-generated decline over the last two -- two and a half years, and that projects out to 11.8 BCF.

The P/Z curve to an abandonment of 1000 pounds estimates an EUR of 12.5 BCF.

I used an average of those two for 12.1 BCF for the -- my drainage calculations.

Q. All right, Mr. Vasicek, let's go to Exhibits 12A and 12B, the data on the Lowe State well

A. Exhibits 12A and 12B are decline curves and P/Z curve for the Lowe State in Unit H of Section 17.

This well was brought on in April of 1972, had a bottomhole pressure of 5988 pound. This was -- I got this data from *Dwight's*.

In April of 1972 it IP'd for 2.75 million a day.

As of February of 1997, this well had cum'd 8.2 BCF. I projected it over the last several years, a computer-generated decline of 8 percent, to produce an EUR of 9.98 BCF.

The P/Z shows approximately 10.9 BCF, and so I used an average of 10.5 for my drainage calculations.

Q. All right. Let's now go to the data on the Humble State A well, your Exhibits 13A and -B.

A. The Humble State A was drilled by Tom Brown. It's in Section 16, Unit E. It was drilled in June of 1972.

We have a bottomhole pressure taken from a drill stem test of 4505 pounds. In August of 1972 this well was IP'd for 560 MCF a day and 17 barrels of oil. As of February of 1997 it had cum'd 2.5 BCF. We projected it out to make 3.1 BCF on the decline, and on the P/Z of 3.5. I used an average of that, of 3.3 BCF.

Q. Mr. Vasicek, if you'd now go to Exhibits 14A, your volumetric calculations, and 14B, the drainage map

area, and explain what these exhibits show.

A. Okay. Exhibits 14A and -B are -- is in a -- a drainage area map, representing the circular drainage pattern around the wellbores, draining each area. We anticipate this is probably the elliptical and not in a circular pattern, but this is to represent the -- shown to represent the area that the volumes would drain.

In my calculations I've used a height for the State ETA of 17 feet, porosity of 13 percent, and water saturation of 12 percents. This calculates out for a drainage area of 496 acres with a radius of 2622 feet. Basically, it is draining the east half of Section 8 and the west half of Section 9.

On the Humble Townsend I've used a height of 36 feet and a porosity of 10 percent, water saturation of 17 percent. This gives a 297-acre drainage pattern, which calculates out to a radius of 2029 feet, which would be the west half of Part 9 [*sic*] and part of the east half of Section 8.

The Lowe State well, I've used a height of 24 feet, porosity of 13 percent and water saturation of 12 percent. I get 313 acres, which is a radius of 2083 feet. It mostly covers the east half of Section 17.

And the Humble State A, I've used a height of 10 feet, porosity of 8 percent and a water saturation of 30

percent. It comes out to 442 acres and 2475 feet.

As you can see, it's tough to fit these volumes into a structure, as V-F has already noted, but we feel that the actual wellbore height used for our calculations is actually thickening to the west -- I mean, excuse me, to the east, which would be on V-F's land, and I think with the thickening over there you can very easily fit the reserves into this area.

Q. Have you planimetered the geology as mapped in Sections 8 and 9?

A. Yes, I've planim- -- We ran a planimeter over the geology in Sections 8 and 9 and -- as mapped in Section 8 and 9, and come up with a planimetered volume of around 20 BCF. We've estimated an ultimate recovery of 24.8 BCF.

This shows that either we've got a larger -- part of a larger structure in Section 9, and that probably that the State ETA is also drained a little bit from Section 17.

Q. Mr. Vasicek, do you see any communication between the wells in Sections 8 and 9?

A. We have a -- Our field people seem to notice slight indication in production increase when one of the wells is shut down, but it doesn't show up on any of the decline curves, because they are -- when they're shut down and not shut down simultaneously, they're shut down on short periods of time which wouldn't reflect on a decline

curve. Usually when they're shut down for a long period of time it's because of pipeline shutdown.

Q. Now, you were present today when Mr. Williamson testified concerning the existence of a permeability barrier in the -- or between the wells in Sections 8 and 9 that would, in essence, prevent them from competing with one another?

A. Yes.

Q. Do you agree with that testimony?

A. No, I don't.

Q. Would you refer to what has been marked V-F Petroleum Exhibit Number 15 and review that, please?

A. Yes, Exhibit Number 15 is a deliverability test which was run in 1989. And in the process of running this deliverability test -- The well had been shut in several weeks prior to running this, and in the process of running this deliverability test, if you'll turn to page 3 of this exhibit, they had some problems with the choke plugging, which was indicated by points 1 through 5, and they ended up shutting the well in for a time period -- I believe it was overnight.

When they shut the well in overnight, they basically got a buildup. And what this buildup shows is, from .5 it increases to a certain point, and then it starts to break over in a downward trend.

Q. And you've got sort of a peak between the indicated points 5 and 6 on the curve?

A. That is correct. If there was a permeability barrier, we would expect to see that continue to increase or level off. But with it decreasing the way it decreases, that's indication of interference from another wellbore.

I would also like to state that on the front of this test by Schlumberger, Schlumberger, under the comments, has indicated that there appears to be interference from an offsetting well.

Q. Is there any other offsetting well that could be interfering with the Townsend Humble well, in your opinion, other than the well in -- current well in Section 8?

A. No, there's no other well close enough to do that.

Q. In your opinion, does this data establish that there is and has been communication, pressure communication, between these wells?

A. Yes, it does.

Q. Do you believe that the wells in Section 8 and Section 9, in fact, are competing with one another for the reserves in this reservoir?

A. Yes, I do.

Q. Let's go to what has been marked for identification as V-F Petroleum Exhibit Number 16. Will

you identify and review that, please?

A. Okay. Exhibit Number 16 is a pressure-versus-time plot, not P/Z versus time but a pressure, reservoir pressure -- pressures, is taken for pressure, versus time plot.

Most of the wells, like I said before, were wellhead pressures, and you expect them to probably fall a little bit lower than the actual bottomhole pressure, due to loading in the wellbore.

If you'll note, we see a -- First of all, the State ETA well comes in at a fairly high pressure, and the Humble Townsend, which is the red curve, is quite a bit lower. We think these wells -- this indicates the fact that the State ETA had made 1.8 BCF prior to the penetration of the Humble Townsend.

You'll also note that there's a convergence to the declines of the State ETA and the Humble Townsend in about 1981.

Q. Now, we're talking about the red and the light blue lines; is that right?

A. Right, the red and the light blue lines.

Q. Right.

A. At that point the State ETA made 7.3 BCF, and that calculates out to a drainage area of 365 acres and a 2249-feet radius. The Humble Townsend had made 6.5 BCF,

and that calculates out to a 216-acre radius, seventeen hundred and -- excuse me -- yeah, 1735-feet radius.

We think that this shows definite pressure communication between the State ETA and the Humble Townsend since 1981.

If you move on down the curve to about 1993, 1994, you kind of see a convergence with all the curves. And I feel that this -- this indicates that all the wells are feeling each other's boundaries and competing against each other for reserves.

Q. Let's now go to the P/Z curve V-F Petroleum Exhibit Number 17. Will you review that for Mr. Catanach?

A. Yes. This one is exhibit of the P/Z versus the cum for the reservoir. And this plot will note the convergence of the reserves. At the 20 BCF you see the convergence of the blue triangles and the red stars. That's the convergence of the pressures and the cum's for the State ETA and Humble Townsend.

The blue points, as they drop off, I feel like those are bad pressure points due to building of fluid in the reservoir.

Around the 24-BCF range we start seeing the Lowe State entering into competition with the State ETA and the Humble Townsend. I think this is, again, indication that there is pressure communication in this reservoir.

Q. Mr. Vasicek, could you review the current production from each of these wells?

A. Yes, I have. I know the data we had was dated February of 1997. I can vouch for the Humble Townsend that it is still producing at approximately this same rate, and I assume the other wells are close.

The State ETA is making 566 MCF a day, and estimated to currently have drained 485 acres of the projected 496 acres.

The Humble Townsend is making around 530 MCF a day and has currently drained about 281 acres of 296 acres. This is as of February, 1997.

The Lowe State is making 466 MCF a day, and the Humble State A is around 200 MCF a day.

Q. Can you estimate the remaining reserves available to be produced by the ETA Number 2 and the Humble Townsend wells?

A. We're estimating the reserves to be around 3 BCF, 3.3 BCF or so, for those two wells.

Q. Mr. Vasicek, what conclusions can you reach from your engineering study of this reservoir?

A. Well, at present there are three primary producers in the field, and they're all making around 500 MCF a day on a wide-open choke. None of them are choked back.

We've seen the bottomhole pressure in this reservoir drop from 6350 to around 1400 pounds and expect abandonment to be around 1000 pounds, possibly as low as 800.

I'd also like to say that V-F -- I mean, that Mewbourne ran a pressure test that showed that the reservoir pressure in their well was around 1400 pounds, which correlates in very well with these P/Z curves and these pressure curves, and also falls very nicely on our P/Z curve. So I think the reserves are adequately being drained by the existing wellbores.

We think that the State ETA and the Humble Townsend have been in communication since inception of the Humble Townsend well, and -- where this is shown through the initial reservoir pressure of the V-F well being 732 pounds below the initial reservoir pressure when it was drilled.

The pressure cum curves clearly indicate that at least by 1981 these wells were in communication, and we think there's about 3 BCF remaining here.

Q. Where are these reserves coming from that are being produced at this time?

A. We see a thickening in the eastern direction, and if you -- Although we use wellbore heights for our drainage calculations, if you were actually draining from a slightly

thicker sand, it's very easy to put these reserves into the east half -- or west half of Section 9. We think the reserves are coming from Section 9, which is our acreage.

We think a new well in Section 8 would only drain the additional reserves from Section 9 and would violate our correlative rights to the gas in that section, and I think that we've demonstrated that through the P/Z curves, the volumetrics, the decline analysis, and shown that a third well is unnecessary to recover remaining reserves.

Q. Now, Mewbourne has indicated they expect to obtain a well that will produce 30 MMCF per month. Were you present for that testimony?

A. Yes.

Q. You heard Mr. Williamson talk about a limit on the production of 1000 a day?

A. Yes.

Q. Aren't those basically the same?

A. Yes.

Q. Mr. Vasicek, does it make sense to you as a petroleum engineer in this circumstance to drill as close to the offsetting well as possible, as is now proposed by Mewbourne?

A. Well, that's kind of their call, but I would sure be concerned about pressure depletion at this location. It makes more sense to get as far away from the existing

wells, than crowd into a pressure sink.

Q. And if you saw a larger reservoir extending off to the north, would it make sense to move your well farther to the north on the --

A. Yes, I think --

Q. -- spacing unit?

A. -- it would be, it would.

Q. In your opinion, could the new Mewbourne well create a high-permeability streak in this reservoir?

A. That's one of our concerns, is that the proposed location could either encounter or artificially, with a fracture effect, create a high-permeability streak in the reservoir, which would give Mewbourne an unfair volume of proportional reserves unless they are severely restricted on their deliverability.

Q. What will the impact be on V-F of Mewbourne drilling an additional well at the proposed location?

A. I think it would accelerate drainage across -- of gas, across the lease lines and would violate our correlative rights to that gas. And I also believe it would create waste, because the same reserves are going to be recovered by the existing wells.

Q. And anything that you've seen, could you recommend to V-F, absent the drilling of a new -- additional Mewbourne well, for V-F to go out and drill

another well in Section 9?

A. What's that again?

Q. Can you -- Based on anything you've seen here today, would you be able to recommend to V-F that they go out and drill another well in Section 9?

A. No, I could not. I could not recommend another well in this pool.

Q. What does V-F Petroleum recommend be done by the Division with the Mewbourne Application?

A. We seek that they deny the Application. They're trying to recover more gas from the reservoir, and they're trying to recover more gas from the offsetting Section 9, is where they're trying to get it from.

And if they -- if we're not denied the -- then we propose that a substantial penalty be placed on the well's ability to produce.

Q. What penalty would V-F recommend be imposed if one is, in fact, imposed?

A. Well, we would base the penalty on encroachment if the Application were not denied, and the standard location, I believe, is 1650, and they are encroaching to 660, which is a 60-percent encroachment. And --

Q. And would you recommend, then, a 60-percent penalty?

A. Yes, I would recommend a 60-percent penalty.

Q. And against what should the penalty be applied?

A. Well, we think that the penalty should be applied against the actual production of the well.

Q. And how should that be determined?

A. Well, we think initially that they should produce -- should run a seven-day test on the well and use the last four days of that seven-day actual production test out of sales line to be applied to the penalty, and then another test be run three months following, and then semi-annually from there on.

Q. Your concern, really, is that if a penalty is imposed on the well, it be applied to some accurate measure of what the well really can do; isn't that right?

A. Yes, our primary concern is that -- is to get an accurate reading on the actual deliverability and not be able to jostle the numbers and manipulate the numbers.

Q. If they're -- to a deliverability test, what would you recommend?

A. If they're plotted to a deliverability test, we recommend that the well be under production for at least ten days prior to the deliverability test, ten consecutive days of continuous production so as to approximate what the well will actually produce on an actual basis.

Q. Would you recommend that any deliverability test be witnessed both by V-F and the Oil Conservation --

A. Yes, I --

Q. -- Division?

A. -- would propose that we be given sufficient notice to witness any tests that are done, and I would propose that they be done by an independent auditor or an independent engineering firm.

Q. Mr. Vasicek, if this location is approved, is it your opinion that the recommended penalty is necessary to protect the correlative rights of V-F Petroleum?

A. Yes, I believe the well in Section 8, the current well in Section 8, has already drained the reserves from that section, and all the reserves are coming from Section 9.

Q. In your opinion, is denial of the Mewbourne Application or, in the alternative, the imposition of a 60-percent production penalty necessary to offset the advantage gained by Mewbourne with its proposed unorthodox well location in Section 8?

A. Yes.

Q. Were V-F Petroleum Exhibits 9 through 17 prepared by you?

A. Yes.

MR. CARR: At this time, Mr. Catanach, I would move the admission into evidence of V-F Petroleum Exhibits 9 through 17.

EXAMINER CATANACH: Exhibits 9 through 17 will be admitted as evidence.

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

EXAMINER CATANACH: Mr. Bruce?

CROSS-EXAMINATION

BY MR. BRUCE:

Q. Mr. Vasicek, is it my understanding that the four wells in the pool you believe are all in pressure communication?

A. Yes. Well, primarily the Number 2 and the -- the State ETA Number 2 and the V-F Petroleum Humble Townsend are in pressure communication, and we think we're seeing probably some communication now between the Lowe State.

The pressures that were taken off the Humble Townsend are wellhead pressures, and I don't know if that's going to enter into any problem here anyway.

Q. Well, let's look at your Exhibit 9.

A. What is that?

Q. This chart.

A. Okay.

Q. If they're in communication, why -- Looking at the Humble Townsend, drilled in November, 1971, and then the Lowe State was drilled just four or five months after, and the pressures increased 360 pounds. Why would that

happen?

A. I don't think that the drainage had reached the Lowe State at that point. The Humble Townsend is a lot closer to the State ETA than the Lowe State is. The Lowe State was a directional well, and I don't think that the drainage had reached that point.

You'll note that it is lower, considerably lower than the initial pressure of the State ETA.

Q. Well, then why four months later would all of a sudden there be a 1500-pound drop to the Tom Brown well?

A. To the Tom Brown well? The -- Let's see. The Lowe State well came on -- Let's see. go to the decline curve of that well.

Q. Well, I mean, you have the dates here --

A. Right.

Q. -- only a few months apart.

MR. CARR: Well, he can look at the decline curve if he --

THE WITNESS: Well, I think if you'll look -- take a look at the decline curve of the Lowe State well, you're talking about the communication between the Lowe State and the Humble --

Q. (By Mr. Bruce) I'm -- about all of them. You've claimed before that these are all in communication.

A. Well, I think that the Lowe State -- I think at

the present, that the Lowe State and the Humble Townsend and the State ETA are -- Yes, they're all in communication.

Q. Okay. My question is -- The Tom Brown well is the poorest well in the pool?

A. That's right.

Q. Why is the pressure there suddenly --

A. It's a tighter --

Q. -- just a few months after the Lowe State, 1500 pounds lower, after only a couple of months' production from the --

A. I think we'll have to look at the production of the Lowe State and see what that well has made.

But I don't think that has much bearing on whether there's communication with the Humble Townsend. The reserves that have been drained from the Humble -- excuse me, from the Humble State A --

Q. It doesn't indicate to you --

A. -- are involved --

Q. -- that there may be different pressure regimens here?

A. No, I think the State ETA and the Lowe State and the Humble Townsend are the three primary producers in this reservoir, and I think that the pressures that are represented here are representative of a reservoir that's being drained -- I mean eventually going to be drained,

together.

Q. Well, on your Exhibit 14B you have these overlapping drainage circles. Shouldn't that indicate that these wells would all basically have the same pressure?

A. The drainage circles --

Q. Yes.

A. -- should eventually have the same pressure?

Q. Wouldn't that indicate that these wells should all have the same pressure?

A. Eventually, should eventually, at the end of the -- at the end of --

Q. Well, I mean, isn't 25 years enough?

A. We'll you're pro- -- How many years are you projecting that this is -- this reservoir is not completely drained yet; there's still 3 BCF in the north half -- in the north -- in Section 8 and Section 9, to be produced. And we think most of it's coming from Section 9.

And so these circles represent drainage at ultimate EUR.

Q. Well, your -- Based on your ultimate recoveries, hasn't about 85 percent of the reserves been recovered?

A. I think that -- I think we're getting close to that figure. I think another 3 BCF will be -- probably between 85 and 90 percent of the reservoir will be drained.

Q. You indicated that you had plainimetered the area

that your geologist drew, at least as to Sections 8 and 9. Have you done that for the entire reservoir that your geologist --

A. Yes, I have.

Q. What volume of gas do you --

A. Let me find my notes, and I'll give that to you.

From this -- From planimetering the entire section -- the entire reservoir, I come up with a volume of 43 to 45 BCF, depending on what porosity and water saturation you use for averages through the planimetering.

And we estimate from our decline curve and our P/Z curve that we should recover between probably around 38.6 BCF from the four wells, which is 85- to 90-percent recovery, and that's what we'd expect to see.

Q. If most of the reservoir is, indeed, on Section 9, why isn't the V-F well producing substantially more than the American Exploration well in the south half of Section 8?

A. I'll tell you, I think both of the wells would have -- if they were both drilled at the same time period, I think they would both be draining and be producing similar to each other. But the State ETA had a two-year headstart on the V-F well, which accounts for 2 BCF -- 2 BCF headstart.

They're currently all producing about the same

rate right now, around 500 MCF a day.

Q. But even then, it would have been producing reserves, even on your own definition by -- from Section 8, the ultimates wouldn't be that much different, would they?

A. The ultimates? Well, I think the fact that this was an overpressured reservoir to start with gave -- and the State ETA being a -- the first well in the pod, gave them a tremendous advantage.

Q. And I believe you said that you wouldn't recommend another well in this pool?

A. No, I think the wells -- the drainage -- the reservoir of this pool can be drained by the current wells.

Q. And so V-F has no plans to do any further exploration?

A. I don't know what V-F plans on further exploration; I was just brought in to do this right here.

MR. BRUCE: Okay. I have nothing further of this witness, Mr. Examiner.

EXAMINER CATANACH: Mr. Carr, anything?

MR. CARR: No redirect.

EXAMINER CATANACH: Just a couple.

EXAMINATION

BY EXAMINER CATANACH:

Q. There was some evidence presented by Mewbourne earlier about some differences, current differences in

pressure between the wells in Section 8 and Section 9. Do you agree with that -- that that difference exists at this current time?

A. I think that the difference in pressure was due to the fact that -- Are you talking about current pressures, are you talking about --

Q. Current.

A. I think the reason why they see current differences in pressure -- and I think you can refer to the pressure-versus-time curve --

Q. I wouldn't know where to find it.

A. -- which is -- I know it. It's the one right before 17, I think, so it would be probably Exhibit 16.

MR. CARR: It is --

THE WITNESS: Exhibit 17?

MR. CARR: Exhibit 16.

THE WITNESS: 16, Exhibit 16.

Q. (By Examiner Catanach) Whose is that? Mewbourne's or --

A. V-F, V-F's well, Exhibit -- what this has done is taken -- This curve shows the green line and the red line, which is the Lowe State and the Humble Townsend currently at about 1400 pounds. I believe that those pressures when they were taken -- between 1200 and 1400 pounds. They're wellhead surface pressures, and I think they were probably

influenced a little bit by fluid-loading.

I think -- We know V-F -- I mean Mewbourne, has run a bottomhole pressure in their well, indicating that their well is 1465 pounds, and I've plotted that point as a blue point on the blue line, the last point on the blue line. And I think if you take a look at that, you see all these points converge.

Q. Okay, so it's your opinion that the wells are at approximately the same pressure at --

A. That -- It sure is.

Q. -- this point?

Okay.

A. I think any difference in -- between what they're presenting and we're presenting is the fact that they've got wellhead pressures, and these wells may have had some condensate buildup.

Q. Okay. You seem to -- There seem to be some significant differences in the estimated ultimate recoveries between what you've presented ad what Mewbourne presented.

A. Yes.

Q. Do you want to comment on that?

A. Well, their ultimate recoveries, I think, were primarily based on decline analysis, and they've got slightly less decline than what we do. And I don't know

what they projected theirs out to -- economic limit of.

I know that we've projected ours out to around 30 MCF a day. And that number seems to jibe with our P/Z curves, which we've limited to around 1000 pounds bottomhole pressure of this reservoir. I feel like 1000 pounds is probably very close to what this reservoir is going to be abandoned at.

EXAMINER CATANACH: I don't think I have anything further of this witness.

Is there anything further of this witness?

MR. BRUCE: Not of this witness, no. Mr. Examiner, I would like to recall Mr. Williamson very briefly.

EXAMINER CATANACH: All right.

ROY C. WILLIAMSON, JR. (Recalled), the witness herein, having been previously duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Mr. Williamson, I've handed you what's been marked Mewbourne Exhibit 12. What does that reflect?

A. Okay, Exhibit 12 is a document from Whipstock, Inc., that compares the measured depth to the true vertical depth, as far as the deviated hole in the Lowe State Number 1 well.

Q. And if you use those directions, what does that give as a top of the Morrow lime -- the Atoka sand, in the -- I forget the exact name of the well, but it's the well in the northeast quarter of Section 17?

A. It's the Great Western Drilling Lowe State Number 1.

Instead of having a subsea top of minus 8404, it would have a subsea top of minus 8012. So roughly a 200-foot error has been imposed in the structure map by not taking into account the deviation of the hole.

Q. So V-F shows minus 7800 for the top of the -- or for the Atoka, correct?

A. Right.

Q. And you're showing something several hundred feet --

A. About 200 feet deeper, minus 800 feet.

Q. And that's a significant difference?

A. That will, that will change the shape of the -- the entire shape of the structural map.

Q. Okay. Next, Mr. Williamson -- You've heard Mr. Vasicek testify today, haven't you?

A. Yes, I have.

Q. And I think he testified that there was certainly communication between the American Exploration well in the southeast quarter of Section 8 and the V-F well in the

southwest quarter of Section 9; is that correct?

A. Correct.

Q. Now, based on your testimony and your exhibits -- and I would refer you to your Exhibit 4, the structure map, and then your Exhibit 9A --

A. Right.

Q. -- where in your opinion is the -- And this came about with respect to that, I believe, production test or some- -- I forget exactly what Exhibit number it was. Where could the competition be coming from for the V-F well?

A. Well, before I address that, I want to say one thing about the pressure measurements. The comment was made that we might have condensate in the hole that affects the surface pressures.

These wells have -- Cumulative production is somewhere around 10 to 12 barrels per million, which is a fairly low condensate rate. These wells have been able to produce well. I don't think there's any buildup of condensate in these holes.

And even if there were, it has been a consistent situation all along. And I think if we were seeing a buildup of condensate in these wellbores, we would see the pressures dropping off more rapidly. Instead, we see them flattening out. So I don't think we've got fluid buildup

in the reservoirs that affects these pressures.

Now then, looking at the data that I believe more correctly represents what's in the reservoir, the Humble V-F Petroleum pressure, the Humble Townsend Number 1, is more closely related to the Lowe State Com Number 1, which is the well down in Section 17.

Those two pressures have apparently come together and apparently --

Q. And that's on your Exhibit 9A. Those two pressures are almost equal, aren't they?

A. That is correct.

Q. Do you believe it's necessary to use the Z factor in those measurements?

A. Absolutely. I don't think you can compare pressures well without using the Z or the compressibility factor, which is why I used it in this case.

And again, I maintain that we've got around a 700-pound pressure difference between the V-F Petroleum well and the State ETA Number 2 well.

Q. And if those faults, those northeast-trending faults or permeability barriers that you have on your Exhibit 4 are there, really, the two wells that are in competition are the well in Section 9 and the well in Section 17?

A. That's what the pressure data shows.

Q. And this could also account for the massive pressure differential between the Lowe State and the Tom Brown well, couldn't it?

A. That is correct, because these pressure differentials -- Maybe the ETA well did get a little bit of a headstart, but if they are truly in communication over 25 years -- and it wouldn't take 25 years; several years, five years, ten years, those pressures should have converged and they didn't. So something is separating those two wells.

Q. Do you have anything further, Mr. Williamson?

A. No.

MR. BRUCE: Mr. Examiner, I -- is --

Q. (By Mr. Bruce) Well, Mr. Williamson, was Exhibit 12 taken from Mewbourne Oil Company's records?

A. Sir?

Q. Was Exhibit 12 taken from Mewbourne Oil Company's well records?

A. Yes, yes.

MR. BRUCE: And Mr. Examiner, I'd move the admission of Mewbourne Exhibit 12.

EXAMINER CATANACH: Exhibit 12 will be admitted as evidence.

CROSS-EXAMINATION

BY MR. CARR:

Q. Mr. Williamson, this Exhibit 12, what does this

show us? The top of the Morrow sand, is that what we're looking --

A. Sir?

Q. Does this show the top of the Morrow sand; is that what we're looking at?

A. No. Well, what it shows is, starting on the front page where you have a measured depth of 9735 versus a true vertical depth, it shows at that point what the difference is as a function of the deviated hole.

MR. CARR: That's all I have.

MR. BRUCE: That's all I have.

EXAMINER CATANACH: The witness may be excused.

MR. BRUCE: And I have nothing further.

MR. CARR: And I'd like to recall Mr. Koss for about two questions, with your permission.

EXAMINER CATANACH: Let's do it.

MR. CARR: Okay.

GEORGE M. KOSS (Recalled),

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

DIRECT EXAMINATION

BY MR. CARR:

Q. Mr. Koss, you heard Mr. Williamson just testify about a substantial difference in the top of the interval in the Lowe State Number 1 well, based on a -- some data

from the records of Mewbourne, did you not?

A. Yes.

Q. Are you mapping the same interval as has been mapped on the Mewbourne maps?

A. No, sir. Mewbourne's mapping top of the Morrow lime; I'm mapping top of the Atoka-Shoe Bar sand.

Q. And those are different intervals, are they not?

A. Yes, sir.

MR. CARR: That's all I have.

THE WITNESS: I have one more comment, if I may. There's a typo on Robin's report. The water saturation in the Great Western was 22 percent, not 12. And what that does is, it gives us a nice relationship between water saturation and the depth of the formation.

The Avance well had 12-percent water saturation, the V-F Humble Townsend had 17 percent, the Great Western 22 percent, the Tom Brown 30-percent water saturation, and that just steps right on downstructure, as I have interpreted it. And I wanted to bring that up.

MR. CARR: That's all I have.

EXAMINER CATANACH: Hold on, Mr. Koss.

CROSS-EXAMINATION

BY MR. BRUCE:

Q. Now, what are you mapping? I mean, is -- are you mapping --

A. Yes, on the Great Western well, the top of the Morrow lime comes in at 12,518, and the top of the Atoka-Shoe Bar sand comes in at 12,442. There's a 76-foot difference.

Q. Okay, and would that be the -- would -- The 12,442, what would be the subsea depth on that?

A. 8402. And the subsea on the top of the Morrow lime will be 8478, so there's a 76-foot --

Q. So if there was a --

A. -- difference.

Q. -- if there was a -- just using that minus 8404, if you have a delta between measured and true vertical depth of 392 feet, wouldn't you still be having a subsea depth of about 8000, rather than the 7800 that you are talking about?

A. Well, I haven't worked out the Dynadrill information. I'm just going off the logs. I'd have to say it would be 60 to 70 feet.

Q. Well, have you seen Exhibit 12? I mean, you're -- The top of what you're talking about, you've said, is 12,442 --

A. Uh-huh.

Q. -- and what is the difference between the --

A. Right. Okay, what was the corrected top of the Morrow lime again?

Q. On the second page, on the second page.

You know, you have a measured -- whatever ones you want to use.

But you know, you could go down to the 12,484 or the 12,399 measurement and read off to the right. What is the difference between --

A. Okay, you don't have --

Q. -- the column-one and the column-four figures?

A. Do you have the subsea posted on this page, page 3?

Q. No, I don't, but what is the difference?

A. So 12,091.67, that would be the corrected top of the Morrow lime.

Q. That is correct.

A. Okay.

Q. No, that's the -- That's the true vertical depth, the vertical depth.

A. Okay.

Q. It's about what? 390 feet, Mr. Koss?

A. It would be about -- 7980 would be the top of the sand.

Q. And that's 180 feet different from what you've mapped, isn't it?

A. What do I have on my map?

Q. Minus 7800.

A. Is that -- Right, right.

Q. Couldn't that set up a fault between the Lowe State and the Tom Brown wells if there's -- if you're looking at a couple hundred feet difference between those two wells?

A. I would have to remap, recontour.

MR. BRUCE: Okay, that's my -- That's all I have, Mr. Examiner.

MR. CARR: That's all.

EXAMINER CATANACH: I suggest we dispense with any closing statements and --

MR. CARR: I would like to give a brief --

EXAMINER CATANACH: I knew it. All right, go ahead, Mr. Carr.

MR. CARR: Mr. Catanach, this is a correlative-rights case, and the way we regulate operators in New Mexico and try to protect correlative rights is by setting the size of spacing units and establishing setback requirements.

And in this case Mewbourne is proposing to be too close to V-F, and when we look at the reservoir they have too many wells.

The OCD is charged with the protection of correlative rights, and you're authorized to enforce a penalty to offset the advantage that is gained by a well

that is too close.

They come before you and they say, We'd like a 1000-a-day penalty if there is one. Mr. Bruce says he may in his closing change the amount of that penalty. We found 1000 a day too much because, in fact, it's exactly what they projected their well to make.

We propose a 60-percent penalty if you decide to let them drill the well.

But you know, you're not required to approve every application that comes before you. In fact, I would submit you're required to disapprove them when correlative rights are going to be impaired and when waste is going to be caused, and that's the result of what they are seeking here today.

Section 8, as you know, is only productive on the extreme eastern portion of the section, and they have produced with their wells over there, since 1969, 11.5 BCF, with a well in a standard location -- would have been a standard location, 1980 from the south, 660 from the east, if they had a standup unit. And then they would have been allowed to have one well.

But what we do over in 8 is, we have the same owners, in essence, and what they want is two wells 660 off the common line with V-F.

V-F has a standard 320-acre unit, they have a

standard well location, they have dedicated a west-half standard unit in the Atoka-Morrow, and it's going to be drained with their current well.

But if you approve this Application what you do is, in the east half of 8, in the same reservoir, you let Mewbourne with a partially productive tract stand on the same footing with V-F that has a fully productive tract. Their zone is thinner than the thinning reservoir under V-F. Mewbourne can be treated the same because it's all common ownership.

And on the Mewbourne tract from which they've already produced 11.5 BCF, they now want to put an additional well, having in essence already drained what was there.

What they propose is an unnecessary well. It will cause waste, it's going to impair correlative rights, and it should be denied.

But look at the evidence. Will they see more reservoir, at least horizontally? What they see is a thinner reservoir. They base it on well control and they take it off to the north, but they really have no well control to the north which will justify a northern extension.

And they see faults, but they don't have anything that really can support the faults except, oh, there must

be something there because they see some pressure differentials.

So when you look at the testimony from Mr. Vasicek about what happens when these wells do load up, and he told you that they do, you can see that the pressures are virtually comparable.

When you look at the recent bottomhole pressure data that Mewbourne has acquired, what we have is, we have a common reservoir, and we have wells that are competing for one another.

The only way they can come in here and concoct a reason, now that Mewbourne has increased its ownership position, to put a second well there is to somehow find a pressure barrier that, well, it must be there, maybe we'll see it after we drill a well on top of you.

You know, it was interesting, Mr. Haden said yes, that they could be called an exploitation company. I guess you find that you can't always explore your neighbor's minerals, but you may be able to exploit them, and I'll tell you, that's what's happening here today.

The time has come for you to say no to people who come in here and play games with rules, games with the technical case, and try and do nothing more than gain an advantage on the offsetting operator.

You're authorized to impose a penalty, and if

that's the option you take it must be 60 percent at least, and it must be against an effective measure of what that well can do.

But what you really must do, unless you're going to authorize this kind of activity, is say no and deny the Application.

EXAMINER CATANACH: Mr. Bruce?

MR. BRUCE: Mr. Examiner, Mewbourne is before you today seeking approval of an unorthodox gas well location. All of the interest owners in Section 8 believe that location is necessary. This location is necessary to prevent waste and to lessen the risk involved in drilling the well.

Now, when you review the evidence I think you only need to focus on two key items.

First, the two existing wells in Sections 8 and 9, which are only 1320 feet apart, will each produce 14 BCF of gas, yet they have significantly different pressures. V-F can't really explain this difference. That means there's a fault or permeability barrier in that area. This means that V-F's well won't be harmed by Mewbourne's proposed well.

Second, the four existing wells in this pool, which are within a one-section area, will ultimately produce 44 BCF of gas. Clearly there's more reservoir out

here than V-F thinks. In order to produce all the reserve and further delineate the reservoir, another well is needed.

In fact, the drilling of this well will help prove whether V-F's acreage in the northwest quarter of Section 9 is productive and pressure-separated from its well in the southwest quarter of Section 9.

V-F can't explain why, if the bulk -- they show the vast bulk of the reservoir is on their section -- why it produces no better than the other wells in the pool.

Now, why does the well need to be unorthodox? Simply, if you move too far west, the reservoir thins and you'll get a dry hole. Both parties agree on that issue. It would be economic waste to drill that well 1650 feet from the east line of the section.

Will the location affect V-F? It may, but only slightly, based on the huge production with little pressure drawdown experienced by wells immediately offsetting the proposed location.

The main effect of Mewbourne's well will be on the well in the south- -- if any, will be on the well in the southeast quarter of Section 8. Apparently those interest owners think it's worth the risk to drill that well.

What about moving further north? Well, that

would increase the risk unacceptably.

I'd note that there has been no development in this pool since 1972, but now you have some interest owners who are willing to risk a large sum of money to prove that there is additional reservoir in this area, a move that could well result in the drilling of other wells.

Mewbourne is willing to accept a penalty on this well. Mewbourne believes that the penalty that Mr. Carr proposed based on footage, or a 60-percent penalty, we think that's a reasonable penalty.

But we think there should be a minimum allowable of a million cubic feet a day. That is a substantial penalty, considering that a normal well in this pool produces about three and a third million cubic feet of gas per day. That is a 60-, 65-percent penalty, right off the bat.

We think this is fair, it will allow the interest owners in Section 8 to recover their fair share of reserves, and it will help delineate the reservoir.

We'd ask you to approve the location.

EXAMINER CATANACH: Thank you, gentlemen.

Draft orders within 21 days?

MR. CARR: Twenty-one days? We can do that.

EXAMINER CATANACH: And there being nothing further in this case, Case 11,842 will be taken under

advisement.

And we'll adjourn this hearing.

(Thereupon, these proceedings were concluded at 4:40 p.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 11842, heard by me on November 6 1997.

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 November 21st, 1997.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998