STATE OF NEW MEXICO

ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

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

APPLICATION OF COG OPERATING, LLC, FOR SPECIAL RULES, EDDY AND LEA COUNTIES, NEW MEXICO — Case No. 14613

TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: RICHARD EZEANYIM, Technical Examiner
DAVID K. BROOKS, Legal Examiner

May 17, 2011

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, RICHARD EZEANYIM, Technical Examiner, and DAVID K. BROOKS, Legal Examiner, on Tuesday, May 17, 2011, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South St. Francis Drive, Room 102, Santa Fe, New Mexico.

REPORTED BY: PAUL BACA, CCR #112
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I N D E X

BURNETT/HUDSON EVIDENCE

BURNETT/HUDSON EXHIBITS

LEGAL EXAMINER BROOKS: The COG Apache group has 8 hours and 35 -- 34 minutes remaining, and the Burnett/Hudson group has 3 hours and 42 minutes remaining.

TECHNICAL EXAMINER EZEANYIM: We will call the hearing back to order now.

I'm going on the record. I'm not going to read the cases again. It's on the record the cases we are dealing with.

Today, now, we are going to go to Burnett/Hudson's witnesses. It's about 8:35 in the morning. So at this point, if there are no comments from anybody from what we did yesterday, I really want to congratulate you for -- you did excellent yesterday. That means we are going to finish today so everybody can go about their business. I'd like to streamline, instead of fighting here for years and coming back. So for what we did yesterday, I'm very proud of you guys.

At this point, if there is no comment, I will call on counsel for their appearance on Burnett/Hudson to present your first witness.

MR. CAMPBELL: Good morning, Your Honor. I'm Michael Campbell appearing for Burnett/Hudson. We have three witness, the first of whom is John

Haiduk.

LEGAL EXAMINER BROOKS: We'll begin at 8:36.

TECHNICAL EXAMINER EZEANYIM: Mr. Haiduk, you were sworn in yesterday, so you are still under oath.

THE WITNESS: Yes, sir.

JOHN HAIDUK,

after having been first duly sworn under oath, was questioned and testified as follows:

EXAMINATION

BY MR. CAMPBELL:

Q. Good morning, Mr. Haiduk. Would you state your name and your current occupation?

A. My name is John Haiduk. I am a petroleum geoligist. My current position is geological manager for Burnett Oil Co., Inc.

Q. Would you please provide the Examiners with a brief background of your education and experience as a petroleum geologist?

A. I hold bachelor's and master's degrees from Oklahoma State University in geology.

I have been employed as a petroleum geologist -- this is my 29th year. I've spent the last 11 and a half years with Burnett Oil Co., Inc.

Prior to that I was with EOG Resources.

I also spent time with Pickett in Ardmore, Oklahoma, and the Gungor family in Enid and Oklahoma City, Oklahoma.

Q. Have you testified before this division before?

A. No, sir.

Q. Are you familiar with the COG application in case 14613 and the Burnett/Hudson application in case 14647?

A. Yes, sir.

Q. As a petroleum geologist for Burnett, have you prepared certain exhibits pertinent to those two applications?

A. Yes, sir, I have.

MR. CAMPBELL: Mr. Examiner, we'd tender Mr. Haiduk as an expert in the field of petroleum geology.

TECHNICAL EXAMINER EZEANYIM: Could you examine for the -- your educational -- your education? I was not paying attention. Since this is your first qualification to the division could you go, you know, further and tell me further qualifications or certifications?

THE WITNESS: Again, I hold a bachelor's

and a master's degree in geology from Oklahoma State University.

TECHNICAL EXAMINER EZEANYIM: And your work experience?

THE WITNESS: 28 -- 28 full years.

TECHNICAL EXAMINER EZEANYIM: Okay. Are you a certified petroleum geologist?

THE WITNESS: No, I'm not.

TECHNICAL EXAMINER EZEANYIM: You worked for 28 years, right?

THE WITNESS: That's correct.

TECHNICAL EXAMINER EZEANYIM: He's qualified to testify at this time.

MR. CAMPBELL: Thank you.

Q. (By Mr. Campbell) We have 16 exhibits to run through here, Mr. Haiduk.

Could you identify and explain the purpose of Burnett/Hudson Exhibit Number 1?

A. This is a pool outline map of the consolidated area in the shelf area of Southeast New Mexico. You can see in the red line there that this is Burnett/Hudson's proposed area of pool consolidation, and the various colored lines represent the approximate boundaries of the current pools, Yeso pools.

Q. Could you identify for the record the name of the six pools for which Burnett/Hudson seeks consolidation?

A. That would be the Loco Hills Glorieta Yeso, the Cedar Lake Glorieta Yeso, the Friend Glorieta Yeso, the Friend Glorieta East Yeso, the Maljamar Yeso West, and the Maljamar Paddock North.

Q. Now, other than those six identified pools, which are the subject of Burnett/Hudson's application in Case 14647, does Burnett/Hudson offer any position or opposition to the application of COG with respect to the six pools left in their Case Number 14613?

A. No. I believe that the Dodd Federal unit and the Grayburg-Jackson Seven Rivers have already been excluded.

Q. Correct. Could you identify Exhibit Number 2?

TECHNICAL EXAMINER EZEANYIM: Before you do that, I needed to make a clarification for the record.

We have six pools. We had this prehearing conference on Wednesday, and there was an objection to the West Maljamar North being included in that consolidation. And we reached an agreement we can

deal with the other five, excluding that.

Correct me if I'm wrong. Is that what we reached on Wednesday?

MR. CAMPBELL: I think, clearly, that COG withdrew opposition to consolidation of five of those pools.

TECHNICAL EXAMINER EZEANYIM: Yes. There is -- we have five of those. But now, if you're adding that, the Maljamar North, I don't know whether that's -- because I want to make clear what's going on, so we know what's going on.

MR. CAMPBELL: We have maintained that the single pool to which they object should be consolidated.

TECHNICAL EXAMINER EZEANYIM: Okay.

MR. CAMPBELL: They are opposing that. But we will illustrate that that sixth pool ought to be included.

LEGAL EXAMINER BROOKS: And is that the North Maljamar/Paddock?

TECHNICAL EXAMINER EZEANYIM: Yeah, the Maljamar --

MR. CAMPBELL: I thought they objected to the Maljamar Yeso West.

MS. MUNDS-DRY: Correct.

TECHNICAL EXAMINER EZEANYIM: Okay. The Maljamar Yeso West.

LEGAL EXAMINER BROOKS: Okay. So it's the West Maljamar Yeso that COG --

TECHNICAL EXAMINER EZEANYIM: If you are objecting to that --

MS. MUNDS-DRY: That is correct. We are objecting to that pool being consolidated with the other five pools.

LEGAL EXAMINER BROOKS: That's because it already has a special pool order on gas, right?

MS. MUNDS-DRY: That, and it's unclear to us that Burnett/Hudson have any interest in that pool.

LEGAL EXAMINER BROOKS: Okay.

MR. CAMPBELL: But we -- we still are urging, through our presentation, the consolidation of that pool with the other five, to which there is no opposition.

TECHNICAL EXAMINER EZEANYIM: Oh, yeah. Yes, that's not a problem. I mean actually, you shouldn't even go -- be going to consolidation. That has been done.

LEGAL EXAMINER BROOKS: And what is your position with regard to interest? I thought that --

you know, that should be fairly objective whether you do or don't have an interest in the pool.

MR. CAMPBELL: We are seeking consolidation there because we have the offset tracts.

LEGAL EXAMINER BROOKS: So you -- your -- you own tracks within one mile of the exterior boundaries of that pool?

MR. CAMPBELL: Yes, sir.

LEGAL EXAMINER BROOKS: Okay.

TECHNICAL EXAMINER EZEANYIM: Okay. So you are right. You know, what you're saying is right. We don't want to go there. That is already done. Those five pools will be consolidated. They're already consolidated because there is no objection, and there were notices, and nobody objected. The people who have been objecting are on notification on those five pools. Now it's only on the sixth pool.

And remember now, Counsel, whenever we develop a special pool it's going to encompass all the pools without consolidation or not. So I want to make it so that we don't go back now, and then this will spill over into Friday.

MR. CAMPBELL: I'm not intending to do

that, Mr. Examiner.

TECHNICAL EXAMINER EZEANYIM: Okay. Because I said I don't want -- consolidation has already been done. We are going to consolidate those five pools.

MR. CAMPBELL: Yes, sir.

TECHNICAL EXAMINER EZEANYIM: I mean I tell you right now, but not including the sixth pool, because there is no objection to that.

Do you see what I'm trying to say? So we might go to those three issues unless you see one to give us evidence to say that that sixth pool should be consolidated with the five, that -- you know, concrete evidence.

Do you see what I'm trying to say here?

MR. CAMPBELL: Yes.

TECHNICAL EXAMINER EZEANYIM: Because I don't want us to, you know, go back to square one and then --

MR. CAMPBELL: Well, we are seeking the application of the special pool rules that we seek for the five agreed-to pools --

TECHNICAL EXAMINER EZEANYIM: Yes.

MR. CAMPBELL: -- to apply a mile from the boundary --

TECHNICAL EXAMINER EZEANYIM: Yes, you should.

MR. CAMPBELL: -- into that Maljamar West.

TECHNICAL EXAMINER EZEANYIM: Yes.

MR. CAMPBELL: Okay.

TECHNICAL EXAMINER EZEANYIM: Yeah, you should, yeah.

MS. MUNDS-DRY: Mr. Examiner, excuse me for interrupting.

This witness was qualified as a geologist, and this appears to be several land exhibits. Maybe if I could take the witness on voir dire, maybe I can understand how he is qualified to present these land exhibits.

LEGAL EXAMINER BROOKS: Is there any controversy about the land exhibits? I mean...

MS. MUNDS-DRY: Well, we do have some questions about them.

LEGAL EXAMINER BROOKS: Okay. Well, we will put it on your time, then.

MS. MUNDS-DRY: Okay.

VOIR DIRE EXAMINATION

BY MS. MUNDS-DRY:

Q. Good morning, Mr. Haiduk. My name is Ocean Munds-Dry.

A. Good morning.
Q. I represent Concho.
I see here, for example on Exhibit Number 1, that you have presented certain pool boundaries.
A. Yes.
Q. Were you responsible for creating this exhibit?
A. My assistant was, under my direction. These were taken directly from maps provided to us by the OCD.
Q. And so someone that works for you created this map?
A. That's correct.
Q. And you've indicated that the source is from the OCD?
A. As much updated as we possibly could. I think you will see at the bottom that it should have been on there that operating areas and pool boundaries are approximate, because we were told by Mr. Kautz of the OCD that he did not have fully updated maps of some of the pools.
Q. So if I understand correctly, you or someone who works for you spoke to Mr. Kautz about these pool boundaries?

A. Burnett personnel did, yes, extensively.
Q. Okay. And this is what they told you and what is reflected on this map?
A. That is correct.
Q. And is that the case for the next several land exhibits that you are about to present?
A. The traces of the outlines?
Q. Yes, sir.
A. Of the pool boundaries? Yes.
MS. MUNDS-DRY: Okay.
Thank you, Mr. Brooks.
LEGAL EXAMINER BROOKS: Okay. Thank you.
TECHNICAL EXAMINER EZEANYIM: Sorry, Mr. Campbell. I just feel I -- I'm sorry to interrupt, but I need to do this so that we know where we're going.
MR. CAMPBELL: Certainly.
TECHNICAL EXAMINER EZEANYIM: I don't want to stray back now and then we're not getting confluent -- I'm sorry about that.
MR. CAMPBELL: That's all right.
May we resume?
TECHNICAL EXAMINER EZEANYIM: Yes. Sure. Go ahead.

FURTHER EXAMINATION

BY MR. CAMPBELL:

Q. Could you identify and state the purpose, Mr. Haiduk, of Burnett/Hudson Exhibit 2?

A. This just expands upon the previous exhibit. What we're trying to demonstrate here is the basic areas of operation of each of the significant operators in the area of the proposed area pool consolidation.

Q. And can you identify on Exhibit 2 which acreage and operatorship belongs to Burnett/Hudson?

A. That is the yellow acreage here (indicating). And we also have leasehold here (indicating), but operations have not been assigned yet.

I would like to take this opportunity to maybe clarify something that was said yesterday in the opening statements.

I believe Mr. Grable said that our Loco Hills lease was acquired in 1998. That is only a small portion of the lease that we took as a farmout and have developed from EOG Resources. The bulk of that, the majority -- the vast majority of this acreage over in the Loco Hills area in 17 South, 30 East is the legacy Burnett property which we have

had in the family since the 1940s.

Q. All right. Thank you for that clarification.

Could you identify and state the purpose of Burnett/Hudson Exhibit 3?

A. This is a map showing current operators by well, again trying to follow the same color code. We have the individual wells at this time instead of just blocks of acreage. Again, it shows the proposed area of pool consolidation and the pool boundaries as on the previous maps.

Q. How many wells has Burnett/Hudson drilled in the six -- in the five pools subject to this application?

A. Approximately 85.

Q. Has Burnett/Hudson, in these consolidated proceedings, other than core data, tendered to COG and Apache all of the data Burnett/Hudson has obtained with respect to each of these wells?

A. I believe the only thing that we withhold is core data and FMI data, XRMI data, which is the well bore imaging log that we -- that we hold confidential. Any -- any dip majors we would hold confidential, which is another type of log.

Q. Other than those exceptions, have you

provided Burnett/Hudson -- excuse me -- have you provided Concho and Apache with all of Burnett/Hudson's data?

A. Yes.

MR. COONEY: Excuse me, Mr. Hearing Officer. I hate to interrupt, but I've asked Mr. Campbell two or three times to send me the data produced in response to the subpoena served by COG, and I don't believe I've received it.

MR. CAMPBELL: Well, I will check again at the break. I've sent it to -- Ocean clearly has it.

MR. COONEY: Right, I understand.

MR. CAMPBELL: And whatever I sent to Ocean, I sent to you, but I'll double-check.

MR. COONEY: Thank you.

TECHNICAL EXAMINER EZEANYIM: Okay.

Q. (By Mr. Campbell) Could you identify and explain the purpose of Exhibit 4?

A. This is just a more regional map showing the same area, but encompassing much more.

Again, you see the pool boundaries in here, and I know they are quite faint. And the COG application is in the navy blue right here (indicating). Their consolidated -- the proposed area of consolidation of pools. I don't know if I'm

saying that right or not. It's just their COG application area.

It also shows some of the other Yeso pool boundaries and wells as you go on to the southwest along the Yeso fairway trend.

Q. What is Exhibit 5?

A. This is a stratigraphic chart. Highlighted in this column is the stratigraphic chart for the northwest shelf area of New Mexico, which this area covers.

What I've got highlighted in the -- in the pink here is the Glorieta formation and the Yeso formation and the four members of the Yeso formation from the top down, being the Paddock, Blinebry, Tubb, and Drinkard.

Q. Okay. Thank you.

Could you identify Exhibit 6?

A. This is a -- productive trends in the Yeso Clear Fork. The Clear Fork is the equivalent of the Yeso as you cross the border into Texas. Of course this is a Permian Basin map. We just wanted to show the commission the extensive outline of this particular trend.

Q. Exhibit 6 identifies a cross-section, A to A prime. Is that cross-section identified in

Exhibit 7?

A. It is. It's a diagrammatic cross-section basically showing the depositional nature of the Yeso and adjacent strata, the Yeso being here (indicating) in yellow, the top boundary being the base of the Glorieta, the lower boundary being a -- the top of the Abo formation.

Q. Thank you.

Could you identify and state the purpose of Exhibit 8?

A. Again, this is for demonstrative purposes to -- this is a type log basically showing the four members of the Yeso formation. You see the Yeso formation is here (indicating), base of the Glorieta. Here (indicating) is the Glorieta formation. The San Andres formation lies above that. And between the base of the Glorieta and the top of the Abo is the Drinkard, at the base, and Tubb, the Blinebry, and the Paddock members of the Yeso formation. Over here (indicating), you can see we've designated this as the interval of requested consolidated pools.

Q. Thank you.

Could you identify and state the purpose of Exhibit 9?

A. This is a Yeso structure map covering the area that we propose for the pool consolidation. Basically, this is a structure map on the top of the Yeso with 50-foot contra-intervals. You can see over here in this highly developed area is up dip -- is the up-dip portion within the pool boundaries. And as you head towards the east, you become -- going down structure as much as 5- or 600 feet. So you are going down dip towards the east.

You have a strong structural south dip on the south edge of the pool. This is where the Yeso appears to be wet, based on well tests in the area.

Q. What is Exhibit 10?

A. If you will go back to the previous map for just a moment, Mr. Campbell, I'll show this line of cross-section. And it's still hard to see on here, but this is a cross-section which goes from A to A prime which covers most of the area that we're proposing. It's a six-well cross-section from this well (indicating), this well (indicating), this well (indicating), and through some of the Yeso productive trend. And that's what this next Exhibit 10 is, is those wells on this cross-section.

Again, you can see the cross-section is hung on the top of the Glorieta on the green line.

This is a stratigraphic cross-section. We've used book density logs with gama ray track, book density in this one to do the correlations with. But basically, you're showing just a -- we're showing just the Paddock and Blinebry members and the Tubb -- top of the Tubb member at the base.

This is the area that we're most interested in, because this is where the producing reservoirs are. And the cross-section here is basically to show the continuation of the reservoirs across the area of this pool consolidation.

Q. What is Exhibit 11?

A. This is the first in a series of what we call vintage operator maps. Now, we're going to take intervals of time and show the commission the -- how the activity in the Yeso has gone on over those incremental times. And it will be a cumulative-type map, so the wells that were drilled previous to that were also going to be added on each time, so you see the ongoing development as time goes on.

Q. Exhibit 11 illustrates the vintage 1990 to 2000?

A. That's correct.

And then the -- what you can see on here

is that the two dominate operators, here (indicating) in the purplish color, is Mack Energy, and in the lighter blue color is Marbob. Burnett has got a couple of wells in there that are kind of hard to see, but we really hadn't started development yet.

You can see the -- that most of the activity has gone on through here (indicating). There was a little bit of, I believe, activity also in this (indicating) particular area in the Friend Glorieta Yeso field, and over here (indicating) in the Maljamar Yeso West area.

Q. Most of the concentrated area was to the west?

A. That is correct. West of the Burnett Loco Hills acreage block.

Q. Exhibit Number 12, then, is the vintage 2001 to 2005?

A. That is correct. As you can see again, this is a cumulative map, so we're showing wells that were drilled between 1990 and 2000 on this well -- on this map, as well as the wells from 2001 to 2005.

Again, much increased activity. Again, Marbob and Mack Energy leading the way. You can see

the Burnett acreage is in -- started to be in full development right through here (indicating). But again, as we go forward, you see really a blast of drilling in the next vintage section.

Q. Again, this vintage 2001 to 2005 would appear to concentrate drilling on the western side?

A. Yes, it does. However, there again, as we see in this particular 17/31, we're beginning to see a lot of activity in this particular area as well.

Q. Exhibit Number 13, then, is the vintage 2006 to 2008. Would you state your observations relative to that exhibit?

A. During this time frame a new operator has kind of hit the -- has hit the ground running in through here (indicating). Based on our knowledge of the area and activities in New Mexico, Mack Energy was acquired by COG, and those wells that were operated by Mack are now -- were then taken over by COG, and they're represented by these burgundy dots. And you can also see that there was definitely a lot of drilling, a lot of going in on a 10-acre spacing in this area by COG.

Q. And much of that 10-acre spacing, again, to the west?

A. Yes, it is.

The activity over here (indicating) in the Maljamar Yeso West appears to be, for the most part, still on 20-acre development during this time frame.

Q. The final vintage chart is Exhibit 14. Would you explain that?

A. Again, this is the last two years of activity. Again, even more increase in activity in this particular area, while -- another thing has happened.

In late 2010, Apache has taken over operations with -- from some -- on some of the Marbob wells. They're showing up in orange. So they have got a large position here just to the east of the Burnett area, and they have taken over, and there's 10-acre spacing here (indicating) and here (indicating), with Apache. And of course the density has greatly increased overall where COG has operations.

Q. Do you have some estimate of -- of the spacing patterns in this most recent development? Is it 10-acre or...

A. It's predominated by 10-acre spacing, yes, in the COG areas, exclusive of the Burch Keely and the Dodd Federal, which were excluded in this hearing.

Q. Would you identify Exhibit 15?

A. This is the current operator map with currency, I believe, as of January 1st of this year. It's pretty much the same map as you saw previously. Again, Apache has taken over operations here (indicating). Yeso -- excuse me -- COG and Chevron have interspersed operations in this particular area.

And again over here (indicating), the entire Maljamar Yeso West is dominated by COG operations. And again, Burnett has operations in this (indicating) area, this Loco Hills, and then in Section 8, of course as well, at 17/30 East.

Q. Finally, could you identify and explain the purpose of Exhibit 16?

A. This is Yeso cores taken since 1995. To qualify that, by this -- the information provided, taken -- used by this -- represented by this map, was derived from IHS data, which is -- IHS Energy is a commercial database -- and by Burnett files.

So wells that are on the Burnett leases here may not be reported, because they're supposed to be sidewall cores, but we still took Yeso cores.

This still goes to show -- basically, one out of eight wells, Burnett takes sidewall cores to

do a significant analysis. And with that, we take FMI or XRMI imaging logs to help complement that to see if we can define the reservoir better.

Q. Okay. Thank you, Mr. Haiduk.

MR. CAMPBELL: I pass the witness.

I move for the introduction of Exhibits 1 through 16, excuse me.

TECHNICAL EXAMINER EZEANYIM: Any objection?

MS. MUNDS-DRY: No objection.

MR. COONEY: No objection.

LEGAL EXAMINER BROOKS: Okay. The witness was passed at 8:57.

TECHNICAL EXAMINER EZEANYIM: Exhibits 1 through 16 will be admitted.

EXAMINATION

BY MS. MUNDS-DRY:

Q. Mr. Haiduk, you said, I believe when referencing Exhibit 1, you wanted to clarify something that Counsel said in opening, and I wanted to make sure that I understood this correctly.

That Burnett has had a certain leasehold block since 1940 --

A. Since the 1940s.

Q. Since the 1940s.

A. Yes. And that's this -- this majority area right in -- in through here (indicating). Just a small part of our lease came from a farmout from EOG, Enron Oil & Gas, in 1998.

Q. Okay. And Burnett didn't develop that acreage until --

A. No, it is developed for the shallow. We've developed it since the '40s.

Q. Okay. So you didn't develop the Yeso until the early --

A. I think we started in 1998.

Q. Mr. Haiduk, if I could finish my question --

A. I'm sorry.

Q. -- just for the court reporter, and then you can answer.

A. I'm sorry.

Q. That will make the court reporter much happier. I know you're anticipating my question, so it is hard sometimes.

A. I'm married. I have to...

Q. Earlier you said, when I took you in voir dire, that you -- your office, Burnett's office, spoke extensively, I believe, with Paul Kautz in determining the pool boundaries?

A. I don't know how extensive it was. Mr. Jacoby, our geological -- or excuse me -- our engineering manager -- spoke with him more in-depth than I know about. So I would have to defer to him and let him tell you about that conversation. He just related the conversation to me.

Q. Okay. Well, I'll ask that question of Mr. Jacoby.

Do you know if your -- the folks that work for you looked at any OCD orders in addition to talking to Mr. Kautz?

A. Yes, they did.

Q. Did you look at any reporting services such as Byrum's?

A. I do not know if we did.

Q. Okay. But you -- you have stated here on your -- on your Exhibit 1 the pool boundaries?

A. Yes.

Q. Do you know how many net acres Burnett/Hudson has in this proposed consolidated area?

A. No, I do not.

Q. Who would know that, if that was testified to today, Mr. Jacoby?

A. I don't know that any of us would exactly.

We could get that information for you with a phone call to the office.

Q. Does Burnett employ a landman? Do you have a landman on staff?

A. Yes.

Q. Is there some reason the landman couldn't be here today?

A. I don't know. I wasn't involved in that conversation.

Q. Also on Exhibit 1 you noted here in 17 South, 31 East, that the East Friend Glorieta Yeso pool is in the southeast quarter, southwest quarter.

What is the source of determining that boundary for that pool?

A. Could you -- I'm sorry. Could you please --

Q. Where did you -- how did you determine that that was in the East Friend Glorieta Yeso pool?

A. Which -- and it's the south --

Q. That's in Section 12 of 17 South, 31 East.

A. That's in the north -- excuse me.

Q. In the southeast quarter of the southwest quarter. You have a square there, 40 acres?

A. Yes. That's what threw me. That appears to be in the northeast of the southwest.

Q. I'm sorry. Northeast of the southwest.

A. We were informed by Mr. Randall Hudson, of Hudson Oil Co. -- Company of Texas.

Q. If we could turn to Exhibit Number 2, please.

MS. MUNDS-DRY: Mr. Campbell or Mr. Grable, could we turn to Exhibit 2 on your slide?

MR. GRABLE: Sure.

Q. (By Ms. Munds-Dry) This indicates that these are operating areas, correct, on the exhibit?

A. Uh-huh.

Q. And you have here in the back, focusing on this yellow block in 17 South, 31 East, you have approximately four sections in yellow on the very most eastern boundary.

A. Uh-huh.

Q. How do you define "operating areas"?

A. I think I clarified that particular block in my testimony, in that we have not been assigned operations, that we just have 60- -- approximately 67 percent of the working interest in the Yeso formation in those four sections.

Q. So this exhibit is inaccurate?

A. I did clarify it on the record, I believe.

Q. But the exhibit is inaccurate?
A. Yes. It is not an operating area yet.
Q. And I believe Burnett has at least one permit in -- in those -- in one of those four sections. Are you aware of what --
A. I believe we have six approved APDs.
Q. Six approved APDs?
And do you know what pool has been designated for each of those six APDs?
A. I do not.
Q. Do you have any reason to believe that it's in the Friend pool?
A. I have no opinion.
Q. Do you know who would know that with Burnett?
A. Probably our land manager.
Q. Do you think you could find that out for me on a break or over lunch?
A. I am sure we can, yes.
Q. Thank you, Mr. Haiduk.
If we could turn to Exhibit Number 3, please?
MS. MUNDS-DRY: Can you show that on the slides, Mr. Campbell?
Q. (By Ms. Munds-Dry) You show here a

current operator map. Did you post operations whether the well was active or inactive? Is it all wells or is it just active, inactive, or do you know?

A. These are wells that were designated as Yeso producers by -- in a spreadsheet provided to us by COG. The only thing that we modified was that we added four recent, new-completed Burnett wells. Other than that, we didn't try to make a determination.

Q. I also noticed that you included CML Exploration in the box in the middle there. Do you see that?

A. Here (indicating)?

Q. It's sort of into the light, in the red box there, well count?

A. Uh-huh.

Q. Now, CML is not actually in your proposed consolidated area, correct?

A. It does not appear to be.

Q. Was there some reason they were included in the well count?

A. Most likely what happened was this was a much larger map and we decided to crop it down, and they just weren't deleted from the -- from the

legend.

Q. And do any of these parties support -- that you have listed here -- support Burnett/Hudson's application?

A. I don't believe we have any letters of support, no, besides Hudson Oil.

Q. Mr. Haiduk, if we could turn to Exhibit 4, please.

A. (Witness complies.)

Q. You note a box indicating the COG application area?

A. Uh-huh.

Q. Now, why didn't you include the Artesia Glorieta Yeso pool?

A. I have to admit that I'm going to plead ignorant to that. I believe this box was given to us by the land department and it was placed on here. And I did not -- is it just not labeled? Is that what it is?

Q. It looks like it's not included in the box, the application area, as part of COG's application.

A. I do not have an opinion. I'm sorry.

Q. Okay. How up-to-date is this information? When did you -- I guess my question is: When did

you pool -- pull the wells that you show here on the map?

A. Again, I believe these wells were provided to us by COG on a spreadsheet, so whatever their currency was.

Q. Okay.

TECHNICAL EXAMINER EZEANYIM: Excuse me, Counsel. Please, I want you to direct me on your line of questioning. What are you trying to establish?

MS. MUNDS-DRY: Well, we are trying to --

TECHNICAL EXAMINER EZEANYIM: Because, you know, I have to get a handle on what you're trying to establish so I can be with you. Your line of questions to the witness, what are you trying to establish?

MS. MUNDS-DRY: Well, we are really just trying to understand where they got their information from.

TECHNICAL EXAMINER EZEANYIM: Information that --

MS. MUNDS-DRY: Mr. Ezeanyim, there's some differences in the Concho exhibits you have been presented and what they are presenting as their land exhibits, and we're trying to understand where the

differences came from.

TECHNICAL EXAMINER EZEANYIM: I hope that you are not going into consolidation of the other five pools.

MS. MUNDS-DRY: No. No, no.

TECHNICAL EXAMINER EZEANYIM: Okay.

MS. MUNDS-DRY: We're trying to understand the basis for these exhibits.

TECHNICAL EXAMINER EZEANYIM: Oh, okay.

MS. MUNDS-DRY: Since there are differences, we are trying to understand why there are --

TECHNICAL EXAMINER EZEANYIM: Okay. You have the right to do that. But if you are going to go into consolidation, we are not going there.

MS. MUNDS-DRY: I understand that, absolutely.

TECHNICAL EXAMINER EZEANYIM: Okay. Very good.

Q. (By Ms. Munds-Dry) Mr. Haiduk, if we could go to Exhibit 6.

A. (Witness complies.)

Q. Mr. Haiduk, I believe you indicated that this was a Clear Fork equivalent. I believe those were your words. Is that correct?

A. The Yeso is equivalent of the Clear Fork formation in Texas.

MR. COONEY: Excuse me. We need Exhibit 6.

MS. MUNDS-DRY: Mr. Campbell, I'm sorry, could you put the exhibit up, please?

Q. (By Ms. Munds-Dry) And when you say "the equivalent," I just want to explore that just a little bit.

Do you see similar porosities in the Clear Fork than you do in the Yeso trend here in Southeast New Mexico?

A. It depends on the field. It's a very, very large area and there is a lot of reservoir change across.

Q. I understand that. But generally speaking, can you give me an opinion on whether the porosity is similar in the Yeso as it is in the Clear Fork?

A. All I can speak of is to the northwest shelf area. It's fairly similar across our study -- across our area of development, area in question.

Q. And what about permeability, the same question?

A. I don't know. I haven't studied any

permeability data for the Clear Fork.

Q. Okay.

A. Can I expand on that just a little bit --

Q. Please.

A. -- for the Clear Fork?

Again, for the Yeso, we have taken cores and I have -- we have looked at that.

Q. But you have no opinion as to whether permeabilities are similar in the Clear Fork as in the Yeso?

A. That's correct. I do not.

Q. Oh, we skipped all sorts of exhibits.

Let's go to Exhibit Number 9, please.

A. (Witness complies.)

Q. Were you responsible for generating this map, Mr. Haiduk?

A. Yes, in conjunction with another one of our geologists, Larry Galbiati.

Q. Is this something that you input some information and you have a software system?

A. Yes.

Q. So it's a computer-generated structure map. Is that fair?

A. No. No, it's not. It's a -- what we do is we do an overprint, and then we go back in and we

look at it and we adjust any contours that we don't feel are appropriate.

We also input data into the computer to tell it what parameters to look at specifically. And we have trends that we can magnify or diminish the trend, based on how we feel the geology fits, and then again, we hand adjust it, hand adjust the contours.

Q. Okay. So you are able to hand adjust the contours?

A. Absolutely.

Q. Let me ask you something. If -- if you -- I believe Burnett/Hudson is asking for a 2,000 to 1 GOR in the six pools you seek to consolidate -- and understanding that there's some difference of opinion as to whether it should be five or six. Is that correct?

A. I think we're asking -- our application asks for 2,000 GOR, following state-wide rules.

Q. And how do you justify, in a constant GOR of 2,000 to 1, when you show here on your structure map that you have a large pool with up-dip and down-dip positions?

A. Well, I believe on one of the -- in our previous hearing that we had several weeks ago, that

COG submitted an exhibit -- and we will probably need to dig that out -- saying that there's -- there is no difference. The structural position has no bearing on the GOR in this particular area.

So again, we go by that. But we're -- we've not seen any gas gap. Again, we agree with Mr. Reyes' conclusion of high -- a high degree of heterogeneity in the reservoir and a fairly low permeability reservoir. And it is a solution gas drive, but we're not seeing in any way where gas gaps are being formed.

Q. Do you know how many active wells Hudson has in the Yeso?

A. One.

Q. That's easy to keep track of, right?

A. Yes.

Q. Does Hudson have any remaining undeveloped interests in these pools that are subject to Burnett's application?

A. The block that you see here, that we had previously said that we -- we have 66 percent of, I misstated that. Burnett and Hudson have approximately 67 percent.

Q. Okay. Thank you for that clarification.

Who has the remaining interest in that

block?

A. I believe COG.

Q. On your Exhibit Number 10, Mr. Haiduk, were you responsible for -- for picking the tops and bottoms for the Yeso shown on this cross-section?

A. I have checked all of them, yes. I picked the ones that were over to the -- over onto the right side of the cross-section. We kind of split the area with the other geologist.

But for this particular exhibit, of course I wanted to check his work, and I agreed with it.

Q. And is that the same for picking the Paddock and the Blinebry?

A. Yes ma'am.

Q. I'd like to turn to Exhibit Number 11, please.

A. (Witness complies.)

Q. This shows, if I -- if I can count the dots correctly -- and I'm a lawyer, so I'm not good at math. But between 1990 and 2000, that Burnett drilled two wells in that 10-year period?

A. Yes.

Q. And then, I think as we see on Exhibit 12, that's really when Burnett's activity picked up. I think I counted 35 wells in that 2001 to 2005 period

for Burnett. Is that correct?

A. I won't contest it. That may be good.

Q. Were these all Yeso wells that were drilled between 2001 and 2005?

A. Yes.

Q. If we could turn to Exhibit 15, please, Mr. Haiduk.

A. (Witness complies.)

Q. Now, this is the current operator map?

A. Yes, ma'am.

Q. Okay. And you indicated that this -- that the spacing within this proposed area of pool consolidation is predominantly on 10-acre spacing. Is that correct?

A. It appears to be.

Q. And do I understand correctly, from Burnett's application, that Burnett proposes to grandfather in the existing wells on 10-acre spacing?

A. I believe so, yes.

Q. Now, you understand that under the current density rules no operator is required to drill four wells on its 40-acre spacing?

A. I understand that.

Q. So you could drill two wells on the

40-acre unit right now if you wanted to?

A. Or four.

Q. Or four?

A. Yes, ma'am. I understand that.

Q. If we could go to Exhibit Number 16, please.

A. (Witness complies.)

Q. You indicated, I believe, that you drill -- or for one out of eight wells Burnett does cores?

A. Approximately, yes.

Q. And are those sidewalls or hole cores?

A. We -- predominantly sidewall.

Q. And you indicated that Burnett is still attempting to define the reservoir?

A. Absolutely.

Q. How many cores does Burnett have in total in this -- in your proposed application area?

A. I think it's --

Q. Did you say eight?

A. I think it's -- it looks like 11.

Q. 11 cores. And how many of those are sidewall?

A. 10 of the 11.

Q. And so you have one hole core?

A. Uh-huh.

Q. And are those Paddock or Blinebry cores?

A. They're both.

Q. They're both? All 11 of them are both Paddock and Blinebry?

A. The -- I know all the sidewall cores are, I believe. The hole core, I'd have to go back and check.

Q. Do you have an opinion as to whether sidewall cores or hole cores are better in terms of evaluating the reservoir?

A. It depends on what you're trying to evaluate.

Q. Okay. Now, if -- if you're still attempting to define the reservoir, how can you determine what the proper density should be?

A. I think it's a -- it's an iterative process. You continually try to define a reservoir. We've got a reservoir that we have been developing since the 1940s in Texas we're still taking cores on. We're still doing analysis on it, because we want to maximize the oil recoveries.

And any operator that isn't currently ongoing -- with an ongoing development project, drilling, is not repeatedly reevaluating the

reservoir, I would say it's not being managed properly.

I understand from Mr. Reyes' testimony that he is currently always reevaluating the res- -- is evaluating the reservoir.

I understand that COG, in his testimony, said that he was -- they were pushing the limits trying to find new boundaries. To me, in my opinion, that's evaluating the reservoir.

Q. All right. And I believe Mr. Reyes' testimony, as you step out, it's important to continue to evaluate the reservoir so you can determine the economic limits?

A. Any -- any geologist would say that. I agree with him.

Q. So you don't disagree with that?

A. No, sir -- I mean, excuse me.

Q. That's okay.

A. A lot of geologists think that way. I hope they all do.

Q. Now, what about if you're in, you know, what they have called yesterday with Mr. Reyes, and the engineers referred to as the fairway?

A. Uh-huh.

Q. Are you still defining that portion of the

reservoir?

A. I would think that you are, yes.

Q. And so I go back to my question. How do you know what the proper density is if you're still attempting to define that portion of the reservoir?

A. Basically, in the densest parts of the field where there's 20-acre development, say, in Burnett's leases, we've got enough production history over 7, 8, 10 years on some wells that we can find out what the drainage is. We have got logs over those particular areas, we have got cores over those particular areas, and so we've got a pretty good idea. We know, in our area.

You should be able to take that data and extrapolate it into other areas, such as the four sections over there in the Maljamar area that we've talked about previously, especially when it's been drilled on either side of it. It's still kind of a new area, but with a couple of -- with a couple of new wells and core data, which we plan on taking on our first wells, we think we can pretty well define the reservoir by drilling just a few wells.

Q. Is the entirety of the pools that are the subject of Burnett and Concho's application within what you call the fairway?

A. In our area of proposed consolidation I would say yes.

Q. I lost my train of thought. Well, I'll think of it later.

Let's go to Exhibit 17, please.

MR. CAMPBELL: We didn't introduce 17.

MS. MUNDS-DRY: Oh, I'm sorry. We stopped at 16.

Could I have just a second, please, Mr. Ezeanyim, and let me try to remember what I was going to ask?

TECHNICAL EXAMINER EZEANYIM: Okay. Sure.

Q. (By Ms. Munds-Dry) And I remembered my line of thought.

Mr. Haiduk, you indicated, I think in your testimony just now, that you have an extensive amount of data for your areas. And you indicated that you think you can extrapolate that out to the rest of these pools that are the subject of Burnett's application?

A. What I'm saying is that you can drill one or two or four wells. You don't have to drill four wells per 40 to define what the reservoir is and how it would perform.

Q. I see. And would you agree with me -- I

don't think this is the subject of much debate -- but the more data points you have the better analysis you will have as to what the proper density should be?

A. We always like to drill as many wells as possible to get data, but we don't always like to drill as many wells to get commercial wells.

Q. That's fair enough.

MS. MUNDS-DRY: I think that's all I have, Mr. Ezeanyim. Thank you.

TECHNICAL EXAMINER EZEANYIM: Thank you very much.

LEGAL EXAMINER BROOKS: Okay. Pass the witness at 9:20.

TECHNICAL EXAMINER EZEANYIM: Redirect?

MR. CAMPBELL: Just briefly, Mr. Examiner.

FURTHER EXAMINATION

BY MR. CAMPBELL:

Q. In Burnett/Hudson's examination of the reservoir, has the company found it prudent and protective of both correlative rights and prevention of waste to begin its development on 20s rather than 10s?

A. Yes, sir.

MR. CAMPBELL: That's all I have.

MR. COONEY: I have one question.

TECHNICAL EXAMINER EZEANYIM: Okay.

EXAMINATION

BY MR. COONEY:

Q. Mr. Haiduk, you indicated that of the 11 cores, 10 are sidewall, and they are both Paddock and Blinebry?

A. I'd have to check, but the predominate -- predomination are Blinebry and Paddock.

Q. Okay. And do those wells produce from both Paddock and Blinebry?

A. I'd have to go back and check.

Q. If the cores were taken of both zones, would you assume that they're producing from those?

A. I would assume that we probably tested the Blinebry.

Q. Okay.

MR. COONEY: Thank you.

LEGAL EXAMINER BROOKS: Okay. You-all took one minute between you, so I won't charge anybody.

TECHNICAL EXAMINER EZEANYIM: Any more questions for this witness?

LEGAL EXAMINER BROOKS: No questions.

TECHNICAL EXAMINER EZEANYIM: Okay.

LEGAL EXAMINER BROOKS: Well, I guess I do have a question, come to think of it.

Are you aware that there are discrepancies -- you talked about your inquiries about the pool boundaries. Are you aware that there are discrepancies between various sets of records kept by the division as to pool boundaries?

THE WITNESS: I'm not as aware of New Mexico as I am of Oklahoma. But I understand in the state of Oklahoma, I have been through many discrepancies. So yes, I would imagine that there probably is some.

LEGAL EXAMINER BROOKS: Okay. That's all I have.

TECHNICAL EXAMINER EZEANYIM: Okay.

Let's go to Exhibit Number 9. You stated that Burnett/Hudson has 86 wells in those five pools, right?

THE WITNESS: We have --

TECHNICAL EXAMINER EZEANYIM: Is it 86 or 85?

THE WITNESS: We have 85 wells included in the area of proposed consolidation.

TECHNICAL EXAMINER EZEANYIM: And I see you have 86 wells.

THE WITNESS: 86. That would be about right, yes, sir.

TECHNICAL EXAMINER EZEANYIM: 86 wells. Okay. I thought you -- this is your exhibit, so I am reading from your exhibits. Okay.

Now, out of those 86 wells do you have any well in the Maljamar Yeso West?

THE WITNESS: No.

TECHNICAL EXAMINER EZEANYIM: You don't have any?

THE WITNESS: We just have the -- we just have -- us and Hudson together have a 67 percent right on the edge of it.

TECHNICAL EXAMINER EZEANYIM: Okay. Now -- but all those 86 wells are contained within the five pools you want to consolidate, right?

THE WITNESS: Yes, sir.

TECHNICAL EXAMINER EZEANYIM: Okay. If you look at Exhibit Number 9, I see Maljamar/Paddock North. There was nothing for Maljamar Yeso West. Is it included in there? Is that included in that Exhibit Number 9?

THE WITNESS: Yes. It must have inadvertently been left off.

TECHNICAL EXAMINER EZEANYIM: Okay.

THE WITNESS: The outline is there.

TECHNICAL EXAMINER EZEANYIM: Okay. Yeah, okay. Because I think it's included, but it wasn't marked, so I was wondering why.

THE WITNESS: I apologize, sir.

TECHNICAL EXAMINER EZEANYIM: Okay. If you will look at that exhibit again, you have A, A prime.

THE WITNESS: Yes.

TECHNICAL EXAMINER EZEANYIM: What are you trying to indicate from A, A prime, and your series of dots going all the way from the --

THE WITNESS: Yeah. Those are the wells that are on Exhibit Number 10, that are included on the Exhibit Number 10 cross-section.

TECHNICAL EXAMINER EZEANYIM: Exhibit 10?

THE WITNESS: Yes, Exhibit 10, the next cross-section.

TECHNICAL EXAMINER EZEANYIM: Oh, okay.

THE WITNESS: Those are wells that are included.

TECHNICAL EXAMINER EZEANYIM: Okay. That's your A, A prime. Okay.

THE WITNESS: Yes, sir.

TECHNICAL EXAMINER EZEANYIM: Okay. Very

good.

Okay. Let's go to Exhibit Number 14. I see there you list all the -- you listed all the operators in the pool.

THE WITNESS: Uh-huh. Yes, sir.

TECHNICAL EXAMINER EZEANYIM: All of these operators in the -- all the 12 pools, or just in the pools you are interested? Is this -- let me explain first.

On the left-hand side I see about 15 operators. But if you look at the right-hand side where you listed them, how much they're producing, I think is -- no -- okay.

It's -- actually, you can see the 10 of them, the number of wells and the number of the wells, and then there are 10 of them.

On the left-hand side there are 15. Some of them have farmed out their interest to those who are producing, because we have a total of 1,827 wells. Is this 1,827 in the whole 12 pools or in the pools you're interested in?

THE WITNESS: I believe it's just in this platted area.

TECHNICAL EXAMINER EZEANYIM: Oh, in your --

THE WITNESS: In just this area of the map.

TECHNICAL EXAMINER EZEANYIM: In those six pools?

THE WITNESS: Yes.

TECHNICAL EXAMINER EZEANYIM: Okay.

THE WITNESS: Well, no. These six pools plus this area (indicating).

TECHNICAL EXAMINER EZEANYIM: Okay. Yeah. That's what I wanted to understand. So there are much -- more wells outside this 1,800-some wells?

THE WITNESS: Yes, sir.

TECHNICAL EXAMINER EZEANYIM: Okay. Very good.

If you will go to Exhibit Number 14 again, you look at the Maljamar West, it appears to me that some of them are located on 10-acre spacing.

THE WITNESS: It appears so, yes.

TECHNICAL EXAMINER EZEANYIM: But you don't have any wells there?

THE WITNESS: We do not have any wells.

TECHNICAL EXAMINER EZEANYIM: Because if you look at this cover of the wells, it appears to be at least 10-acre spacing there.

But on your -- the area where you have,

you have only drilled 20-acre wells, right?

THE WITNESS: Yes. In our interpretation, yes, we have only drilled 20-acre wells.

TECHNICAL EXAMINER EZEANYIM: You haven't drilled any 10-acre wells?

THE WITNESS: No. We have done 10-acre offsets where there would normally be a -- what we do is we do a diagonal within the 40. We drill diagonal. We have, in one or two instances, actually drilled a north/south instead of a northwest or southeast trend.

TECHNICAL EXAMINER EZEANYIM: Okay. In your application now, your consolidated application to consolidate those five wells, or for that matter six wells, did you give notice to all of these operators that you're going to consolidate these six pools?

THE WITNESS: I understand what we did is we notified the exact same entities that were notified by COG in their application.

TECHNICAL EXAMINER EZEANYIM: So -- and nobody objected?

THE WITNESS: Not that I'm aware of. I was not informed by Mr. Campbell and Mr. Grable there was any objections.

TECHNICAL EXAMINER EZEANYIM: This is how we create pools. We create pools when we give notice to everybody interested. And if nobody objects, then we can create the pool.

THE WITNESS: I believe Premier Oil and Gas showed up based on our -- based on our notification.

TECHNICAL EXAMINER EZEANYIM: Since there are no objections except the objection here by COG and Apache, which you have resolved, right?

THE WITNESS: I understand, yes.

TECHNICAL EXAMINER EZEANYIM: Okay. Good. That's all I have for you.

THE WITNESS: Thank you.

MR. CAMPBELL: We will call Mr. Mark Jacoby.

Mr. Examiner, if I might, could I tender the notice of publication exhibits relative to the Burnett/Hudson Case Number 14647?

TECHNICAL EXAMINER EZEANYIM: That way, we're sure that we have those notices.

Is there any objection to that tender?

MS. MUNDS-DRY: I'm sorry?

TECHNICAL EXAMINER EZEANYIM: Okay. He wants to give us evidence that he did give notice to

the operators, which I'm sure you got the notice.

MR. CAMPBELL: These are Exhibits 52 and 53.

Mr. Examiner, we would move the admission of Exhibits 52 and 53 showing notice of publication.

TECHNICAL EXAMINER EZEANYIM: Any objection?

MS. MUNDS-DRY: No objection. I do wonder if he has the green cards showing he gave notice to the parties.

MR. GRABLE: I have those green cards. I didn't know it was necessary to put them in, but I can take the stand at the end of the hearing, if it's necessary, and I'll swear to who we served.

TECHNICAL EXAMINER EZEANYIM: Is that okay with you?

MS. MUNDS-DRY: He doesn't need to do that, if he will -- I mean, Mr. Brooks, that's usually something you like to see.

LEGAL EXAMINER BROOKS: Usually the attorney -- in practice here, usually the attorneys do file the green cards with their affidavits of notice. They don't usually testify to them, however. They may be asked about it from the table.

MR. GRABLE: I will see if my legal

assistant can put them in PDF form.

MR. CAMPBELL: May we submit them when we receive them, after showing them to Ms. Munds-Dry?

LEGAL EXAMINER BROOKS: Yes.

TECHNICAL EXAMINER EZEANYIM: Okay. At that point, Exhibits Number 52 and 53 will be admitted.

Your next witness.

MR. CAMPBELL: We call Mr. Mark Jacoby.

LEGAL EXAMINER BROOKS: Okay. We're beginning the examination at 9:30.

TECHNICAL EXAMINER EZEANYIM: Mr. Jacoby, you were sworn yesterday, correct?

THE WITNESS: Yes.

MARK JACOBY,

after having been first duly sworn under oath, was questioned and testified as follows:

EXAMINATION

BY MR. CAMPBELL:

Q. Please state your name for the record.

A. My name is Mark Jacoby.

Q. And what is your current employment, Mr. Jacoby?

A. I am the exploration manager -- I mean the engineering manager for Burnett Oil Company, in

Fort Worth. And I look after the Permian Basin and principally the New Mexico properties.

Q. This is your first time testifying before the division, although you -- you appeared at a prior hearing, did you not?

A. I appeared at the previous hearing for this matter, yes.

Q. Would you provide the Examiners a brief description of your education and work experience as a petroleum engineer?

A. I have a bachelor of science and a master of science in industrial engineering from Texas Tech in 1975.

I began working for Amoco Production Company immediately, and I've worked 36 years as a completions and operations petroleum engineer in the Permian Basin for various companies.

I came to work for Burnett Oil four years ago.

Q. What are your responsibilities for Burnett Oil?

A. My responsibilities are to look after the operations, the drilling and the completions, the -- getting wells on production, principally for the Loco Hills, New Mexico, property.

Q. Are you familiar with the engineering data and information pertinent to these consolidated cases?

A. Yes, I am.

Q. Have you studied those in connection with your testimony and the exhibits you will sponsor?

A. Yes, I have.

MR. CAMPBELL: Mr. Examiner, we tender Mr. Jacoby as an expert in the field of petroleum engineering.

TECHNICAL EXAMINER EZEANYIM: Any objection?

MS. MUNDS-DRY: No objection.

MR. COONEY: No objection.

TECHNICAL EXAMINER EZEANYIM: Okay. The qualifications are accepted.

MR. CAMPBELL: Thank you.

Q. (By Mr. Campbell) We're going to talk about three exhibits, Mr. Jacoby, that you have prepared. They are Exhibits 18, 19, and 20.

Did you prepare each of these exhibits?

A. Yes, I did.

Q. Could you identify Exhibit 18, please?

Now, this -- this -- let me ask you this.

A. Okay.

Q. In preview to your conclusions regarding Exhibits 18, 19, and 20, would you advise the commission what conclusions you have reached with respect to those exhibits?

A. The conclusions that I've reached, and that we will discuss, that principally through our well completion techniques, that we can consistently drain the Yeso with two wells on a 40-acre unit rather than four.

Also, we'll demonstrate that we can drain 40 acres with two wells at a greater oil producing rate than a comparable 40-acre unit with 10-acre spacing.

And then we'll also demonstrate that Burnett wells, with two wells per 40, not only will yield a greater oil production rate, but will also stay at or near the 2,000 GOR limit; thereby, conserving reservoir energy.

And then we'll demonstrate that the drilling of four wells on 40 acres in most cases is unnecessarily and economically wasteful.

Q. All right. Let's begin with Exhibit Number 18, Mr. Jacoby. This is a rather busy slide. And just to orient the Examiners, I would like you to first explain what you intend to convey in the

upper left-hand quadrant of Exhibit 18.

A. Okay. This is a map, up in the upper left-hand corner, that shows the area of nine wells that COG operates.

And then on three sides, Burnett operates nine wells -- or more than nine, but it seemed like a very good sample, a very good place to take an equal number of wells and have an objective. This locates what we're going to be discussing.

Q. Okay. And you're going to be comparing the nine Concho wells to the nine Burnett/Hudson wells. Is that correct?

A. That's correct.

Q. Now, if you could again orient the Examiners, can you retrieve Exhibit Number 3?

A. (Witness complies.)

Q. Let's go to 2.

The area of your nine-well comparison is where on Exhibit 2?

A. It is in the north end of -- the yellow acreage is Burnett acreage, Burnett-operated properties.

The dark color there is the Harvard Federal lease. There's 160 acres in that lease that Concho operates. We're on three sides of Concho

with our operations.

Q. All right. That is the comparison --

A. Yes.

Q. -- that you're going to make --

A. Yes.

Q. -- in Exhibit 18?

A. Right.

Q. Let me get back to 18.

All right. Now, there's an X to X prime cross-section in your comparative sampling here, correct?

A. Right. There is a cross-section that goes from our operations west of the Harvard Federal and then goes down to this corner and crosses all the way across the Harvard Federal lease into a well on our -- on the east side of Harvard Federal that Burnett operates.

Q. And have you charted that cross-section in Exhibit 20?

A. Yes, we have.

Q. Referring quickly to Exhibit 20, what does Exhibit 20 tell you about the cross-section on which you're making this comparison?

A. This exhibit -- this is Exhibit 20 right here, right?

Q. This is Exhibit 20.
A. Right.
Q. This is the cross-section --
A. Right.
Q. -- in your comparative chart on 18.
A. Okay. This cross-section is simply to show that all of these wells are in the same geological framework. These four logs all have a nice Paddock section that you can really correlate. They may have a Blinebry section. It's just simply to show that we feel like it's -- they're very comparable geologically.
Q. All right. Now with respect to the Concho wells in the Harvard lease, are those Concho wells drilled on 10-acre spacing?
A. Yes, those are. That's 160 acres, and they're all on 10-acre well spacing.
Q. And what about the Burnett wells surrounding the Concho wells? Are they drilled on 10s or 20s?
A. They are on 20s. We are developing on 20s. Some actually are still 40, but coming to 20s.
Q. All right. Now continuing the orientation relative to the comparison you're making, what are the logs on the right side of the screen?

A. The two red triangles, the Burnett -- this would be 51, and the Harvard Federal Number 13 -- are the two strip logs. And this is just to show a Burnett well log and a Concho strip log.

Q. All right. We will come back to that.

Could you explain what you seek to convey in the lower left-hand quadrant of the slide?

A. The lower left-hand quadrant is just simply to show the comparable volumes of sand and water used in our frac stimulations. The sand, you can see, is the red. The times 10 is just a scale. You cannot see those numbers on the screen there, but the sand is very comparable.

The total fluid is -- the Burnett volume is 460 percent greater than Concho's.

Q. All right. In the preview that you gave the Examiners, you testified that Burnett/Hudson is consistently able to drain 40 acres with two wells, that doing so yields greater oil production while at the same time honoring the current state-wide rules for GOR.

What's the principal basis of your conclusion for that result?

A. The principal basis is the results that we've gotten from the frac stimulation at the

completion of each of these wells, just comparing them.

Q. Is it fair to say Burnett/Hudson effects completion in frac differently than Concho does?

A. Yes, it is.

Q. All right. Let's first walk through -- is there a term of art that Burnett uses or the oil and gas industry uses in characterizing the type of completion and frac techniques that Burnett/Hudson uses?

A. There is. We have evolved into using a frac technique known as slickwater frac.

Q. Slickwater fractionation?

A. Right.

Q. Could you explain to the commissioners what is meant in the oil and gas industry by the term "slickwater fractionation"?

A. A slickwater frac is simply water that has -- the only chemical added to it is friction reducer; hence, the name slickwater.

And then it -- the slickwater frac, the way it carries sand is pumped -- it's pumped at a very high rate with alternating stages of water, and then water plus sand, with a lot of stages.

Q. Now, is this slickwater fracking a

practice and procedure well known in the oil and gas industry?

A. Yes, it is. I think it probably began in the Cotton Valley quite a few years ago, and then it's been used tremendously in the shale plays.

TECHNICAL EXAMINER EZEANYIM: How many years ago?

THE WITNESS: I'm not sure how many years ago. But whenever the Cotton Valley play was really beginning to take off, and the Austin Chalk, slickwater fracs were used without gel added.

I work with a consulting engineer that designs every one of these jobs for us under my supervision, and he's familiar with all of those. And we have maintained -- we watch industry very closely as well. So that's where we've gotten the idea to go with the slickwater.

Q. (By Mr. Campbell) Cotton Valley and Austin Chalk are in East Texas?

A. Yes, that's correct.

Q. All right. I was going ask that myself.

So slickwater fracking is a known and recognized fracking technique in the oil and gas industry?

A. Yes, it is. It's used all over the

country.

Q. Has it been used to any real extent in Southeast New Mexico?

A. I was not aware of it to much of an extent until we started utilizing it here in the Yeso.

Q. So Burnett/Hudson employs the slickwater frac completion technique?

A. Yes. I might add, I had used it in a smaller volume on a smaller scale because of a smaller amount of pay in the San Andres in West Texas. My previous employer, I worked for 24 years, I had some experience with the same slickwater there.

Q. And Burnett/Hudson's log utilizing the slickwater technique is on the left of these two logs. Is that correct?

A. Correct.

Q. On the right-hand side is the COG well, one of the wells in the location map. Is that correct?

A. That's correct.

Q. What is the identity of that well?

A. That well is the Harvard Federal Number 13. It's in the northwest corner of their Harvard Federal lease.

Q. Okay. I would like you to explain to the Examiners in a bit of detail what is shown relative to the perforations utilized by Burnett/Hudson with its slickwater frac versus the perforations utilized by COG on its gel frac. I mean is there a general term of art for the methodology that COG uses?

A. Yes. They use -- from what I have seen of all of their -- I have seen many of their completions -- they use a gel water frac. It's been used many years in the industry.

Q. All right. And what -- what do you mean by a gel water frac?

A. A gel water frac utilizes, through a series of some chemicals mixed in with water, to create a very viscous fluid to carry higher concentrations of sand.

Q. So what is the principal difference between Burnett/Hudson's slickwater fracking technique and COG's gel fracking technique?

A. As I have mentioned, the slickwater frac has -- basically, the only chemical added is friction reducer. So it has a very low viscosity. The gel water frac has chemicals added to create a high viscosity.

As far as the results of that --

Q. Now, let's talk -- let's talk, then, about your comparative perforation techniques, starting first with the Burnett well on the left.

A. I might say that -- I know it's been brought out -- that we run open-hole logs and mud logs on every one of our wells. And our analysis starts with John Haiduk, who was on the stand prior to me, and the geologist that works for him. Both of them take this log -- these logs and create a -- a log template. They study it quite a bit and develop a -- we use a cutoff of 3 percent porosity.

I take the log then and pick perforations selectively. I'll go through and pick pay points. I also pay real close attention to the number of perforations in the well, because I feel it's very important to pump at about 2 barrels per minute per perforation, so the number of perfs is important.

Q. On the left-hand side, then, have you indicated the selective perforation points that you -- that you instituted in connection with this well?

A. Yes. On the left-hand side of the strip, these dark lines (indicating), those are the perforation points.

Q. So you selectively, through log

examination and other data, have selectively identified your perf areas?

A. Yes.

Q. This appears to be a three-stage slickwater frac.

A. It is. Yes, it is.

Q. This well was completed in October of 2009?

A. The bottom half of the Blinebry was completed, yes, in October of 2009.

Q. And over what period of time did you effect the three stages of the slickwater frac?

A. This particular well produced for three months from the bottom half of the Blinebry. We moved up, we completed the upper half of the Blinebry. You could see there's not as many perforations. It produced for a month, and then just two or three months ago -- well, we completed the Paddock on the stage three.

Q. All right. Now moving to the COG well, the Harvard Federal was completed approximately a year later. What do the dark vertical lines on the left side of the COG well indicate?

A. They indicate, from what I can tell -- what I understand, they perforate 200-foot segments,

basically a 200-foot interval three times in most of their wells, from what I have seen in the Blinebry. And then they move up and complete in the Paddock as well.

Q. Has it been your observation that this interval-type perforation mechanic that COG employs is generally standard across all of its wells?

A. It appears so, yes.

Q. That is, they perforate four 200-foot blocks --

A. That's my understanding.

Q. -- in most of their wells?

A. Yes, that's correct.

Q. You've heard the testimony of the COG witnesses indicating that they -- they approach things on a statistical matter as opposed to paying much attention to the logs.

A. Yes.

Q. All right. Now, have you -- these -- these wells are quite close together?

A. They are.

Q. The Harvard Federal is drilled on a 10-acre spacing?

A. Yes.

Q. The Burnett well, the Gissler well, is

drilled on a 20-acre spacing?

A. Yes.

Q. And have you, on the basis of these two wells, studied the comparative production of these wells and the comparative GOR?

A. I did.

Q. Is that reflected in Exhibit 19?

A. It is not.

TECHNICAL EXAMINER EZEANYIM: It is not?

THE WITNESS: It is not on this exhibit, because the COG well was completed in December of 2010. I did get four months' production from their well.

Q. (By Mr. Campbell) Okay. What I'm trying to get to is whether you have attempted to normalize a comparison --

A. Yes, attempted --

Q. -- of production between the Burnett well and the COG well over time.

A. Okay. This comparative production chart is actually the sum of the nine wells on the Harvard Federal.

Q. All right. Let's walk through this slowly. You are comparing the Burnett oil production from its well fracked with slickwater

technique to the oil production from the COG well utilizing this indiscriminate interval perforation mechanic gel frac. And you are also illustrating comparative GOR numbers?

A. Right. And I did this -- I did a normalized -- the first six months' production of the nine COG Harvard Federal wells. And then I selected nine Burnett Gissler wells that surround the lease. I tried to take all subjectivity out of the comparison, is why I did this.

Rather than using EURs, I just took the sum of the first six months' production of each of those nine wells, and that's reflected on this chart.

The dashed lines represent the Burnett nine wells. The solid lines represent COG wells. The green is the Burnett oil production. The green solid line is COG oil production.

Of each of those nine wells, the first months' production for Burnett wells is 27.7 -- 27,700 barrels for that month. COG was 18,900.

Q. All right. Let's -- let's stick with the comparison between the nine Burnett wells and the nine COG wells. Let's first stick through and walk through the oil production conclusions.

A. I just summed each of those six months, and you can follow the trend of the Burnett Oil six wells. It was pretty flat. At the end of the sixth month was 27,400 barrels of oil for that month.

The Concho wells were pretty flat. Here (indicating), it dropped some to 11-7, 10,000-something, over 10,000 barrels for that month, below 10,000, and then I believe that's 8,900 barrels.

Q. So what conclusions do you reach relative to oil production from these comparative nine-well Burnett/COG samples?

A. My conclusion is is that our wells on 20s are draining and producing at a higher rate than the same number of wells producing on 10-acre spacing.

Q. All right. Let's turn to what the data shows with respect to GOR.

A. Okay. I did the same comparison with GOR. The Burnett GOR is across the bottom. The first month was 1,700. The first month of COG's wells were -- I'm sorry, I can't -- that's 30 -- it's a little over 3,000.

The next month was 4,300. Burnett's was 2,200.

Burnett's, which was fairly flat, was

2,500 at the sixth month. The COG GOR kind of gradually increased. The sixth month was 7,100.

Q. And what conclusions do you then draw between the comparative examination of these wells relative to the GOR?

A. One of my conclusions is is that with the slickwater technique, which develops about a 500-foot frac length, and it stimulates much more reservoir, is able to effect the lower GOR for a longer period of time. Because it's -- the slickwater technique allows the reservoir to produce a lot longer before it goes into a matrix flow.

Q. Now as I understand it, Mr. Jacoby, you have recently been honored by invitation to present a paper at the national meeting of the Society of Professional Engineers. Is that correct?

A. Yes.

Q. And the invitation relates to a paper which you have been invited to prepare in connection with this slickwater fracking technique. Is that correct?

A. Yes.

Q. When will you present that paper?

A. I co-authored that with John Ely. We'll present that paper at the national SPE convention in

the end of September.

Q. And where will that be?

A. That will be in Denver, Colorado.

Q. What is the -- what is the full -- what is the full name of the paper that you will present to the SPE?

A. Two engineers, so this is a lengthy name. But the full name is: Utilization of simple fluids and proppant combined with design optimization yields outstanding results in New Mexico Yeso oil play.

Q. Thank you. In summary, would you state your conclusions relative to the study you have undertaken in comparing nine Burnett wells to nine similar COG wells, 20-acre spacing versus 10-acre spacing?

A. One conclusion is, is that through our completion technique, that we can drain 40 acres with two -- two wells rather than four. We can also drain at a -- that same 40-acre proration unit -- at a greater oil production rate than four wells drilled on a 10-acre spacing.

I also conclude that we can, in addition to effecting higher oil production, we'll also conserve reservoir energy because we're able to

produce very near the state rule GOR of 2,000 to 1.

And then it just demonstrates that in most instances four wells on a 40-acre unit are really unnecessary and economically wasteful.

MR. CAMPBELL: Thank you, Mr. Jacoby.

I pass the witness.

TECHNICAL EXAMINER EZEANYIM: Thank you, Mr. Campbell.

LEGAL EXAMINER BROOKS: Passed the witness at 9:56.

MS. MUNDS-DRY: Do you think we could take a quick break, just to stretch real quick?

TECHNICAL EXAMINER EZEANYIM: Okay. We'll take a quick break, a 10-minute break.

MS. MUNDS-DRY: Thank you.

(A recess was taken from 9:58 a.m. to 10:16 p.m.)

TECHNICAL EXAMINER EZEANYIM: Welcome back. Let's go back onto the record and continue with the cross-examination from COG.

MS. MUNDS-DRY: Thank you, Mr. Examiner.

EXAMINATION

BY MS. MUNDS-DRY:

Q. Good morning, Mr. Jacoby.

A. Good morning.

Q. Tell me -- I didn't catch it in your direct. What's the name of the paper that you have been honored -- or tasked -- I guess it's a question of whether it's an honor, right, since it will be a lot of work --

A. Yes.

Q. -- to work on that paper.

What's the title of that paper?

A. It's a long title. It's Utilization of slickwater and proppant design to -- I can't remember the name.

Q. Something close to that?

A. Yeah, something close to that.

Q. And did that paper get peer reviewed?

A. It goes through a group to review the -- we write a synopsis of the paper, and several papers -- many papers are submitted for acceptance. Many are not accepted to be printed -- to be written. This one was at that level.

Q. Thank you.

If we could turn to Exhibit 18, please. I think that's what is up on the projector there.

Now if I understand correctly, Mr. Jacoby, the three -- Exhibits 18, 19, and 20 are based on this 80-acre area that's shown on Exhibit 18 right

there.

A. Yes.

Q. Is that correct?

A. Correct.

Q. And this is what you based your conclusion that the 20 acres is appropriate for these six pools that are subject to Burnett's application?

A. I'm making this conclusion based on the area that -- that we operate. I do the studies, and this is an example to show that for our area and our wells 20 acres is appropriate.

Q. Have you presented any other evidence here today that shows that any other area than 20 acres is appropriate?

A. I have not worked -- I have not applied this to other areas. But what I know about the Yeso, I think it certainly could have a good application in other parts of the Yeso.

Q. Now on this Exhibit 18, you picked the Burnett well, the Gissler. Is that how you say it?

A. Yes.

Q. The Gissler P-51, in the Harvard Federal 13.

A. Yes.

Q. Why did you pick these wells to show

comparisons on?

A. Because they're close to each other, just thinking the pay would be more comparable, and I had good log strips. That's -- I was trying to get as much -- an apples and apples comparison.

Q. Do you know how far Burnett's frac jobs extend out from the well bore?

A. Our frac design is designed for 500 feet.

Q. Have you tagged any of your wells to determine if that's true?

A. I have not.

Q. How do you know if your design is keeping within that 500 feet?

A. Mainly -- I don't know that exactly it's 500 feet, but I know it's a long extension, based on the results from our wells.

Q. So how do you determine your frac half length?

A. We have not gone in and actually run tests to know exactly what that is. We have seen some -- some interference and seen the frac communicate with other wells.

Q. You've seen communication?

A. I have seen the frac communicate, yes.

Q. How far away -- in those instances where

you've seen communication, how offset was that other well?

A. At over 500, and it was one of ours that communicated a little over 900 feet away.

TECHNICAL EXAMINER EZEANYIM: Excuse me. Could you speak a little louder so I can hear?

THE WITNESS: I'm sorry.

TECHNICAL EXAMINER EZEANYIM: I'm sorry. A little louder, please.

THE WITNESS: She asked -- I have seen well frac that communicated a little over 900 feet away.

Q. (By Ms. Munds-Dry) And are these wells 330 from the spacing unit line?

A. No.

Q. What was --

A. That well that I'm speaking of now was not it. Is was an interior well.

Q. It was an interior well from what?

A. Within the interior of Burnett leases.

Q. Okay. But what -- I want to make sure you understand my question. I'm asking was it 330 from the spacing unit line, not the lease line.

A. I'm not sure.

Q. So then I believe the answer that you gave

me before is that you haven't done any studies to determine your frac half length?

A. Not after the fact, no. We use a frac model that's been tested. And they're not exact, but they are approximate.

Q. Okay. Have you conducted any microseismic?

A. I have not.

Q. Has Burnett done an internal comparison from Burnett well to Burnett well between -- the difference between slickwater completions and gel water?

A. Burnett's initial wells in the Yeso were created with gel acid treatments. And yes, I have, to those. Burnett used a very few gel water fracs. We used a very few gel water fracs early on.

The evolution of our stimulation was with large volume hot acid treatments, and then we did a few gel water treatments, and then we went to slickwater.

And the results were so much better than the gel water and the hot acid that we have continued to do and will continue to complete our wells with slickwater.

Q. And have you presented any evidence here

today that show those internal comparisons?

A. I have not.

Q. Have you mapped the lenses, what -- you know what we call -- or what Concho at least calls the lenses? I'm not sure what you call them, but map the lenses in these logs? Are you able to do that?

A. Me personally or in my company?

Q. In your company?

A. Yes, in my company.

Q. And so you -- you feel like you've mapped those lenses?

A. The geologist that works this area has done some very detailed mapping. And yes, he has done some real detailed mapping of the lenses.

Q. I'd like to turn to Exhibit 19, please.

A. (Witness complies.)

Q. Do I understand, Mr. Jacoby, that the well count is nine Burnett wells and nine Concho wells?

A. Yes.

Q. And are these all Yeso wells?

A. They are Yeso.

Q. Are they --

A. Bl- --

Q. I'm sorry, go ahead.

A. I've stated Blinebry and Paddock.

Q. Are they all completed in the Blinebry and the Paddock?

A. We complete ours in the Blinebry and move up to the Paddock. And I looked at Concho wells. Many of these wells were still in the Blinebry. And at the end, each of us had two Blinebry/Paddock completions -- Yeso completions.

Q. So out of the 18 wells, two of the wells had two total completions. Is that what I understand from your testimony?

A. Two Concho, two Burnett.

Q. Two Concho, both in Paddock and Blinebry, and two Burnett?

A. In the last month.

Q. In the last month.

The numbers at the table at the bottom, Mr. Jacoby, that show the production and GOR numbers?

A. Yes.

Q. How did you get these numbers?

A. I just went to production records and totaled the production that was reported to the regulatory agencies.

Q. So you looked at public OCD data?

A. Yes.

Q. Did you provide this data that's the basis of this exhibit to Concho?

A. I'm not sure if it's provided. I mean it's public information. It's...

Q. So you don't know?

A. I don't think I did.

Q. One of your conclusions from this exhibit was that this showed that the drainage -- that this shows drainage to support your application for two wells per 40, or development on 20s. How does this exhibit show drainage?

A. Our wells are developed on 20-acre spacing. I don't know if we have -- I did not show the drainage area calculation on this -- in this slide. But we have done drainage calculations on all of our wells.

Q. Okay. But this slide doesn't support --

A. It does not show that --

Q. -- your conclusion on drainage?

TECHNICAL EXAMINER EZEANYIM: A little louder. A little louder.

A. Well, I think it does, just because of the increased production that we're -- we effect with our fracking.

Q. (By Ms. Munds-Dry) So in your opinion, the increased production shows drainage on your spacing units?

A. It shows more drainage, yes.

Q. At the end here -- if I can point to it (indicating), you show an increase -- I believe this red line is Concho's GOR.

A. Yes.

Q. Is that correct?

A. That's correct.

Q. And you show it rising here at the end?

A. Correct.

Q. Are you aware of whether there were any workovers or recompletions that would cause that sort of GOR to rise?

A. I'm not.

Q. So you don't know if there were any other factors that would affect that increase in GOR?

A. I do not.

Q. Mr. Jacoby, if -- if I'm looking at your Exhibit 18 and 19, and I understand your testimony to be that Burnett has an essentially -- let's call it a better completion technique. If Concho is using a different completion technique, can they drain a 40-acre unit with two wells?

A. Maybe. I don't know. I mean it's developed on 10s now. I'm just -- from the study that we have done with our log analysis and the results of our frac technique, and that has worked for us on our acreage, was my...

Q. So you can really only speak to the Burnett acreage effectively being drained, according to your testimony, with two wells on a spacing unit?

A. As far as the results, yes, but it applies to the Yeso.

Q. It applies to the Yeso? All of the Yeso?

A. Right. I would say that this technique would apply to the Yeso Paddock.

Q. What leads you -- what evidence have you provided here today that should lead you to that conclusion?

A. I have not -- just the technique works in the reservoir such as the Yeso, has worked on the acreage we operate, it's my assumption that it would work on other parts of the basin.

Q. Okay. But if Burnett is the only one using that type of completion technique, is that -- that fair to say that you could apply that conclusion to other operators?

A. No.

Q. You're assuming that completion technique?
A. Yes, yes.
Q. And you're aware now that under existing spacing rules that you don't have to drill four wells on a spacing unit?
A. I do. I am.
Q. If we could turn to Exhibit Number 20, please.
A. (Witness complies.)
Q. Mr. Jacoby, how did you pick these logs? Why did you decide to use these four logs?
A. Principally, just to show that it's geologically apples and apples going all the way across the 160 with Burnett on the west and Burnett on the east, to show with -- it's an apples and apples reservoir.
Q. Do you agree that the Yeso shelf here is a heterogenous lenticular reservoir?
A. I think -- yes.
Q. And I believe you said, actually, comparable geologically. Is that -- that was your testimony?
A. I believe those were my words.
Q. In each of these logs, how far are you looking out in a log?

A. I'm not sure how far a log reaches out. Not very far; two or three feet.

Q. If you have a lenticular reservoir, as we do here, couldn't that easily change past that well bore, past what you can see?

A. It can change.

MS. MUNDS-DRY: I have nothing further for Mr. Jacoby.

Thank you.

TECHNICAL EXAMINER EZEANYIM: Thank you very much.

Redirect?

MR. COONEY: I have --

TECHNICAL EXAMINER EZEANYIM: Oh, you have something?

MR. COONEY: I have some questions.

TECHNICAL EXAMINER EZEANYIM: Okay. Please go ahead.

LEGAL EXAMINER BROOKS: Witness passed at 10:30.

EXAMINATION

BY MR. COONEY:

Q. Mr. Jacoby, an earlier witness for Burnett said that Burnett gave Concho everything they have on these fields except logs.

Did you give Concho the lens mapping that you described?

A. I do not believe so.

Q. Now, turning to Exhibit 18.

MR. COONEY: Could we have Exhibit 18, please?

Q. (By Mr. Cooney) First, your testimony was that you could correlate the pay zones in the Paddock from the logs appearing on the right-hand side of this exhibit. Is that correct?

A. I believe when I stated that, I was sticking to that other exhibit with the four logs on the...

Q. Okay. That would be Exhibit 20?

A. Yes.

MR. COONEY: Could we see Exhibit 20, please?

Q. (By Mr. Cooney) All right. You could correlate the pay zones in the Paddock from these logs?

A. My statement was that you can correlate and see the porosity development pretty much along the same -- through all four wells.

Q. Can you correlate the pay zones in the Blinebry?

A. Not as easily, no.

MR. COONEY: Could you turn to Exhibit 3, please?

Okay. Thank you.

Q. (By Mr. Cooney) Now, will you identify on Exhibit 3 the area -- I think you did for Mr. Campbell -- the area that this 640 acres that we are talking about on Exhibits 18, 19, and 20, where is that on Exhibit 3?

A. Right here (indicating).

Q. Okay. And that's an area where you say there are Burnett wells and there are also COG wells drilled on 10-acre spacing. Is that correct? That -- Burnett on 20 and the COG on 10?

A. Yes.

Q. Okay. Aren't there other areas in Exhibit 3 where there are COG wells on 10-acre spacing and Burnett wells on 20-acre spacing?

A. Other areas in...

Q. In this exhibit, in Exhibit 3?

A. Yes.

Q. Why did you select this particular area?

A. Because I was trying to select an area where we had more than two or three wells, just a group of nine wells. I did not high grade other

areas. It was just an area where we were on three sides of COG.

Sorry, right there (indicating).

Q. Okay.

A. We have production on three sides. It just seemed like that it was more apples and apples in the heavy production all the way around.

Q. And that was the sole basis for selecting this 640-acre area?

A. To make this comparison.

Q. Did you do any comparison of the other areas where -- that are shown on Exhibit 3 -- where we can see that there are Burnett wells on 20-acre spacing and COG wells, or Apache wells for that matter, on 10-acre spacing?

A. I did not.

Q. Now you're basing your analysis and conclusions, then, on what you derived from the study of the 640-acre area as applying to the entire area embraced within the six-pool block here that you wish to have all consolidated. Is that correct?

A. Yes.

Q. And I believe another exhibit showed that Burnett has 85 wells or 86 wells in this area?

A. We do. Right in this area (indicating),

where I made the -- yes.

Q. Did you do any comparison of the GOR and production records of 85 Burnett wells versus 85 COG or COG and Apache wells?

A. No.

Q. And your testimony is that you can simply extrapolate what you concluded from the study of these nine wells to the entire area?

A. I'm making the statement that it works very well on that acreage.

Q. In this area you picked?

A. Yes.

Q. Okay. Now, I believe your testimony was that based on this work, you think that the drilling of the third and the fourth well, the cost of that is economic waste?

A. Yes, I am. On our -- on the wells that we operate.

Q. Okay. And that in most areas, you think that two wells in the 40-acre proration unit is sufficient?

A. Did I say that?

Q. I think you said most areas.

A. I think it's applicable. I know that -- I know that the whole area, a lot of area is developed

on 10s. Maybe it would have worked, but it's -- it's been done. I'm saying it works.

Q. Okay. Are you saying that your analysis applied to every area within the block of the six-pool unit you're trying to get consolidated here?

A. My -- my response to that would be that I would evaluate this in every area and study with open-hole logs and do the same kind of analysis that we do, and just evaluate it. If we drill the 20s first and if that works, then evaluate drilling the 10s.

Q. And in fact, you haven't evaluated any area other than this 640 acres which is the subject of Exhibits 18, 19, and 20?

A. For this particular analysis, no.

Q. Okay. Now, do you log these slickwater fracs?

A. When you say "log," you're talking about tracers?

Q. Yes.

A. No, I have not.

Q. Okay.

MR. COONEY: Would you bring up Exhibit 18 again? I'm sorry for making you go back and forth,

Mr. Campbell.

Thank you, sir.

Q. (By Mr. Cooney) Now, do you see where my little pointer is there? There's a Burnett well (indicating). I'm sorry that it's shaking so much. It must be my advanced age.

There's a Burnett well on the south side of what you've outlined in blue, and a COG well directly to the north and a little bit to the west.

A. Yes.

Q. And you frac on a northwest pattern?

A. The slickwater frac, one thing that I did not mention, it -- it contacts all the microfractures, I would say preferentially northwest. But it does not -- generally, it goes out in a much more radial, because it contacts a whole lot of the fracture systems.

Q. How far out does it go?

A. As I testified, the frac model in our design is based on 500 feet.

Q. Well, in that particular area, on a northwest frac orientation, doesn't it look like you may be producing some of COG's gas?

A. I would -- ask that question again.

Q. Well, if you go out 500 feet or more from

your well with your slickwater frac job, isn't that getting into the area outlined in blue?

A. It possibly could be.

Q. Okay. Now one thing we can probably agree on, Mr. Jacoby, as we look at the production figures that you have in Exhibit 19 -- and we don't need to bring that up -- is that there doesn't seem to be any interference between the 10-acre wells and the COG wells. There doesn't seem to be any interference with the Burnett wells outside of the blue box. Is that correct?

A. Based on?

Q. Based on this production data.

A. What I will say is that I have seen -- I did not com- -- let me say I did not compare the decline curves for interference.

Q. Okay. And if we look -- maybe we ought to go to Exhibit 20 -- no, Exhibit 19.

Okay. What this is designed to show is that the Burnett wells are producing better than the COG wells.

A. Yes.

Q. So wouldn't that indicate to you that the existence of the Burnett wells on the 10-acre spacing doesn't seem to be having much impact --

excuse me -- the existence of the COG wells on the 10-acre spacing doesn't seem to have much impact on the Burnett wells?

A. That's correct.

Q. Okay. Also on this slide, I was curious here that the oil production in the Burnett wells, these nine wells, seems to be going up. Is that right?

A. It does, yes.

Q. And if I read this right, is that 27.4 MBO per month? What is that, in thousands of barrels of oil? I'm not real good at Ms and all of that.

A. That's 27,700 barrels per month.

Q. Okay. That's way above the current allowable, is it not?

A. Yes.

Q. And if the oil production seems to be going up, the annual averaging you are seeking may not do you much good with the allowable you're proposing. Isn't that correct?

A. Let me just say that the 27,000 and the -- all of these wells have -- there are fracs being done on the Blinebry, cleanups were taking place. Our first completion was in October of 2009, and we did not realize exactly how the OCD was applying the

allowable.

Q. Okay. Have you done any studies of the long-term effects or results of slickwater fracking, as opposed to conventional sand or L-fracking?

A. What do you mean by "long-term"?

Q. Well, you've only been doing it a few years, so you don't know what the long-term effects are in this area of the Yeso formation?

A. No, we do not.

Q. Okay. And getting back for a moment to your testimony that it's economic waste to drill the third and fourth well, isn't the -- or aren't the frac jobs that Burnett does, the slickwater frac jobs, much more expensive than the gel frac that COG is using?

A. No, they're not.

Q. Are they any more expensive?

A. They're comparable. I have not --

Q. What is the expense?

A. I have not compared it recently, but some time ago I compared it.

Q. Is the drilling of a horizontal well more expensive than a vertical well?

A. Yes.

Q. Okay. Now what you're, in essence,

saying, then, is that the division should force operators to use the slickwater frac technique as opposed to the gel water that they're using, and thereby avoid what you term the economic waste of cost of the drilling the third and fourth well?

A. I don't think I was saying to force people to. I'm just saying these are the conclusions I draw for us. It works well for us.

Q. Okay. It's Burnett's choice to use the slickwater frac with two wells?

A. Yes.

Q. And other operators may choose to use a more conventional fracking system via four wells?

A. Yes.

Q. On the production comparison represented here in Exhibit 19, have you -- have you done an extended time comparison of the production and GOR rates?

A. On these wells?

Q. Yes.

A. Not extended more than -- these are all fairly new completions.

Q. Another thing I was curious about, and I'm not that -- I'm almost done.

If we look at Exhibit 18 --

MR. COONEY: If you could go back to that, Mr. Campbell.

Q. (By Mr. Cooney) Now, I'm not sure if I counted this right, but it looks to me like there are 12 COG wells within the blue box. Is that right?

A. There are -- I'm sorry. I did not say that -- the wells used in this comparison were highlighted in green or yellow. I'm sorry, I'm colorblind. The Brin- --

Q. It's green.

A. It's green? Okay.

I think for those three wells, can you see the green color around the --

Q. Yeah, that's what I'm looking at.

A. Those nine wells.

Q. Okay. You didn't use all 12 of the COG wells?

A. Some of their wells were completed in the Grayburg San Andres.

Q. Okay. Are you saying that there are only nine wells within the blue box completed in the Paddock and Blinebry or in the Blinebry?

A. I'm not sure. I -- I don't recall on the other wells.

Q. Okay. And out of the 21 Burnett wells that I count outside the blue box, why is it that you only used nine of those?

A. I was trying to make apples and apples. I was trying to make nine versus nine rather than --

Q. Okay. And on what basis did you select this particular nine?

A. Of which wells? Which nine?

Q. Burnett wells.

A. Burnett wells? Proximity to the Harvard Federal lease.

Q. All right. Would you agree that the wells in this Yeso formation generally have a hyperbolic decline followed by a long relatively flat decline over time?

A. I would say they go -- hyperbolic going into an exponential decline, yes.

Q. If there was well work going on with respect to any of the nine COG wells that you used for your comparison during this six-month period you state, wouldn't that affect the validity of the comparison?

A. It would. I tried to take that into account, looking at the month's production. And I made an esti- -- I made a guesstimate that -- if a

well had severely less production, and none of these were. So I assume that they were not down for any extended period of time.

MR. COONEY: I have nothing further.

THE WITNESS: Thank you very much.

TECHNICAL EXAMINER EZEANYIM: All right.

LEGAL EXAMINER BROOKS: I would like to ask one question.

MR. CAMPBELL: I have some redirect. May I redirect?

LEGAL EXAMINER BROOKS: Okay.

We will change at 10:49.

FURTHER EXAMINATION

BY MR. CAMPBELL:

Q. Mr. Jacoby, I would like to refer you to Burnett Exhibit Number 19.

Counsel was suggesting that there has been no evidence of impact by COG's 10-acre wells on Burnett/Hudson's 20-acre wells.

Would you consider the differential and the high and increasing GOR ratio in COG's wells to be a possible impact on Burnett/Hudson?

A. Yes, I would.

Q. Now relative to actual interference or communication between COG's 10-acre wells and

Burnett/Hudson's 20-acre wells, is six months enough time to give you a clear read as to whether there is interference occurring or not?

A. Probably not. You'll have to look at a decline curve over time, unless there's a direct frac communication.

Q. Are you aware factually of a circumstance when a COG 10-acre well has communicated with and adversely impacted a 20-acre Burnett/Hudson well?

A. Yes, I am.

Q. I'd like to probe that just a little bit.

MR. CAMPBELL: I have a demonstrative exhibit here, Mr. Examiner, if I might hand it to the witness and opposing counsel.

TECHNICAL EXAMINER EZEANYIM: Sure.

MR. CAMPBELL: It is not marked as an exhibit.

LEGAL EXAMINER BROOKS: If you call it a demonstrative exhibit, you don't propose to offer it into evidence. Is that correct?

MR. CAMPBELL: That's right.

TECHNICAL EXAMINER EZEANYIM: You don't want it to be part of the record, you just want people to see it?

MR. CAMPBELL: Well, why don't we -- why

don't we go ahead and introduce it. It is direct -- we believe direct evidence of adverse --

LEGAL EXAMINER BROOKS: Yes, I was wondering why you were not offering it as an exhibit if it was --

MR. CAMPBELL: I don't have it marked. Could we mark it as Exhibit 54?

TECHNICAL EXAMINER EZEANYIM: We have to ask for objections to that.

LEGAL EXAMINER BROOKS: Yeah.

MR. CAMPBELL: We can mark it, and then I would offer it as Exhibit 54, and you can object.

MS. MUNDS-DRY: No objection.

MR. COONEY: No objection.

TECHNICAL EXAMINER EZEANYIM: No objection? Okay.

LEGAL EXAMINER BROOKS: All right.

TECHNICAL EXAMINER EZEANYIM: So you can mark the exhibit, and if you would like, you can admit it.

MR. CAMPBELL: Okay.

Q. (By Mr. Campbell) Mr. Jacoby, could you identify Burnett/Hudson Exhibit 54?

A. Yes. It is the Burnett-operated Section 8 Gissler B lease.

Q. Do we have to go back to Exhibit 3 to find this location?

A. Yes. Go back to Exhibit 3.

Q. All right. Can you locate on the general map, Exhibit 2, where this Section 8, 17 South, 30 East is?

A. Section 8 is this -- colored in yellow, that's just west about three miles from our main area of operations.

Q. All right. And Exhibit 54, then, is illustrating circumstances in this far southeast, southeast quarter section?

A. Yes. Yes, it is.

Q. All right. Returning to Exhibit 54, could you identify the circumstance of direct interference by a COG 10-acre well on a 20-acre Burnett/Hudson well?

A. Yes. We have a well, the Gissler B-45, which is in the very southeast of the southeast, Section 8. It was on production. It had been produced -- was producing.

Concho was completing the Caddo Federal Number 7, which is a 10-acre well. It's due south of the Gissler B-45. At the time they were completing, and when they fracked that well, it

directly fracked into the Gissler B-45. The well was making over 100 barrels of oil a day, was still cleaning up from the frac, and their frac communicated. It knocked our well off for a month. We had to pull the well and got sand in the pump.

The well is now back. It's now back in production. But, yes, it communicated directly with our well.

Q. Would there be any other reason for the cessation of production in your well other than the communication and interference by the COG well?

A. Not that I'm aware of.

Q. Now, Mr. Jacoby, if an operator can drain 40 acres with only two wells, not four, if doing so increases production and yet honors the state-wide rules at a 2,000 to 1 gas/oil ratio and the cost is comparable, why is it, in your opinion, COG is not utilizing this technology?

A. My opinion would be that it doesn't fit their model of a standardized program of -- of, basically, a standardized program of drilling and completing wells.

Q. That is to say, COG insists on what they call a statistical approach to drilling rather than a prudent examination of individual well logs?

A. Yes. Yes.

Q. Burnett/Hudson is not trying to force COG into utilizing the slickwater frac, is it?

A. No. We are not trying to force anyone to use that.

Q. But it is your expert testimony to the division that wells can be drained out there. A 40-acre production unit can be drained effectively and efficiently with only two wells?

A. Yes, it is.

Q. And that rules requir- -- rules allowing four wells to be drilled results in economic waste?

A. Yes. I would say that from my analysis here.

MR. CAMPBELL: That's all I have.

LEGAL EXAMINER BROOKS: It's 10:56.

My question was this.

TECHNICAL EXAMINER EZEANYIM: Do you have any redirect based on those questions?

MS. MUNDS-DRY: We do, based on this exhibit.

TECHNICAL EXAMINER EZEANYIM: Yeah. Okay. Go ahead.

FURTHER EXAMINATION

BY MS. MUNDS-DRY:

Q. Mr. Jacoby, Exhibit 54, do you still have that in front of you?

A. Yes.

Q. This Gissler B-45, how far is that from this section line?

A. It's a 330.

Q. Did you use a slickwater frac job on the well?

A. Yes.

Q. You previously testified you designed the frac jobs to go 500 feet.

A. Yes.

Q. And your -- your frac -- frac direction generally goes north/south?

A. I think it goes radially.

Q. It goes radially?

A. It goes pretty much northwest/southeast.

Q. You've also testified that you have seen some frac lengths go as long as 900 feet.

A. That long, yes.

Q. Did you frac your well before Concho fracked its well, the Caddo Fed 7?

A. Yes.

Q. How do you know you didn't frac into our well?

A. I do not know that.

Q. You do not know? So this --

A. It was not drilled. It was not drilled at the time.

Q. So this evidence of interference could have been because your frac job fracked into our well?

A. The interference occurred on the same day that the Caddo 7 was being fracked, and they fracked into the well.

Q. Certainly, you can't argue that it's very possible that it at least went into Concho's acreage, your frac job?

A. It's possible.

MS. MUNDS-DRY: Thank you.

MR. COONEY: I've got a couple more questions, if I could.

TECHNICAL EXAMINER EZEANYIM: Go ahead. Your time is still running.

MR. COONEY: Thank you.

FURTHER EXAMINATION

BY MR. COONEY:

Q. Mr. Jacoby, you said that six months isn't

enough time to know if COG's wells on a 10-acre spacing are adversely affecting Burnett, is that correct, Burnett's 20-acre spacing?

A. I said that.

Q. Okay. Isn't it true that that's also not enough time to know if a slickwater frac will help the well to produce or drain 20 acres, if you're just looking at six months' worth of data?

A. I look at six months' worth of data and estimate from decline curves, and that's -- I've estimated that it continues to -- to produce oil on time.

Q. But you don't have any long-term studies or data concerning slickwater fracs?

A. We began fracs -- slickwater fracs -- the first one the end of 2007 --

Q. Okay.

A. -- or January of 2008.

Q. So we're only dealing with three and a half years?

A. That's correct.

Q. Have you ever run into or heard of instances where the slickwater frac well's production falls off over a period of time, as compared to gel water or gel fracs?

A. My com- -- my analysis shows that decline rates are less steep. The hyperbolic portion lasts -- is quicker, and will get into the exponential curve more quickly.

Q. You haven't produced any of those decline curves to support this analysis, though?

A. I have not produced beyond when they were completed.

Q. Okay. Now, can you turn to Exhibit 19 one more time?

A. (Witness complies.)

Q. Maybe I just don't understand this. And if so, I apologize. But doesn't this show a GOR of 2.2, that would be 2,200 to 1, in the second month for the Burnett GOR?

A. Yes.

Q. And 2,500 the third month?

A. Yes.

Q. And going on out there to the right, all of those are above 2,000 to 1, are they not?

A. Yes.

MR. COONEY: Nothing further.

MR. CAMPBELL: Mr. Ezeanyim, I'm sorry. I didn't request to make one clarification question on cost. I will be very brief.

TECHNICAL EXAMINER EZEANYIM: Okay. Sure.

LEGAL EXAMINER BROOKS: Did you pass the witness?

MR. COONEY: Yes, I passed the witness.

LEGAL EXAMINER BROOKS: Okay. Passed the witness at 11:01.

TECHNICAL EXAMINER EZEANYIM: And then we're going to Burnett/Hudson.

LEGAL EXAMINER BROOKS: Okay.

TECHNICAL EXAMINER EZEANYIM: You can ask any question you want.

FURTHER EXAMINATION

BY MR. CAMPBELL:

Q. Mr. Jacoby, my question may have been, you know, inartful.

You have said that the cost, generally, of a slickwater frac for a Burnett well is roughly equivalent to the gel frac AFE by COG, correct?

A. When I have compared the costs in some months back, yes, they were comparable.

Q. Okay. So in Burnett/Hudson's thinking, it can drill two of those slickwater fracs and drain the production unit, whereas COG would have to drill four of its comparatively costed gel fracs, correct?

A. Yes, that's correct.

Q. So that the COG completion techniques to drain the same acreage costs about twice as much money. Is that a fair statement?

A. Yes.

MR. CAMPBELL: Thank you, Mr. Examiner.

TECHNICAL EXAMINER EZEANYIM: Thank you.

LEGAL EXAMINER BROOKS: Okay. This is --

TECHNICAL EXAMINER EZEANYIM: Redirect?

MS. MUNDS-DRY: Mr. Ezeanyim, based on that question, if I could, briefly.

TECHNICAL EXAMINER EZEANYIM: Okay.

LEGAL EXAMINER BROOKS: The time now is 11:03.

TECHNICAL EXAMINER EZEANYIM: Now, it's COG. I know you are going back and forth.

MS. MUNDS-DRY: I'll make this brief.

FURTHER EXAMINATION

BY MS. MUNDS-DRY:

Q. Mr. Jacoby, if I understand your answer, then, are we all going to be forced to slickwater fracs?

A. I'm not forcing anyone to slickwater fracs.

Q. Then how do your cost comparisons mean anything? How does that show economic waste?

If we want to go about our business and do four wells with gel fracs at the same cost, why is that any different?

A. Four times two is -- costs more than at a comparable price, is all I'm saying.

Q. Well, you're saying to drain 40 acres with two wells you have to use a slickwater gel, correct?

A. Correct.

Q. Concho chooses to do it and Apache chooses to do it in a different way, and it takes four wells to drain the 40-acre spacing unit, correct?

A. Correct.

Q. So in order to get to your conclusion, we all have to drill with slickwater fracs, correct?

A. To get to my conclusion, the --

Q. That we need two wells per 40?

A. I'm just saying that's what the cost is for our two wells. That's just what I'm saying.

MS. MUNDS-DRY: Okay. Thank you.

TECHNICAL EXAMINER EZEANYIM: Thank you.

LEGAL EXAMINER BROOKS: Okay. It's 11:04.

I can understand -- and even a lawyer can understand -- that if your fracking technique produces longer or more extensive or more adequate fracturing of a formation, why it would produce a

greater amount of production.

What I don't know, and I would ask your -- what I didn't really follow from your presentation, and what I would ask your explanation of, is why does your fracking technique, in your opinion, keep the GOR down as compared to the techniques used by COG?

THE WITNESS: My opinion is that with the longer frac length, the slickwater frac does frac in a general direction, but it -- with a slickwater, the main advantage is it's contacting microfractures in the reservoir; whereas, the gel water builds one fracture and -- and has fluid loss and does not contact nearly as much area of the fractures.

And the gel water frac is -- is designed probably at 150 or 200 feet, I'm not sure exactly what. But just my experience from having used them, it's -- that's an approximation. And slickwater is around 500 feet long.

So you have more reservoir that's stimulated and is producing into the well bore before it gets to a matrix flow condition, is why I think -- why I think that it produces a lower GOR.

LEGAL EXAMINER BROOKS: And what exactly -- now, you know, I'm not a technical

person. What exactly do you mean by "matrix flow condition"?

THE WITNESS: It's the point in time where the reservoir is flowing out of an unstimulated part of the reservoir, where it's just matrix in its natural state.

LEGAL EXAMINER BROOKS: Thank you.

TECHNICAL EXAMINER EZEANYIM: You're done?

LEGAL EXAMINER BROOKS: I'm done.

TECHNICAL EXAMINER EZEANYIM: Thank you very much. This is -- this is becoming interesting. I'm enjoying this but -- you know my work is cut out for me, but I am enjoying it.

Mr. Jacoby, this is interesting. First of all, let me begin with your paper that you're going to present this September.

Has that paper been peer reviewed for presentation or is it just under the -- still not reviewed by your peers or something?

Because before you present it, it has to be peer reviewed and then, you know, maybe approved for presentation.

THE WITNESS: The process is you make application for the paper, and you write a synopsis. And there's a committee that the SPE sets up. They

review the -- the synopsis of the paper and they accept or reject that paper.

TECHNICAL EXAMINER EZEANYIM: Oh, yeah. I know that. I have presented something at the SPE. I know how it goes.

THE WITNESS: Okay.

TECHNICAL EXAMINER EZEANYIM: That's why I'm asking you. Has it been peer reviewed, the paper you wrote?

THE WITNESS: Not peer reviewed, except to that level.

TECHNICAL EXAMINER EZEANYIM: Okay.

Okay. Now going back to your testimony, let's start with Exhibit Number 18, I think, because it is very interesting.

Oh, here we go. Look -- let's look at -- allow me -- you have it, or you can look at it there. I have it, but I can look at it here.

Let's go to that and find one and compare it here, and look at Bennett and COG. What they're trying to demonstrate there, correct me if I'm wrong, is that they have an amount of sand, but the water, the fluid you are using, you are using a lighter fluid than COG?

THE WITNESS: Yes.

TECHNICAL EXAMINER EZEANYIM: And you are -- what you call slick -- slickwater, which you're writing a paper on, right?

THE WITNESS: Yes.

TECHNICAL EXAMINER EZEANYIM: You have written a paper on this slickwater?

THE WITNESS: We are writing it. It's not written.

TECHNICAL EXAMINER EZEANYIM: Oh, it's not written. So you are writing it. After you write it, it will be peer reviewed, so it's not really close to that. Okay. You're just writing it. Before, you can provide some abstracts. Okay.

Now, can you demonstrate to me on that -- on this block diagram what you are trying to demonstrate to the commission?

THE WITNESS: I'm trying to demonstrate that using the slickwater technique that we have used, we stimulate the Blinebry.

TECHNICAL EXAMINER EZEANYIM: Yeah.

THE WITNESS: We stimulate at different intervals in the well, and that it is superior -- has resulted in superior results to the COG completion, where there's a -- we frac each interval successively. And then I just compare six months --

the first six months' production on a normalized basis.

TECHNICAL EXAMINER EZEANYIM: Okay. I see, looking at that, because I want to understand your intent of that block diagram.

THE WITNESS: Okay.

TECHNICAL EXAMINER EZEANYIM: The block diagram you are demonstrating, you are using a lighter fluid, not really the friction reducer.

Is that -- is it because of the friction reducer that you add to the water or is it because of the lighter amount of water that you use?

THE WITNESS: The slickwater design requires a lot of water. It's pumped at a high rate, 80 barrels a minute plus or minus. And the design is such that pads of water alternating with pads of water and sand, many stages, 50 or 60, just alternating. So that once the sand is pumped, the water follows, and just pushes the sand further out.

TECHNICAL EXAMINER EZEANYIM: Okay. Before you turned to slickwater frac, you have done some gel water frac, right? You've done that? You've got that testimony today. You've done some gel water in your well, in the Burnett/Hudson wells. You used gel water frac before you turned to the

slickwater, right?

THE WITNESS: Burnett Oil had. The engineer previous to me used a few gel water fracs.

TECHNICAL EXAMINER EZEANYIM: Oh, you never did it yourself?

THE WITNESS: Not myself, no.

TECHNICAL EXAMINER EZEANYIM: Okay. Now for what the engineer did, can you give me a comparison between the gel water and slickwater? What I understand, which I think is true, is the way of using slickwater you have low viscosity; gel is high viscosity.

So give me a comparison of why gel water or slickwater is done, or gel water frac.

THE WITNESS: One reason that slickwater is better is there's only one chemical added, the friction reducer.

The gel water has cross-linkers, breakers. It has a lot of chemicals added to gel the fluid.

The design of the slickwater extends further, to get more frac length.

TECHNICAL EXAMINER EZEANYIM: Isn't it more costly to do gel water than slickwater?

THE WITNESS: My -- in the -- a few months ago I compared the jobs, one job each, and they're

very comparable. I don't remember the numbers, but the percentage was they were comparable in cost.

TECHNICAL EXAMINER EZEANYIM: Okay. Now, why don't we go to that Exhibit Number 18 again?

I see this is Gissler B-51 and the Harvard Federal Number 13. Those -- okay. B-51 is on 20 acres, right, 51, Burnett/Hudson?

THE WITNESS: Yes, correct.

TECHNICAL EXAMINER EZEANYIM: And then Harvard Federal is on 10 acres?

THE WITNESS: Yes.

TECHNICAL EXAMINER EZEANYIM: Okay. In your demonstration here, are those two wells producing both for the Paddock and Blinebry? Because we need to know -- if we're going to compare apples and apples, we want to know whether both wells are producing from the same pool including Paddock and Blinebry, or is one producing from Paddock and one is producing from both?

Can you tell me where you get these numbers, when we go to Number 19? Can you tell me where those two wells are producing so that we can make an accurate comparison?

THE WITNESS: Okay. The curve on the next exhibit is the sum of nine wells. I do not have the

production comparison of each of these two wells.

TECHNICAL EXAMINER EZEANYIM: Okay.

THE WITNESS: I know what the first four months' production is, and I can tell you what these two wells are producing out of. But I do not have this slide that was -- that slide is a production comparison.

TECHNICAL EXAMINER EZEANYIM: Yes. I'm going to come to that slide.

THE WITNESS: Okay. I'm sorry. I'm sorry.

TECHNICAL EXAMINER EZEANYIM: I'm still going to stay on Number 18 here.

THE WITNESS: Okay.

TECHNICAL EXAMINER EZEANYIM: But you know what I'm trying to really understand, and what I want to know, is what can the reservoir -- is what you tell me that I'm going to use to process that information.

THE WITNESS: Okay. I'll say the well Gissler B-51, for the first four months of production -- and the reason I'm saying four months' production is the Harvard Federal was completed in December of 2010, and there's only four months of production that's been reported.

TECHNICAL EXAMINER EZEANYIM: Okay.

THE WITNESS: And it was completed in the Blinebry and the Paddock altogether, just consecutive fracs, so that the entire Yeso section is on production for the first four months.

The Burnett well was completed first in the lower Blinebry. Do you see where the mark is there? Do you see where the frac is noted?

TECHNICAL EXAMINER EZEANYIM: Yeah.

THE WITNESS: It produced there for three months, then we moved up to the upper part of the Blinebry, which did not have as much pay interval. And it was -- as we've had in other wells. But anyway, it produced for one month.

So the first four months of production of the Gissler B-51 was about 9,500 barrels of oil.

The COG 13, completed in all of that, was almost 5,000 barrels of oil.

TECHNICAL EXAMINER EZEANYIM: Okay. You talked at length about completions, when we were talking about, you know, the frac job and everything.

You see that -- you said that the COG do their perforations every 200 feet. 200 -- that's 200 feet deep, and then you do yours differently.

What is yours called? What is your perforations called?

THE WITNESS: I would call -- I would refer to them as selective perforations.

TECHNICAL EXAMINER EZEANYIM: Okay. And then what -- is there anything wrong with COG's perforations?

THE WITNESS: Is there anything wrong with them?

TECHNICAL EXAMINER EZEANYIM: Yes.

THE WITNESS: I would not choose to do that. They, it appears, block perforate. And there certainly is pay up and down the -- in the well. I just prefer perforating the net pay spots versus just blanket perforating 200-foot sections.

TECHNICAL EXAMINER EZEANYIM: Well, that's why you're two different companies. You can do whatever you like.

THE WITNESS: That's true. That's true.

TECHNICAL EXAMINER EZEANYIM: Okay.

Now, let's go back to Exhibit Number 19, because I think there is -- and what I need to understand there is what was done on that chart.

The nine-well comparison -- I know you've been asked this question. How did you choose the

nine-well comparison? Or why did you choose that Section 11 and 12, 17 South, East 30? Yeah. This is a very nice pool.

Is there any reason why you didn't try to corroborate this area by choosing another set of data, maybe nine wells, ten wells somewhere else, to correspond to what is here?

I'm not saying that this is wrong, because I'm still going to -- I'm not -- that's not what I'm trying to say. But if I were working for Burnett/Hudson, I would do this here, and I would go somewhere else that I can get maybe five wells between Burnett/Hudson and this -- and do it to see how it correlates with this, because we are talking about one pool. And now you are giving me the job of deciding what should be done with this pool, so I don't want any information to be hidden.

I can do the -- I can go back there and choose a different section and try to do what you did to see what I did. But I don't have the information. I don't have it to compare that.

Is there any reason why you didn't do this somewhere else to try to convince the Examiners or the commission that this is exactly what's going on in the whole pool? Because, you know, you have five

pools. You came into Section 12 -- 11 and 12, 17 South, 31 East. I mean, that's okay.

I want to convince the commission -- I'm going to go back, you know, somewhere else, you know -- I mean take your pick -- and do the same thing and see how it correlates with this.

You understand that I'm not -- it's just my ambition to, you know, to kind of figure this all out, so I would like to have that. So why didn't you do that?

THE WITNESS: The reason I chose the nine Harvard Federal in the area of our wells -- I mean our area of operation is about two sections wide --

TECHNICAL EXAMINER EZEANYIM: Yeah.

THE WITNESS: -- four or five sections north and south. It was the best area where there was a concentration of Concho wells. And we were -- we had wells on three sides. Any other area would be nine wells on one side and nine wells on the other side.

It just appeared to me that that was a place that I could get a nice concentration of wells to show -- to try to make it as much apples and apples as I could.

TECHNICAL EXAMINER EZEANYIM: I understand

that. It wouldn't have to be nine wells. It could be two, it could be three.

THE WITNESS: Right.

TECHNICAL EXAMINER EZEANYIM: I mean it could even been two, you know? I'm trying to -- you know, I am not trying to tell you what to do, but this is what I would have appreciated. Because I want to understand this pool as much as possible, so we can make some decisions here, or recommendations.

So with one snapshot I have to -- I have to wonder, what do I do? Do you see what I'm saying?

THE WITNESS: Yes, I do. I chose nine, just to have a bigger sampling of wells versus two or three wells. I thought it would average out more having more wells in a sample.

TECHNICAL EXAMINER EZEANYIM: Yes, I understand that.

How did you obtain this data that you used to make these charts? Where did you get it? IHS or production data? How did you get those data?

THE WITNESS: We obtained the data from IHS.

TECHNICAL EXAMINER EZEANYIM: IHS. And I think if you go to IHS, you know, you could get some

data for other townships, sections, to be able to help you boost your argument in those charts. Okay.

And all of these nine wells are vertical wells, not --

THE WITNESS: I'm sorry?

TECHNICAL EXAMINER EZEANYIM: All vertical wells, right? Are they all vertical wells?

THE WITNESS: Vertical wells. Yes, I'm sorry. I'm sorry, I misunderstood. Yes, they are all vertical wells.

TECHNICAL EXAMINER EZEANYIM: And then these are nine wells. When you -- when you brought your data for these nine wells, all the nine wells for both Burnett/Hudson and COG, all nine of them are producing from the Yeso, which include the Paddock and Blinebry, all the nine wells?

THE WITNESS: Yes.

TECHNICAL EXAMINER EZEANYIM: All are drilled and completed, so you kept that and made sure that both -- all the wells have produced from those two -- and those sections of the pool?

THE WITNESS: Are you asking if they were -- if the Blinebry and Paddock was completed?

TECHNICAL EXAMINER EZEANYIM: In both -- in all of the --

THE WITNESS: In all the wells?

TECHNICAL EXAMINER EZEANYIM: In all the nine wells, yes.

THE WITNESS: No, they were not. Several of the wells -- and I can list and give you -- I can provide you what -- how many -- what each well was completed in of each -- in each month.

TECHNICAL EXAMINER EZEANYIM: Okay. So the point I'm making, that to do apples and apples, both of those nine wells would be producing from those two sections of the pool so that we can -- because if one of -- let's say you are -- Burnett/Hudson is producing from the Paddock only, and then maybe COG is producing Paddock and Blinebry. I don't see how we can compare the two, because it's not apples to apples.

THE WITNESS: I would add, Mr. Examiner, that many of the Burnett wells were producing only from the Blinebry because we -- we frac and complete three or four sections and produce it for a time before we move up the hole.

More of COG's wells were completed in the complete -- all of the Paddock. But I can provide that information for you.

TECHNICAL EXAMINER EZEANYIM: So you are

saying that Burnett/Hudson is producing only from the Paddock, and then COG is producing from both Paddock and Blinebry?

THE WITNESS: No. I was -- if I misstated, I'm sorry.

Most of the Burnett wells were still producing from the Blinebry section --

TECHNICAL EXAMINER EZEANYIM: Okay.

THE WITNESS: -- for four months. And I can provide you exactly what well was completed in what interval.

As best I can tell from COG's, two or three of -- I think there were two wells of COG's the last couple of months that were not in the Paddock, at least from the records. They may have been completed and have not come into the OCD records yet.

TECHNICAL EXAMINER EZEANYIM: Okay. But you understand why I'm making the inquiry?

THE WITNESS: Yes.

TECHNICAL EXAMINER EZEANYIM: I'm making the inquiry, if you want to compare apples and apples, I want -- if -- well, you know, this well is producing from Paddock/Blinebry, this one Paddock/Blinebry, all of them.

So then did that come from there? Then it would be compared in this chart. And then in that case, I mean that would be more credible than if one -- if this is producing from the Paddock only or some are producing from the Paddock only and some are producing from both Paddock and Blinebry. Do you see? See the -- I don't -- I don't know.

Do you see the point I'm trying to make?

THE WITNESS: Yes. Yes, sir, I do. I do.

MR. CAMPBELL: Mr. Examiner, we will supply that comparative production zone and data to you.

TECHNICAL EXAMINER EZEANYIM: And to the opposing counsel?

MR. CAMPBELL: And to opposing counsel, yes.

TECHNICAL EXAMINER EZEANYIM: Okay.

THE WITNESS: I will.

TECHNICAL EXAMINER EZEANYIM: That would be helpful, because it's important. You see why I'm inquiring? I'm trying to understand the facts here, you know, to see what's going on in the pool. I need to see what's going on. You all did, so you are telling me what is happening there. I'm trying to probe to find out the facts. Okay? Very good.

So I am going to mark it as something that's going to be provided to the Examiners and the opposing counsel.

Now, under gas/oil ratio, I want to also understand -- this is my last question. I am sorry I'm taking too long. I didn't want to ask too many questions, because most of them were asked during the cross-examination.

Can you explain to me why the gas and oil ratio are quite different between the two operators? Is it because of 20, because of 10, or because of slickwater versus gel water? What is it?

THE WITNESS: Mr. Examiner, my assumption is only as the longer frac length, as I have mentioned to Mr. Brooks a while ago, that the longer frac length produces longer time in a stimulated condition before it goes into a matrix flow.

A shorter frac length, a gel frac, goes into a matrix flow sooner because it has a shorter frac line.

TECHNICAL EXAMINER EZEANYIM: That would produce the higher gas/oil ratio?

THE WITNESS: Yes, sir.

TECHNICAL EXAMINER EZEANYIM: That's -- have you done something to show that?

THE WITNESS: When it goes to matrix flow, the bottom hole pressure, you're pulling the pressure down at the well bore to the point where gas starts breaking out.

TECHNICAL EXAMINER EZEANYIM: This is really a solution that is mostly -- it drops down to bubble point.

THE WITNESS: Yes.

TECHNICAL EXAMINER EZEANYIM: So I think at that point in time you see these gases, you know, in the well from the -- from the fluids.

So I want to understand -- I don't want it to be an assumption. I want you to tell me definitely what causes that difference. Because I don't -- I don't understand why the gas/oil ratio is so different. I know people are asking for gas/oil ratios. And when I have to make decision here, I want to understand why is that? We know there are differences, but is it because of the type of completion that is causing this problem, the difference in the gas/oil ratio?

THE WITNESS: My assumption is is that when you frac 500 feet on a 20-acre spacing we are contacting reservoir that's -- has no depletion whatsoever, so that it's still above the bubble

point, so that the frac is draining some of the reservoir, extending away from the well bore at a point where it's still above the bubble point in the reservoir.

TECHNICAL EXAMINER EZEANYIM: Do you know the bubble point at different levels?

THE WITNESS: I do not.

TECHNICAL EXAMINER EZEANYIM: Do you know the initial pressure?

THE WITNESS: I have not taken it. I have just heard reports.

TECHNICAL EXAMINER EZEANYIM: Most of these solutions, the initial pressure may be bubble point.

THE WITNESS: Yes.

TECHNICAL EXAMINER EZEANYIM: Unless you start, you know, at the bubble point, the mobile may -- may not -- you know, may -- gas may erupt, but not mobile immediately. But looking for the -- what I understood last week, that in four months it was below bubble point, which I don't know what it is. Nobody had done any PVT analysis on this? It's very surprising nobody has done any PVT analysis.

How do you then conduct operations when you haven't done PVT analysis? Has anyone done PVT

analysis on these pools?

MS. MUNDS-DRY: Yes, Mr. Ezeanyim. Concho presented that to you yesterday.

TECHNICAL EXAMINER EZEANYIM: Oh, you did?

MS. MUNDS-DRY: Yes. We gave it to you in an exhibit.

TECHNICAL EXAMINER EZEANYIM: What exhibit number is that? COG what?

MS. MUNDS-DRY: Number 37.

TECHNICAL EXAMINER EZEANYIM: 37? That would be interesting.

MS. MUNDS-DRY: I'm sorry, I misspoke. 36 is the composition. Mr. Prentice was prepared to testify about that yesterday, but you didn't ask him the question.

TECHNICAL EXAMINER EZEANYIM: Okay. But -- so there is no PVT analysis that is done, right?

MS. MUNDS-DRY: That has been done, yes. We can talk about that in our rebuttal time if you would like.

TECHNICAL EXAMINER EZEANYIM: Okay. That would be interesting. But I feel I've gotten a handle on most of the things that are being requested: Consolidation, allowables, and

everything. But at least I've gotten a handle, but on this gas/oil ratio I wonder why we have the same pool and we don't have the same gas/oil ratio. I need to understand, in general, why -- why that is happening.

I mean you see the dilemma we are in here. They're not in different pools, they are the same pool. I mean they should have identical gas/oil ratio. We are talking about 7.1 here to 2.5. That's too much. In engineering calculations that much throws me. Why is it that much?

Okay. Anyway, we may still have some information that might give me insight on how to deal with the gas/oil ratio in this pool. But meanwhile, I think I'm done with you.

THE WITNESS: Okay.

TECHNICAL EXAMINER EZEANYIM: Thank you.

MR. CAMPBELL: May I ask one follow-up question --

TECHNICAL EXAMINER EZEANYIM: Yeah, you may.

MR. CAMPBELL: -- relative to the Examiner's question here?

TECHNICAL EXAMINER EZEANYIM: Go ahead.

FURTHER EXAMINATION

BY MR. CAMPBELL:

Q. Mr. Jacoby, the Examiner was asking you questions regarding your selection of the nine Burnett/Hudson wells and the nine COG wells in this area of comparison here, and inquired of you whether there was any collaboration or corroboration of your findings in this area elsewhere in the pool.

I want you to be clear to the Examiner as to why you selected these nine Concho and nine Burnett/Hudson wells, particularly in terms of the fact that this area of comparison presented the very best comparison of the slickwater 20-acre frac versus the COG 10-acre gel frac.

Could you -- could you explain that better?

A. I can. I can explain that better. The point I did not make, we have developed our field to the north. All of these wells -- all of the Burnett nine wells around the Harvard Federal have been slickwater fracked. And so --

TECHNICAL EXAMINER EZEANYIM: Where? Where? Which area?

THE WITNESS: The nine Burnett Gissler wells.

TECHNICAL EXAMINER EZEANYIM: Okay. Okay. They're all slickwater?

THE WITNESS: Yes.

TECHNICAL EXAMINER EZEANYIM: But in the rest you have gel water?

THE WITNESS: I have -- actually, most -- many of our other -- our older wells were stimulated with hot acid treatments.

TECHNICAL EXAMINER EZEANYIM: Okay.

Q. (By Mr. Campbell) So this area is the limited area available for comparing results between Burnett/Hudson's slickwater fracking technique and COG's gel fracking technique?

A. That is -- that is true. Much of our lease in the middle of the field, the wells were completed and stimulated with hot acid treatments. This is an area where we've completed in the last -- more recently, and have used slickwater exclusively.

TECHNICAL EXAMINER EZEANYIM: Yeah. Your counsel said that -- that's a word that is very interesting to me. You used the word "limited."

Can you explain limited to me? He said limited in that area. Yeah, that's what your counsel said, that the slickwater is limited in that area. Can you explain what "limited" means?

THE WITNESS: I think what he means is, is that there have not been in this area of wells. It's further south where the wells have been stimulated with hot acid.

All of these have been limited to slickwater treatments.

Q. (By Mr. Campbell) Okay. Now, how many -- how many of -- how many of Burnett/Hudson's 86 wells have been subjected to slickwater fracking?

A. If you count all of the fracs, two, three and -- two and three. I mean most of the wells, three fracs. Probably about 75 slickwater fracs plus or minus frac treatments.

Q. I don't want -- there are three fracs per well?

A. Okay.

Q. Right. I want the number of wells that have been -- Burnett/Hudson's 86 wells that have been subjected to slickwater frac.

A. I would say approximately 25.

Q. All right. Okay.

MR. CAMPBELL: Thank you.

LEGAL EXAMINER BROOKS: You're passing the witness?

MR. CAMPBELL: Yes, sir.

TECHNICAL EXAMINER EZEANYIM: Anybody have anything from this witness?

LEGAL EXAMINER BROOKS: The time is 11:36.

MS. MUNDS-DRY: Nothing further for Mr. Jacoby.

TECHNICAL EXAMINER EZEANYIM: Nothing further?

MR. COONEY: Nothing further.

TECHNICAL EXAMINER EZEANYIM: You know, I think this is a very good time to stop because we're done with him. We have one more witness. Is that correct?

MR. CAMPBELL: Yes, that's correct.

TECHNICAL EXAMINER EZEANYIM: Then we might go to lunch and come back by 1:00? That's good.

(A recess was taken from 11:37 a.m. to 1:07 p.m.)

TECHNICAL EXAMINER EZEANYIM: We're going back into the record. And at this point, we want to hear from Burnett/Hudson's last witness. Is that correct?

MR. CAMPBELL: That is correct.

Mr. Chairman, I believe I neglected to move for the introduction Burnett/Hudson's exhibits

18 through 20.

TECHNICAL EXAMINER EZEANYIM: Yeah, I think so. I thought you didn't want them. Okay.

So what exhibit do you want to admit at this point?

MR. CAMPBELL: Exhibits 18 through 20, sponsored by Mr. Jacoby.

TECHNICAL EXAMINER EZEANYIM: Any objections?

MS. MUNDS-DRY: No objection.

MR. COONEY: No objection.

TECHNICAL EXAMINER EZEANYIM: Exhibits Number 18 through 20 will be admitted.

MR. GRABLE: Good afternoon, Mr. Ezeanyim.

Let me approach. I have explained to opposing counsel and Mr. Brooks that Burnett's exhibits are in three parts.

TECHNICAL EXAMINER EZEANYIM: Yes, I see that.

MR. GRABLE: And I'm going to have to kind of walk through them. There are a handful in the prefiled booklet that we're not going to offer.

TECHNICAL EXAMINER EZEANYIM: Okay.

MR. GRABLE: There are also a rebuttal set that Mr. Campbell gave you yesterday morning that

should look like this (indicating).

TECHNICAL EXAMINER EZEANYIM: Yeah, I think -- just a moment. I think I put them together again.

MR. GRABLE: Okay.

TECHNICAL EXAMINER EZEANYIM: Let me see this one. This one (indicating)?

MR. GRABLE: No. No, one more.

TECHNICAL EXAMINER EZEANYIM: Oh, okay.

MR. GRABLE: This set was the set he gave -- the additional set yesterday. And we have yet again a few more today that was given.

Now, we're going to go through the notebook in order. And when we come to a point that we're going to insert one of these that does not yet have a number, we'll give it a letter number following the preceding numbered exhibit.

TECHNICAL EXAMINER EZEANYIM: Are you going to start with the Exhibit Number 21?

MR. GRABLE: We would, except that there was one that was in Mr. Haiduk's group, Number 17, that was not presented by him, and Mr. Gore is going to testify to that, and then we're going to come back to 21.

TECHNICAL EXAMINER EZEANYIM: Okay. Very

good. We'll figure it out.

MR. GRABLE: That's a way to keep everybody awake in the afternoon.

WAYMAN GORE,

after having been first duly sworn under oath, was questioned and testified as follows:

EXAMINATION

BY MR. GRABLE:

Q. All right, Mr. Gore. You've been previously --

LEGAL EXAMINER BROOKS: Okay. We'll start the time at 1:09.

Q. (By Mr. Grable) You've been previously sworn.

Would you please state your name for the record and by whom you're employed and in what capacity?

A. Yes. My name is Wayman Gore. I'm a petroleum engineer with PGH Petroleum & Environmental Engineers, in Austin, Texas.

Q. Do you have other engineers from your firm that have been with you during the hearing?

A. Yes.

Q. Who are they?

A. Amy Huff and David Dennard.

Q. And have they assisted you in the studies of exhibits you prepared for this case?

A. Yes. Them, as well as some others back in Austin.

Q. Have you testified before the division on previous occasions? And if so, have your credentials as an expert in petroleum engineering been accepted?

A. Yes.

Q. Would you just tell the Examiners very briefly your educational and work history?

A. I received a bachelor of science degree in petroleum engineering in 1980 from the University of Texas.

I went to work right out of school for Tenneco Oil Company, in Houston in the Gulf Coast Division, as a production engineer responsible for the upper Texas Gulf Coast properties.

I left Tenneco in late 1981, during the Tenneco/Houston Oil and Mineral merger.

I went to a small independent in Houston, Sanchez-O'Brien Oil & Gas Corporation. Sanchez-O'Brien had a number of ex-Tenneco people there, so it was a good fit. They were a much smaller company. My responsibilities were

production engineering and reservoir engineering.

And at Sanchez-O-Brien, we actually had properties that we operated in nine different states. Among them was New Mexico.

Q. Are you a registered professional engineer?

A. Yes, sir, I am.

MR. GRABLE: At this point, I would tender Mr. Gore as an expert in this proceeding.

MS. MUNDS-DRY: No objection.

MR. COONEY: No objection.

TECHNICAL EXAMINER EZEANYIM: He's so qualified. Go ahead.

Q. (By Mr. Grable) All right. Now, Mr. Gore, let me ask you if you can, at the beginning, simply to summarize the topics of your studies and your areas of testimony you will present during your detailed testimony on the exhibits.

A. Okay. Basically what -- what we've looked at are the -- or is the evidence of drainage areas on the Burnett properties.

We have calculated -- we've evaluated every Burnett well, so approximately 85 wells, made drainage area calculations from detailed well log analysis, to look at the -- not only the average

drainage area of the wells in the Yeso formation, but also the range of those drainage areas.

In addition to that, we've looked at issues of well interference, where we think we're seeing evidence of wells on drilled -- wells drilled on 10-acre spacing interfering with one another, and the effects that has on the gas/oil ratios in the field.

That was primarily the issues that I was charged with.

Q. All right. Thank you, Mr. Gore.

Now, will you turn now to what is -- was marked for identification as Burnett/Hudson Exhibit 17 -- it should be displayed on the screen -- which is captioned "Log Analysis Example."

Do you have that in front of you?

A. I do.

Q. Can you explain to the Examiners how you have evaluated logs for the purpose of your testimony?

A. Well, the log analysis was actually done by Burnett with their software. But I've reviewed all of that work in accordance with the formulas, the input parameters, to ensure that I agreed with those. But Burnett uses the Prism software, which I

think is a package of geographics.

And what is shown on this exhibit is the types of information that you get out of the log analysis. You know, you -- the logs obviously record porosity and resistivity, gamma ray.

But then going through the standard calculations for water saturation, density, porosity and the various cutoffs, the average porosity, average water saturation, and net pay was computed for both the Paddock and the Blinebry sections of the Yeso formation.

And this particular log -- Burnett not only runs open-hole logs on all of their wells, but they have a number of wells in which they have recovered or taken sidewall core information as well as XRMI imaging logs, which are fracture identification logs.

And all of that is merged into the analysis to come up with what is the basis for Burnett's well completions, so picking net pay and perforating and then designing the fracture stimulations.

Q. Are the -- is there a symbol or a display on this log of what would be the PHI of net pay under the Burnett analysis?

A. Yes, there is.
Q. And where does that appear?
A. It's going -- this is hard to read. There is a pay flag indicator -- let's see. I will tell you, it's difficult to see on this particular exhibit.
TECHNICAL EXAMINER EZEANYIM: Do you have a pointer? Can you give him a pointer?
MR. GRABLE: Yes.
Q. (By Mr. Grable) Does it come up into this (indicating) section of the log?
A. Right. The --
Q. It's pretty small.
A. Do we have a bigger copy of this, by chance, that we could look at, or...
Q. We'll come back to this.
A. Okay.
Q. Is there any other information on this Exhibit 7 that you have used in your studies in coming to your opinions?
A. No.
Q. All right. Now, let's turn to what has been previously marked as Burnett Exhibit 21, the drainage calculation method.
You were here yesterday when the COG

witness explained their calculation of drainage areas?

A. Yes.

I just found this net pay flag, if that's helpful, although you -- you really can't read it off the exhibit. But it's the pink right there (indicating), and it's very difficult to read. But the net pay is flagged as you go down the well log in the -- the tract with that pink header right there (indicating).

Q. On the -- and they show up as green flags on the left side of that vertical line?

A. I believe so, yes.

Q. All right.

Let's turn back to Exhibit Number 21, now.

Is this the same industry standard equation that Mr. Prentice testified to yesterday?

A. Yes. This is the standard volumetric equation for oil.

Q. All right. Now other than showing the full description of the various factors in the equation, I want you to focus on RF, the recovery factor. What recovery factor did you utilize in your studies?

A. Well, we -- we utilized 10 percent. We

also looked at sensitivities on 13 percent and 15 percent. But in my opinion, 10 percent is probably the most applicable.

Q. All right. And what -- why, in your opinion was 10 percent more applicable than the 15 percent utilized by Concho?

A. Well, what we know -- a couple of things. And one, I calculated the recovery factor based upon standard engineering calculations, a Turner analysis, which uses pressures, porosity, saturations, residual gas/oil ratios, that sort of thing.

And given that information, I calculated -- I think it was like 10.2 percent, so I -- I thought 10 percent was the most applicable here.

The --

TECHNICAL EXAMINER EZEANYIM: Excuse me. Can you repeat that sentence that said 10.2 percent? What did you do?

THE WITNESS: We actually computed the recovery factor. And the actual calculation, I think, worked out to be 10.2 percent. I don't know that we -- we have enough confidence in -- in all of the data to get that refined in our recovery factor,

so I thought 10 percent was probably the most applicable recovery factor percentage to use.

TECHNICAL EXAMINER EZEANYIM: All right. I don't want to use your time. We'll revisit that during my time. Okay? I don't want to use your time.

THE WITNESS: Sure.

The -- what we know just from experience is in solution gas drive oil reservoirs, recovery factors typically range from perhaps as low as 7 or 8 percent up to an absolute max of 15, 16 percent.

What we know about this reservoir is it's very low porosity, permeability. I think everybody agrees with that.

What that tells us is it's difficult for the oil to flow through the rock. We know -- and we've had lots of testimony on the fracture stimulations that are required to get these wells to flow. So that alone, in my opinion, would lead me to the conclusion that a recovery factor on the upper end of the range for solution gas drive oil reservoirs would probably be too high.

We then went through the calculations and -- you know, without knowing anything else, I would typically say, well, the recovery factor is

going to be somewhere between 10 and 12 percent. And once we went through the calculations, again, we came out with 10 percent. And so that's what I felt was the most applicable recovery factor to use in my drainage area calculations.

Q. (By Mr. Grable) All right. And there's also been a good bit of testimony about porosity determinations in those reservoirs. Will we have some exhibits later that go into the porosity determinations in more detail?

A. We will.

Q. We'll come to that later. All right.

Any other factor in the equation that you want to comment on?

A. Only that you can see the -- the formation volume factor 1.29, that is what Concho used. I have also confirmed that again with standard correlations, that the B sub O, or formation volume factor, is 1.29 barrels per stock tank barrel.

Q. Now the net pay PHI -- the PHI-H is also a factor that's been the subject of some bit of conflict in this case has it not, Mr. Gore?

A. It has.

Q. And we will -- when we get into the computations of the exact drainage areas you've

computed, will you have more to say about that factor?

A. Yes.

Q. Just now to summarize, which of these various factors in this equation are those where there are major differences between drainage areas as calculated by Burnett and as calculated by Concho, to the extent that you understand the factor?

A. Well, I believe the -- what I understand from -- from the Concho calculations are that they have used a 3 percent porosity cutoff, a varying water saturation cutoff, of -- I think it was 28 percent in the Blinebry, if I am not mistaken, and 40 percent in the Paddock. We could double-check that, but...

Q. That's correct.

A. And Burnett is using 40 percent water saturation cutoff for both.

I have seen PHI-H numbers from COG, in some confidential information that they provided. But really, that's all that I know about the Concho drainage area calculations. We really haven't been provided anything other than a few of the parameters used to establish some of the factors, but we really

don't know -- or I don't know -- how they came up with their actual averages.

Q. Okay. All right. Let's turn now to the next exhibit in order, which is marked 22.

MR. GRABLE: And I will, just for the record, say that we are not going to offer 22. It's duplicative.

Q. (By Mr. Grable) So let's turn now to what is marked Exhibit 23, captioned "Water Saturation and Net Pay Calculation Methods."

Can you explain to the Examiners the data you've displayed on this exhibit and how it's been utilized in your studies?

A. Yes. The water saturation calculation, or equation, is the Archie equation, which is standard. Apparent water saturation is the square root of FRW over RT. That's what Burnett has utilized in the log -- in their log analysis.

The Burnett net pay calculations are based upon two criteria, a density porosity cutoff of 3 percent or greater, and a water saturation cutoff of 40 percent or less. So in order to be counted as net pay it would have to meet both of those criteria, and the density/porosity equation is shown there on the exhibit.

The RW that was used was based on actual water analysis in the field .035 oms. The density matrix of 2.84 grams per cc is based upon the Burnett core data.

We have talked about the cutoffs and the Archie AM&M exponents are standard.

So that is the input data that was utilized in the computation of net pay, average porosity, and average water saturation for the Burnett wells.

Q. All right. Now, do you have subsequent exhibits that go into detail on density/porosity calculation and why you use the density versus neutron porosity?

A. Yes.

Q. And do you also have detailed exhibits later dealing with the density matrix of 2.84 grams per cubic centimeter?

A. Yes.

Q. All right.

Now, let's go forward to what has been marked previously as Burnett Exhibit 24.

A. (Witness complies.)

Q. Can you tell the Examiners, is this a summary exhibit of what -- of your Blinebry

producers, and tell them in general what you've represented in this exhibit?

A. Yes. This is what -- Burnett wells completed in the Blinebry only, a total of 11 wells. The three different piecharts represent the three different recovery factors, with the 10 percent recovery factor, I think, being the most applicable here at the top middle of the page.

Our next exhibit will detail the drainage area calculations. But what the results show is, in my evaluation of: Is 10 acres applicable or 20 acres for a density? I equated that to: Are wells capable of draining more or less than 15 acres? Because, to me, that's the dividing point between 10 and 20.

So I show on the piecharts the number of wells that would have less than 15 acres' drainage or greater than 15 acres' drainage.

In the case of the Blinebry zone, 91 percent of the wells have drain -- or we calculated drainage areas greater than 15 acres, and only 9 percent of the wells had drainage areas less than 15 acres.

Q. And just eyeballing the percentages there, if it was 9 percent, that would be 1 out of 11

computed at less than 15?

A. That's correct. Actually, I've got 2 less than -- 2 of the 11 less than 15.

Q. On the 15 percent?

A. Yes -- on the 15 percent recovery factor?

Q. Yes. On the 10 percent and the 13 percent, only 1 of the 11. Is that correct?

A. That is correct. Only 1 out of the 11.

On the 15 percent recovery factor we have 2 out of the 11.

Q. Okay. All right.

Let's turn now, then, to the following -- Exhibit 25. Are these the data spreads behind the 11 wells analyzed and summarized on the preceding Exhibit 24?

A. Yes.

Q. Can you walk the Examiners through that data and explain its usefulness in making their calculation?

A. This exhibit shows the well -- 11 wells evaluated.

The zone, again, is the Blinebry.

The oil EUR was determined for each well from declining curve analysis.

Then we get into the log data from the log

analysis on each one of the wells. We show net pay, average porosity, average water saturation, SO PHI-H, or hydrocarbon pore volume, and then PHI-H, or pore volume.

And then we compute the drainage area based upon the volumetric equation for the three different recovery factors.

Q. All right. Then the results are shown there under the three columns for 10 percent, 13 percent, and 15 percent?

A. That's correct.

Q. Okay.

MR. GRABLE: Now, this is the first exhibit that's not in the booklet, Mr. Ezeanyim and Mr. Brooks, and I'm not sure which stack it's in.

If you can find the exhibit shown on the board there.

TECHNICAL EXAMINER EZEANYIM: It's not marked?

MR. GRABLE: It's not marked. It's in one of those two stacks I have handed you that are not in the booklets. It should be in the smaller stack.

I'm sorry for this confusion.

I will ask that this exhibit be marked 25A for identification, since it will fall in the

presentation immediately after Exhibit 25.

LEGAL EXAMINER BROOKS: Okay. Someone needs to make sure a marked set is available for the court reporter.

MR. CAMPBELL: We've got two sets with -- I'm keeping track of the final consolidated set here. But may I have one back from the Examiners?

LEGAL EXAMINER BROOKS: You may have mine back -- now or when we get through?

MR. CAMPBELL: When we're finished.

LEGAL EXAMINER BROOKS: You may have mine back when we're finished.

MR. CAMPBELL: And then I will tender it and check with counsel and make sure it's complete and give it to the court reporter.

LEGAL EXAMINER BROOKS: Okay. I am going to mark these numbers as you call them out on here, so my set will be numbered, but I will be through with it when we finish.

Q. (By Mr. Grable) All right. Now is this -- is this well, which has the log and drainage area, or a decline curve shown on Exhibit 25A, one of the 11 wells included in the universe on Exhibit 25?

A. Yes.

Q. We'll refer back to 25. Where does it appear on Exhibit 25?

A. Almost right in the middle, the Stevens B Number 5.

Q. All right. Now, let's go back to 25A. Can you use this exhibit, then, and describe for the Examiners the factors included on that Exhibit 25, or the values, and how they were derived from the information shown on Exhibit 25A?

A. Yes. In the upper left-hand part of the exhibit are the log analysis parameters. And I want to make sure that -- we noticed a typo on some of the printouts. So if you have one that says 5.9 you should make that correction to 6.1. When we made the exhibit we just picked up the wrong line on a different well. So I wanted to make sure everyone knew that.

But this -- this is the log data. Again -- and here is the log analysis printout for the well from which these parameters are defined.

The declining curve is shown in the bottom middle portion of the exhibit. A key part of the drainage area calculation using the volumetric equation is the EUR, or the expected ultimate recovery from the well.

And again, we did that based upon decline curve analysis. And this is the decline curve for the Stevens B Number 5 well with our extrapolations, which yielded an oil EUR of 122,000 barrels and a gas EUR of 182 MMCF of gas.

And the drainage area on this well at a 10 percent recovery factor was calculated to be 33.3 acres, so roughly 30-acre drainage area on this well.

Q. All right. Now, have you made similar exhibits and similar calculations for the Paddock member of the Yeso formation?

A. I have.

Q. We'll refer the Examiners now to what has been previously marked as Burnett/Hudson Exhibit Number 26. Is this the piechart display of summary data in the same format as was previously offered for the Blinebry?

A. Yes.

Q. Would you explain the results of your calculations on the Paddock member here?

A. Again, the -- the results are that for a 10 percent recovery factor, 69 percent of the wells had a drainage area greater than 15 acres, and 31 percent of the wells had calculated drainage

areas of less than 15 acres.

And for 13 percent and 15 percent, we've made that same calculation. Those percentages are 5446 for the 13 percent recovery factor. And for the 15 percent recovery factor it's 37 percent greater than 15 acres and 63 percent less than 15 acres.

Q. Is there one of the values in the drainage area equation that influenced these Paddock wells to have smaller drainage areas than the Blinebrys? Did one factor predominate or did more than one?

A. I think it's primarily one factor, and that's porosity PHI, or PHI-H.

Q. All right. Now given these percentages, what is your opinion with respect to the appropriate drainage area, at least initially, for Paddock producers?

A. Well, again, based on what I feel is the most appropriate recovery factor, the majority of the wells -- in fact almost -- well, a little over two-thirds -- 69 percent of the wells exhibited drainage areas greater than 15 acres. So in my opinion, for those areas where development is going to continue that have been less developed to date, those areas, in my opinion, should initially be

drilled on no denser spacing than 20 acres.

Q. You say "at least initially." Could you explain a little bit about what the Burnett/Hudson position is with respect to the density rule between 10 and 20 acres, why it's more appropriate to start at 20 than 10?

A. Well, we know in this consolidated area Concho has drilled up a lot of the area already on 10 acres, so we can't undo what has been done.

But there are some areas remaining in -- in the -- the application area which have not yet been developed on that dense of spacing. In fact, some of the areas haven't been developed at all.

So given some of the -- and we'll get into some of the -- more of the evidence. But based upon my analysis, it appears to me that wells drilled in the Yeso are capable of -- of officially and effectively draining 20 acres.

So the development for those areas where little or no development has occurred currently, we need to start there. We don't want to start small and realize later that we've drilled wells that weren't necessary. We need to start with a larger pattern. 20 acres, I feel, is appropriate given our analysis.

And then as we drill on 20 acres and we acquire the well data and we look at performance, we acquire the logs and you go through the analysis, if there are areas that demonstrate that a denser spacing is needed, you then come in and do that. You -- you just don't want to start off there, as has been done in a large part of the field already.

Q. All right. Thank you, Mr. Gore.

Let's now go to the data display behind those summary calculations. And are there actually two pages of this?

A. There are two pages.

Q. And do those two pages that are Exhibits 28 and 29 then contain the detailed data behind the drainage area calculations that are summarized on Exhibit 26?

LEGAL EXAMINER BROOKS: It looks like they're 27 and 28.

MR. GRABLE: Okay. Pardon me. I'm confusing the -- I look at the tab sometimes, and it's the next exhibit.

Q. (By Mr. Grable) So 27 and 28.

A. That's correct.

There are a total of 35 Paddock wells that we analyzed.

Q. Do you think 35 wells is an adquate representative basis on which to state your opinion with respect to average Paddock area drainage in this reservoir?

A. I do. That's approximately a little less than half of the Burnett wells drilled. We would have evaluated more, but we only felt comfortable with those wells that -- that had sufficient production history for which we could extrapolate the decline curve. And so that's why we ended up with 35.

Q. Thank you. All right.

MR. GRABLE: Now, Counsel and Examiners, the next exhibit is -- should be the exhibit next following the one that we pulled out and marked 25A. It's a log analysis example, Paddock member. And I'll ask that it be marked Exhibit 28A.

Do you have that one in front of you, Mr. Ezeanyim?

TECHNICAL EXAMINER EZEANYIM: 28A?

MR. GRABLE: 28A.

Q. (By Mr. Grable) Now again referring back to Exhibit 28 or 27, as appropriate, can you show where this particular well is located in the data display in these two exhibits?

A. Yes. It's actually going to be on page 2 of 2, or -- I think Exhibit 28. It's going to be the very first well on the top of that page.

Q. All right. Now, can you explain to the Examiners again how you picked the factors in the drainage area calculation from the log data on this Paddock well?

A. Yes. Again, just like the similar exhibit for the Blinebry, we have our log analysis data here in the upper left corner of the exhibit. This information was derived from the log analysis which -- a log strip with the analysis is shown here on the right-hand side of the exhibit.

For just the Paddock portion of the Yeso, average density porosity of 7.1, average water saturation 29 percent, the hydrocarbon pore volume, SO PHI-H is 8.67. The total net pay computed using the cutoff parameters we have talked about is 173.

So then we have to determine what is the expected ultimate recovery from the well. And again we do that from decline curve analysis. The decline curve is shown at the bottom of the exhibit.

You know this particular well we had a good history. It came on production in late '03 and has really exhibited a fairly exponential, or

straight-line decline, from, really, the beginning of 2005. So we've got six years of steady exponential decline on this well, and we have extrapolated that out. I think we've actually been, you know, somewhat conservative in our estimates.

But the oil EUR is 105,000 barrels, and the gas EUR is 264 MMCF.

So when you put all of that together, the drainage area on this well, once it drains 105,000, we have computed that that would represent an area of 20.1, or roughly 20 acres.

Q. All right. Now, just let me ask you generally, with respect to the factors in the drainage area calculation of estimated ultimate recovery, or EUR, porosity -- density, porosity, water saturation, PHI of oil saturated, net pay, and the sum of the net pay, what is your general level of confidence of the log analysis for those values that have gone into computing the net pays for the wells shown on the Burnett exhibits that we have just gone through?

A. Well, I have a high degree of confidence because we -- we have utilized the available core data, fracture identification logs, merged that data together, and then also compared that with the

results of the wells.

And so we feel like we have a very good handle on what we think the net pay is in the Burnett wells where we have open-hole logs to make those calculations.

Q. Have you been able to compare each factor in the drainage area calculation used by COG and its calculations of drainage areas with the factors you've used in yours?

A. Yes.

Q. Okay. And how -- how do you -- in your review of their calculations versus your calculations, can you just generally describe for the Examiners why you feel more comfortable about your analysis than their analysis?

A. Well, based upon what I have heard in the testimony and seen in the exhibits, it appears that Concho is using a grain density for what I would consider a -- a standard dolomite, or 2.87 grams per cc.

Part of the problem we have analyzing the Concho log analysis is we don't have it, and the witnesses that testified didn't know anything about the parameters that went into it. Were they calibrated -- was the core data incorporated into

the analysis. So there's a tremendous unknown there, and so we really can't test exactly what they have done.

We think we have a good idea. But unfortunately, we've not been provided the information that we would need to determine if -- if their log analysis is reasonable or not.

Based upon what I think we do know, we have determined we don't think it is reasonable. And I'll demonstrate why, I believe, on the next exhibit.

Q. All right. That's what I was going to ask you.

MR. GRABLE: I'm going to now ask you to refer to what we've marked as Exhibit 28B, or bravo, which -- it's a two-log display like that. It should be in that same package you're looking through.

LEGAL EXAMINER BROOKS: In the same package is 25A and 26A and 28A?

MR. GRABLE: I hope so, yes.

LEGAL EXAMINER BROOKS: And you're going to call this what?

MR. GRABLE: 25B -- or 28B, bravo.

LEGAL EXAMINER BROOKS: 28B.

Q. (By Mr. Grable) Can you first, on this Exhibit 28B that's captioned "Calculated Blinebry Pay Comparison, Burnett versus COG," can you tell the Examiners where you extracted these log sections displayed on this exhibit?

A. This is -- this log section is for the Burnett Gissler B-49 well. And I believe this was a COG rebuttal exhibit, if I am not mistaken, where they -- they took the Burnett log data for this -- or log for this well and performed an analysis. Or -- or actually, we -- we looked at the analysis compared to our analysis to try to figure out where the differences were, what --

Q. May I stop you a moment, Mr. Gore?

A. Yes.

Q. I believe it comes from --

MR. GRABLE: Do you have the COG exhibits, Examiners? I believe it comes from --

MR. CAMPBELL: I have the COG exhibits.

Q. (By Mr. Grable) I believe it's page 2 of COG Exhibit 9. It was a two-well Burnett cross-section.

A. Okay.

Q. Let me just -- for convenience, I will give you mine. And ignore my marking, but it was

Concho Exhibit -- at least in my -- my copies that I marked when those exhibits had gone in -- as Exhibit 9, page 2.

Is that the source of the top log on there, the COG log analysis of Burnett Gissler B-49?

A. Yes, it is.

Q. What is the log section on the bottom of that page?

A. The bottom part is the net pay that Burnett calculated for this well. And the top part would be what we believe, based upon what we understand about the COG analysis, what the net pay would be using their analysis.

And so the purpose of the exhibit is to demonstrate the great difference in what would be identified as net pay in this Blinebry section.

Q. As picked by Burnett on the log of one of its own wells versus the COG log analysis of that same well?

A. Right. It's -- it's the Burnett analysis using what we -- we believe to be, as best we can tell, the COG method.

Q. But up there under pay flag, those green flags were exactly what was shown on the Concho Exhibit 9, were they not?

A. I believe it is.

Q. Okay. You haven't added to or detracted from those picks of net pay?

A. No.

Q. Now, can you state for the record approximately, in your opinion, what's the difference in number of net pay PHI picked on this log section from this same well by Concho versus Burnett?

A. Well, I haven't added up the exact footage. But just visually, if you will look at the pay flags here in the depth track of the log, it's going to be the green portions.

It looks to me, just visually, it's probably certainly less than half the net pay using the Burnett analysis, probably closer to about a third.

Q. All right. What effect, if any, on the computation of a drainage area on this well would result from an increase in the net pay PHI?

A. Well, net pay is probably the predominant factor in a net pay, or in a drainage area computation. So if you are using a net pay that is two or three times higher than what it actually is, then you are going to underestimate the drainage

area for that well.

Q. Okay.

TECHNICAL EXAMINER EZEANYIM: Before you go, I want to get something straight in my head.

That was Exhibit 28B? Is that what you called it?

LEGAL EXAMINER BROOKS: 28B.

MR. GRABLE: 28B.

TECHNICAL EXAMINER EZEANYIM: Okay. That's very important. Let me ask the witness some questions. It will go to my time.

The series of log analysis of Burnett on this one, did you offer it to COG?

THE WITNESS: No, sir.

TECHNICAL EXAMINER EZEANYIM: How do you know how they do log analysis?

THE WITNESS: We don't. That's the problem.

TECHNICAL EXAMINER EZEANYIM: Okay. That is a good question.

Now -- but you did analyze this log?

THE WITNESS: We did.

TECHNICAL EXAMINER EZEANYIM: Are you assuming, then, how they do it? Because the question is that they didn't want to tell us how

they did this interpretation. So how do you know -- you assumed how they do it. You know, I didn't want to wait to ask you, because I will forget it. It's very important for me to understand how you did this analysis based on what you think COG does.

THE WITNESS: Okay. What we believe they do is cross-plotting the neutron and the density porosity.

TECHNICAL EXAMINER EZEANYIM: Okay.

THE WITNESS: And using a 3 percent cross-plot porosity as the -- the net pay cutoff.

TECHNICAL EXAMINER EZEANYIM: Okay.

THE WITNESS: And also in the Blinebry, using a 28 percent water saturation cutoff. In the Paddock, it would be a 40 percent water saturation cutoff.

TECHNICAL EXAMINER EZEANYIM: Yes. We are going to Paddock next. That's right.

THE WITNESS: Right.

TECHNICAL EXAMINER EZEANYIM: But now, are you -- you then -- but then the analysis by Burnett, what's the difference? What do you use?

THE WITNESS: Well, the difference is going to be Burnett uses a straight density porosity cutoff, not a cross-plotted porosity.

Also what -- and also, as part of the porosity calculation, we believe that COG is using a different grain density. We don't know that. But given the pay that we're seeing and the PHI-H, we believe that the only way to get there would be to use a grain density that would be for dolomite, a straight standard dolomite grain density of 2.87.

That differs from Burnett, because we used 2.84, which is based upon the roughly 9 or 10 wells, maybe 11 wells, in which Burnett obtained core data.

So we think that is one of the differences in the analysis. We can't pinpoint any other difference, because we simply don't know what they have done.

TECHNICAL EXAMINER EZEANYIM: That .03 would not make a whole lot of difference in your net pay calculation. But anyway...

THE WITNESS: I'm sorry? I didn't understand.

TECHNICAL EXAMINER EZEANYIM: You know you have -- you said they used 2.87.

THE WITNESS: Yes.

TECHNICAL EXAMINER EZEANYIM: You used 2.84.

THE WITNESS: Yes.

TECHNICAL EXAMINER EZEANYIM: That's a difference of .03?

THE WITNESS: Yes.

TECHNICAL EXAMINER EZEANYIM: Okay. I don't know how much difference. I would have to do the calculation to see how much difference that would make.

But my question is, you said you used the industry practice. Is that -- what do you describe as your industry practice? How do you do what you stated here? You said it's based on a proven industry standard formula.

THE WITNESS: Oh, I'm sorry.

The formula is just the density/porosity formula.

TECHNICAL EXAMINER EZEANYIM: Yeah. I know that formula, yeah.

THE WITNESS: Right. And so a key component of that is using the right input values to --

TECHNICAL EXAMINER EZEANYIM: I understand, yeah.

THE WITNESS: -- to reach that density/porosity.

MR. GRABLE: Mr. Ezeanyim, I don't mean to

interrupt you, but we do have, just coming up right after this, some details in those calculations, what -- what the differences are and what difference they make, so we're going to go into that in detail in a minute and explain it to you.

TECHNICAL EXAMINER EZEANYIM: Yeah. Mr. Grable, I'm sorry I interrupted. But if -- you know, I know if I don't ask it now I will just forget it. It's very important that I understand what he is trying to say here.

MR. GRABLE: Yes, sir.

TECHNICAL EXAMINER EZEANYIM: And I won't come back here again. I'm sorry about that.

MR. GRABLE: You're welcome to come back if it's not crystal clear after the next two or three exhibits, because my mind fogs up on some of this stuff. So...

TECHNICAL EXAMINER EZEANYIM: Okay.

LEGAL EXAMINER BROOKS: Okay. We're back on your time at 1:58.

Q. (By Mr. Grable) All right. Let's turn now -- again, I just want to be sure that the Examiners understand. These net pay PHI, as shown under pay flag, under the top log section, are not ones as calculated by Burnett, but rather precisely

what was shown on the COG log section from the COG Exhibit 9, page 2, that you have in your hand.

A. That's correct.

Q. You have not added to or detracted from or attempted to change in any way the apparent COG net pay calculations?

A. Correct.

Q. Okay. All right.

Let's now go to the Paddock, again on the same well. Is the source of the COG log section on top, again, COG Exhibit 9?

A. Yes, it is.

Q. And the corresponding log section from Burnett and its log analysis is the second half of this?

A. That's correct.

LEGAL EXAMINER BROOKS: I do not think this is COG Exhibit 9. I may be incorrect, but I don't think --

MR. GRABLE: It's 9, page 2 or 3, and I'm sorry.

LEGAL EXAMINER BROOKS: Because what I'm seeing as COG Exhibit 9 is this --

MR. GRABLE: I think it's a multipage exhibit.

LEGAL EXAMINER BROOKS: Well, it doesn't really matter, except it could be confusing in the record when you read the transcript.

MR. GRABLE: Yes. Well, I didn't have one of these pretty fold-up color-coded ones to work with.

(Discussion off the record.)

TECHNICAL EXAMINER EZEANYIM: Let's take about a 10-minute break.

(A recess was taken from 2:02 p.m. to 2:17 p.m.)

TECHNICAL EXAMINER EZEANYIM: Let's go back on the record and continue with -- who is cross-examining? You're still --

MR. GRABLE: I'm still examining.

TECHNICAL EXAMINER EZEANYIM: Okay. Yeah, that's right.

Okay. Mr. Grable, we're on the record now. Okay. First, I'd like the record to reflect that in all my questions to Mr. Gore identifying the log sections on the top of what are Burnett Exhibits 28B and 28C, when I referred to those log sections coming from Concho Exhibit 9, it should have been Exhibit 10, which I have located in Mr. Brooks' exhibit folder and handed it to him.

LEGAL EXAMINER BROOKS: Thank you.

Q. (By Mr. Grable) All right. Now turning quickly, Mr. Gore, to this Exhibit 28C, the Paddock part of the net pay comparison on the Gissler -- Burnett Gissler B-49 well, again, what are your observations about the net pay in this well as calculated, apparently by COG, and as calculated by Burnett?

A. Well, again, the pay flags on either the Burnett analysis or the COG is in the depth track, and it's the green markings that -- kind of the blocks or little green points going down.

And what you can see here is Burnett calculates -- again, I didn't add up the footage in either well. But just visually, it looks like it's probably half, roughly, of the pay that COG has apparently calculated in the same well.

So it appears that whatever the procedure is that COG is using, it's resulting in significantly more net pay than what Burnett is calculating.

Q. And as a result of overstating net pay, does that then understate the drainage area?

A. If -- if the net pay is overstated then, obviously, the drainage area is understated.

Q. All right. Thank you.

Now in your response to Mr. Ezeanyim's questions on the porosity calculation, have you prepared an exhibit that explains one of the factors that we believe may differ in calculating porosity; and, therefore, calculating pay on the COG method versus the Burnett method?

A. Yes.

Q. And without having to go through the whole thing, because doesn't the top half of this repeat some of the detail of the equation, one of your earlier exhibits?

A. Yes, sir.

MR. GRABLE: Let me ask you to mark this as Exhibit 28D, 28 delta.

TECHNICAL EXAMINER EZEANYIM: Which?

LEGAL EXAMINER BROOKS: Which is "this"?

TECHNICAL EXAMINER EZEANYIM: Is that this one (indicating)?

MR. GRABLE: Yes, this (indicating) one. It should be the next one in your packet.

LEGAL EXAMINER BROOKS: Oh after 28 or...

MR. GRABLE: No, no. Not in the -- it's, again, some of these new exhibits, these responsive exhibits. And it should be in that same stack that

we were working with the log sections.

LEGAL EXAMINER BROOKS: Okay. I found it. It's one over from the next. Okay. And this is 28D?

MR. GRABLE: D, as in delta, or dog.

LEGAL EXAMINER BROOKS: Okay.

Q. (By Mr. Grable) All right. Now, I noticed that some of the language on here has been flagged with red type. Why did you do that?

A. To highlight that the 2.84 grain density that Burnett is using for their analysis is -- is from -- directly from the core analysis that Burnett has obtained on, I believe, 10 or 11 wells in the Yeso, which shows a 2.87 grams per cc grain density, which is slightly lower than a -- the standard dolomite grain density of 2.87.

Q. Now, you were here when Mr. Prentice testified, were you not?

A. I was.

Q. And he was -- what is your recollection of his testimony when I asked him some questions on cross-examination about the grain density utilized by Concho in their density calculations?

A. I don't think he knew what was used.

Q. Okay. But from everything you've seen in

the Concho exhibits, and from what they have said on the witness stand, do you believe that they did use 2.87 rather than 2.84?

A. Well, it's hard -- it's hard to know what they, in fact, used, because we haven't been provided anything.

But without knowing anything else, unless you have core data or something to demonstrate that the grain density should be something other than the standard grain density, then I think a reasonable assumption would be that you would use the 2.87.

So the purpose of this is, really, to say not -- not so much that Concho used this as a matter of fact, because we don't know. But if they did, what the result would be. And that's what we're trying to demonstrate.

Q. All right. And did Burnett actually input the 2.84 value derived from its log or core analysis into the computer programs on the log analysis that come up with the net pay?

A. Yes. All of Burnett's log analysis net pay calculations are based upon a 2.84 grain density.

Q. And then in your last bullet point on Exhibit 28D, have you estimated the difference in

porosity that would result from the overstatement of the grain density by the difference between 2.87 and 2.84?

A. Yes.

Q. And what is that difference?

A. If you just plug the grain densities into the calculation, the result is -- and I think it's shown on -- on the next page --

Q. Yes.

A. -- the -- you get anywhere from one porosity unit up to about one and a half porosity units' difference. That's simply the difference between using 2.87 versus 2.84.

Now, that doesn't sound like a lot. But when you're dealing with a rock that -- whose cutoff you say is 3 percent, that's 50 percent of what you say would be net pay.

So even though the number itself is, on itself, small, it -- it has -- it could have a major impact on the net pay calculations and the PHI-H calculation.

Q. So on those net pay PHI that are just barely over the 3 percent minimum on the COG calculation, if they were overstated by around a percent from using the wrong grain density, then

that would result in quite a number of net pay PHI for your true net pay?

A. It could.

Q. All right.

Let's turn to the next exhibit now, where it displays it in a little more detail.

Could you explain this graph that I will ask be marked as Exhibit 28E, 28 echo?

A. Yes.

LEGAL EXAMINER BROOKS: This is the slide entitled "Density/Porosity Comparison"?

MR. GRABLE: Yes. And it just -- well, I'll let Mr. Gore explain it.

But that should also be in that same stack --

LEGAL EXAMINER BROOKS: It is.

MR. GRABLE: -- that you are working with.

LEGAL EXAMINER BROOKS: Yes, it is.

THE WITNESS: This is just -- I'm sorry.

Go ahead.

Q. (By Mr. Grable) Would you explain how you extrapolated a graph to this difference in resulting the porosity calculated by using a grain density of 2.87 or 2.84?

A. All right. This is just a graphical

representation of the difference. The Y axis is density/porosity based upon a 2.84 grain density, and the X is based upon 2.87.

And you can see you get two straight lines, and the differences in the two density porosities are shown in the box in the bottom right-hand corner of the exhibit.

Q. In that yellow box?

A. Yes.

Q. So down on this (indicating) end, the differences in this range of values you have shown are from approximately converting these decimals to percents, approximately 1 percent to 1.7 percent or 9/10 of a percent to 1.7 percent?

A. Yes.

Q. And those, again -- if the true grain density is as Burnett says 2.84, and Concho has used 2.87, and this is the porosity calculations, that would result in an overstatement of the calculated porosity by Concho of somewhere between 1 percent and 1.7 percent?

A. Yes.

Q. All right.

MR. GRABLE: At this point, we're kind of turning to a new topic, so I am going to offer for

the record Burnett Exhibits 17, 21, 23 through 25, 25A, 26, 27, 28, and 28A through 28E as in echo.

TECHNICAL EXAMINER EZEANYIM: Mr. Grable, you lost me. I will ask you to repeat it.

MR. GRABLE: Okay. Since we're turning now to a new subject matter, I want to offer these exhibits that we've talked about to this point.

TECHNICAL EXAMINER EZEANYIM: Would you name them?

MR. GRABLE: Which are Numbers 17, 21, 23, 24, 25, 25A, 26, 27, 28, and 28A, B, C, D, and E.

TECHNICAL EXAMINER EZEANYIM: Is that all?

MR. GRABLE: They are offered.

TECHNICAL EXAMINER EZEANYIM: Okay. Any objection too admitting those exhibits?

MS. MUNDS-DRY: No objection.

MR. COONEY: No objection.

TECHNICAL EXAMINER EZEANYIM: Okay. At this point, Exhibits Number 17, 21, 23, 24, 25, 25A, 26, 27, 28, 28A, B, C, D, E will be admitted.

MR. GRABLE: Thank you, Mr. Examiner.

All right. Now, we have a few more of these insert exhibits. And this one should be either the top of the -- this -- it may be the last -- the top one on that page.

Do you have it in front of you?

TECHNICAL EXAMINER EZEANYIM: The small one?

MR. GRABLE: I believe it's on the top of the same package. And with some trepidation, I'm going to say this is a modification of Concho Exhibit 13. But if Mr. Brooks will let me, I'm going to come over and verify that.

LEGAL EXAMINER BROOKS: That will be fine.

MR. GRABLE: Yes. Okay.

Q. (By Mr. Grable) Mr. Gore, do you see what is displayed on the screen, and that I will ask be marked for identification as Burnett Exhibit 28F, as in foxtrot?

A. Yes.

Q. Do you remember the Concho exhibit from which this was derived?

A. I do.

Q. Do you remember the point that Concho was trying to make through their Exhibit 13?

A. I believe I do, yes.

Q. And what is your recollection?

A. My recollection is that it was just a generic example of two wells on 10-acre density draining with the ellipse being 10 acres and the

lenses, if you will, within the Yeso, whether it was Paddock or Blinebry, is, I guess, insignificant for this exhibit. But to demonstrate that this is how they would view their 10-acre density in this reservoir.

Q. Are the ovals, in your recollection, basically symbolic of their expected fracture penetration?

A. Well, I think that would be part of it, yes. And I also -- maybe incorrectly on my part -- but I also thought that somehow that equated to roughly the 10-acre drainage, 9.2 in the Paddock, and Blinebry is only 4.9. But...

Q. I believe Mr. Midkiff testified to this, and I thought he was saying that, you know, you couldn't just judge the reservoir by what it sees there at the well bore, because it's going to fracture out and contact these other pods or lenses some distance away after it's fractured.

A. Right. And as a result of that, you would achieve these drainage areas.

Q. Right. Now is the data that Burnett has added to its Exhibit 28F, the Burnett well and the information in the middle, and then covered a larger fracture area based upon the Burnett testimony

regarding its slickwater fracs?

A. Yes.

Q. And explain the significance of that for this ability of Burnett's wells to contact multiple discontinuous stratigraphic reservoirs within this Yeso formation.

A. Well, what this was meant to represent is what Mr. Jacoby described as the slickwater fracs contacting more of the reservoir. And when you do that, you achieve greater production and greater drainage area. And so that's what this pink ellipse is meant to represent.

Q. And so in summary, would you say this is just a pictogram, or symbolic picture of a Burnett 20-acre slickwater well being able to contact as much of the reservoir as two Concho 10-acre gel frac wells?

A. Yes.

Q. Let's turn now to the next exhibit --

MR. GRABLE: Which I believe should also be in that same stack you're working on, Examiners.

Q. (By Mr. Grable) And can you tell me, Mr. Gore -- we'll ask this be marked Exhibit 28G, as in golf.

What is this display of data intended to

depict, Mr. Gore?

A. This is a generic exhibit meant to represent the relationship between PHI-H and drainage area. And we have three curves on here which would represent three hypothetical wells.

LEGAL EXAMINER BROOKS: Okay. Now, I haven't found this one.

TECHNICAL EXAMINER EZEANYIM: Yeah, it's this -- that one (indicating).

LEGAL EXAMINER BROOKS: This one (indicating)? Oh, okay. Thank you. And that's 28G?

MR. GRABLE: Yes, sir.

Q. (By Mr. Grable) I believe I had asked you in your testimony earlier, that as the stated PHI-H in a drainage area calculation increases the indicated drainage area decreases. Is that what this graph shows --

A. Yes.

Q. -- graphically?

A. Yes.

Q. And so if -- for a particular well on the hundred acre -- or hundred-thousand-barrel recovery, if Burnett had picked a PHI-H of 10 PHI, it would have roughly a 16- or 17-acre drainage area. But if

Concho had picked 20 net PHI, it would have less than 10 acres?

A. Correct.

Q. And you could pick any other numbers on either -- any one of those curves. But this is just to show graphically the relationship between PHI-H and drainage area?

A. Correct.

MR. GRABLE: Now, our final additional exhibit at this point will come from the second stack, Mr. Ezeanyim, the stack that -- it's captioned "Burnett Analysis of COG's EURs." It should be the top page on the second stack.

TECHNICAL EXAMINER EZEANYIM: Yes, we got it.

MR. GRABLE: I will ask that be marked Exhibit 28H, as in hello.

LEGAL EXAMINER BROOKS: And that's the one that says "Burnett Analysis of COG's EURs"?

MR. GRABLE: Yes, sir.

LEGAL EXAMINER BROOKS: And that's 28H.

TECHNICAL EXAMINER EZEANYIM: Mr. Grable, may I ask why these were not admitted before? You didn't want to use them before or what?

MR. GRABLE: No, we -- these were exhibits

that we created after getting their exhibits. So these are, in effect, our responsive exhibits to their case. Since the parties prefiled at the same -- simultaneously our direct case exhibits, this is, in effect, our response to the COG case-in-chief. So after getting their exhibits on the 9th, we worked last week on these responsive exhibits.

TECHNICAL EXAMINER EZEANYIM: Okay. Make sure you get them for the court reporter so they're part of the record.

MR. GRABLE: Yes. All right.

Q. (By Mr. Grable) Now, Mr. Gore, would you explain to the Examiners first the general purpose of this exhibit and how many you looked at and what factor or factors between the Burnett analysis of the reservoir and the Concho analysis of the reservoir you were trying to depict or compare on this exhibit?

A. Well, what we did is we analyzed the COG units and wells on those units in these sections. And it's primarily, I believe, the Loco Hills area. And then the bottom area is the Maljamar area.

And we -- we evaluated 213 wells and extrapolated decline curves and achieved that EUR in

the last column on the exhibit in green.

You can see that those EURs range from 72,000 barrels per well to a low of -- it looks like 52,000 per well. The average is 66,000 barrels a well.

So of the 213 COG wells we did decline curve analysis on, our calculations determined that the average EUR from those wells was 66,000 barrels per well.

Q. Now you were here this morning when Mr. Jacoby testified, were you not?

A. I was.

Q. And do you remember that he testified regarding comparison of nine COG wells in their Harvard Federal lease, that it is surrounded on three sides by some of the Burnett Gissler leases?

A. Yes.

Q. And did you include those nine COG wells in this calculation?

A. Those -- those nine wells, or any of the Harvard Federal wells, are not included in this exhibit. We -- we have evaluated those wells, but it was after we created the exhibit.

Q. And on average, were those wells greater or lesser than 66,000 barrels of oil estimated

earlier, ultimate recovery?

A. Lower.

Q. So if they had been included they would have lowered this average?

A. Correct.

Q. All right. Now, let's go --

MR. GRABLE: It should be in the same stack, the next exhibit. It's just a little box exhibit, where we have attempted to display by Paddock and by Blinebry the difference in EURs as calculated by Mr. Gore and his firm, with different stimulation methods.

Q. (By Mr. Grable) Is that basically the data you've gathered in this exhibit?

A. Yes.

Q. And what results did you notice, and what conclusions do you reach from the data you have analyzed on this Exhibit 28I?

TECHNICAL EXAMINER EZEANYIM: 28I.

A. What we observed is, again, the 213 wells that we analyzed that COG operates, the average is 66. We believe most of those are gel fracs. I don't know that we've gone through all 213 to determine if they were, in fact, gel fracs or not. But nevertheless, the EUR is the EUR, no matter how

it's stimulated. And the average of those 23 wells is 66,000 barrels a well.

We do know, obviously with great detail, how Burnett stimulated their wells, and we were able to break that up into the different methods.

The hot acid treatments, which most of the wells that Burnett has drilled, that's been the method. Those wells average 115,000 barrels a well.

The Burnett slickwater -- I'm sorry. The hot acid, that's all in the Paddock. None of the Blinebry Burnett wells have been stimulated with acid. So 115 barrels a well for 65 wells.

Q. (By Mr. Grable) 115,000 barrels?

A. I'm sorry. 115,000 barrels per well for the 65 wells analyzed.

For the slickwater fracs, we have six in the Paddock and 11 in the Blinebry that we were -- that we analyzed. The average is 149,000 barrels per well in the Paddock and 157,000 barrels in the Blinebry.

So you can see that Burnett has improved their EUR by about 50,000 barrels per well going from acid to slickwater fracs.

Q. Would that be about 34,000 barrels, Mr. Gore, in the Paddock?

A. In the Paddock it would, yes.

Q. Now going to the Blinebry hot acid treatments, is the reason that there really aren't any there is because the Blinebry simply didn't respond, and then they weren't -- these were the early wells, and they weren't able to make commercial wells in the Blinebry using hot acid?

A. That is my understanding, yes.

Q. And once they switched in -- after 2007, or whenever Mr. Jacoby testified, I believe it was 2007 to experimenting with slickwater fracs -- they noticed very promising results in the Blinebry?

A. Yes.

MR. GRABLE: All right. We will go back to the prefiled exhibits now. I'm sorry for that long diversion.

Now if you are back in our prefiled notebook, I will state that we're not going to offer -- the next one in order in the prefiled notebook would be 29. And 29 and 30 we have decided not to offer, based upon subsequent data that we learned.

Q. (By Mr. Grable) Let's turn now, Mr. Gore, to what has been marked and prefiled as Burnett Exhibit 31. Do you have that in front of you?

A. I do.

Q. What is Exhibit 31, and what conclusions do you reach from it?

A. This is a production decline curve on a COG-operated unit of 17 South, 30 East, Section 20C. We have the production plotted in green on semilog paper. And we also have the well count as that changed over time on this unit.

LEGAL EXAMINER BROOKS: Now, you said 20C, and it says 20B.

MR. CAMPBELL: Exhibit 31 in the prefiled.

LEGAL EXAMINER BROOKS: Oh, 31. I was looking at the wrong one. I'm sorry.

TECHNICAL EXAMINER EZEANYIM: And, Mr. Grable, you don't want to tender Exhibit Numbers 29 and 30?

MR. GRABLE: 29 and 30 we are not going to offer. They are withdrawn, in effect. We're just never going to offer them.

TECHNICAL EXAMINER EZEANYIM: You don't want to offer those?

MR. GRABLE: We do not.

TECHNICAL EXAMINER EZEANYIM: Throw them away?

MR. GRABLE: Throw them away.

TECHNICAL EXAMINER EZEANYIM: I hope you don't have any objection to that. Any objection?

MS. MUNDS-DRY: No.

MR. COONEY: No.

TECHNICAL EXAMINER EZEANYIM: Go ahead.

Q. (By Mr. Grable) All right. Going back to Exhibit 31, is the source of the data from this data produced by COG in response to Burnett's subpoena?

A. Well, I suppose in a way it is. I mean they provided data on -- on their wells. I believe we actually pulled this production data off of IHS.

Q. Okay. Go ahead and tell the Examiners what conclusion you reach from the performance of this well with the number of wells drilled in the unit.

A. Well, this unit actually went off production in 2009.

It came on production in 1997, and it produced with one well through the latter part of 1999. When the second well was drilled, you see the jump in production.

The unit produced with two wells and followed a pretty straight-line decline for about two years until the point in time that the third well was drilled in 2002.

So what we've done here is, we have -- we have ignored the production data starting with well three, and -- and so we've only looked at the production data for the two wells on the unit and extrapolated that to see what EUR you would get with two wells, had that well followed the established decline that it had established in 2000 and 2001. That would have resulted in an EUR of 262,000 barrels of oil through the economic life.

We know that this well -- or this unit actually went off production. Nothing has been reported since '09, and it produced only 245,000 barrels, even though for most of its time period either three or four wells were producing.

Q. So what conclusion do you reach from that well's performance in relationship to the number of wells producing on the unit?

A. Well, it appears to me, based upon this data, that two wells would have efficiently and effectively drained this unit.

While we didn't highlight it, we also see some pretty dramatic changes in the decline trend between -- for wells three and four. We didn't highlight it on this particular exhibit, but you can see when well three comes on, that straight-line

decline steepens up. And that's going to occur in 2003, 2004, and 2005. So this (indicating) trend here is steeper than this (indicating) trend.

And again when we go to four wells, we don't have as much data with four wells, and it's a little bit inconclusive. But I think overall, the trend would be even steeper still.

In my opinion, that changing in the decline profile indicates that wells are beginning to interfere with one another, meaning they are competing for the same reserves. So -- we did not observe that with the first and the second well.

So again, my conclusion here is it appears, based upon the production data from this unit, that two wells would have efficiently and effectively drained this 40 acres.

Q. All right. Have you studied and charted the GOR over time of this well as -- of this unit as the number of wells increased?

A. Yes, I have.

Q. And is that shown on Burnett Exhibit 33?

A. It is.

Q. And what trends did you notice during this same period of time from this same unit?

Pardon me. It's Exhibit 32.

A. Yeah, Exhibit 32.

Well, first of all, this graph is a graph of the gas/oil ratio versus cumulative oil production for this unit, 20C.

The GOR data that we've seen up until now has been GOR data on semilog paper. That's -- that's really not appropriate to look at when you're looking at gas/oil ratios.

The proper way is looking at that time on cartesian paper, either gas/oil ratio versus time, and more importantly, versus cumulative oil production.

What we see is -- and the purpose of this is I wanted to see if there was a change in the -- in the GOR profile for this unit during the time period when the unit had two wells versus four wells.

We didn't look at when it was on three wells. We could have. It would have showed the same thing. But for the purpose of the exhibit, I'm concentrating on the two-well time period and the four well.

And what we see is -- so taking that GOR data just during the two-well time period and putting a linear regression, a best-fit line through

that data, you get the -- the red line establishes that GOR trend for the two-well time period.

Then if we move to the four-well time period and we -- we do the same thing, look at the GOR only during that time period and put a linear regression through that data, you can see that there is a much different GOR profile.

In my opinion, that is a result of drilling too many wells on this unit. You increase the GOR versus the cumulative oil production. And as a result, you prematurely deplete the reservoir energy. That would directly result in, over time, a loss or a decrease in ultimate recovery.

Q. In other words, physical waste of producible oil?

A. Yes.

Q. Is this phenomenon you have noted on Exhibit 32 one reason you believe why GOR -- COG's wells produce at a higher average GOR than Burnett's?

A. Yes.

Q. Let's turn now to exhibit -- what has been premarked as Exhibit 33, which is a similar decline trend over time versus number of wells for another Concho unit, this one being Section 20D, 17 South,

30 East.

Would you just quickly tell the Examiners what you plotted here and if you reached similar conclusions as you did with respect to Exhibit 31?

A. Yes. Again, oil rate versus time on semilog paper. Green is oil. We also have the number of wells at any given point in time during the life of this unit.

Again, just like the other one, it appears that there has not been any reported production from this unit since, it looks like, about October/November 2010.

And even then, there was a couple of months that it looks like the unit basically went off production back in late 2009.

But if you look at the two-well time period again and extrapolate that, we get an ultimate recovery of 227,000 barrels for the unit.

The unit ultimately produced -- or at least through when it went off production -- 243,000 barrels. So the two-well EUR would have recovered -- I don't know what that percentage is. It's probably close to 99 percent of -- of the recoverable oil that the unit ended up actually recovering.

And again, I didn't show it on this exhibit. But if you look at the decline profile over the time period when the unit had two wells -- and we have a very nice trend established here, during the time period 2000 and 2001.

Then look at what happens to the decline profile when wells three and wells four come on. It appears to me that we see a steepening decline in the three-well, and especially the four-well time period.

Again, that would indicate interference between the four wells because they would be competing for the same recoverable oil.

Q. Now this graph does show that adding the extra two wells produced 16,000 barrels more oil than you estimated would have been produced with only two wells. Is adding 16,000 barrels of ultimate recovery at the cost of two wells economic or anywhere close to it?

A. No.

Q. Let's turn now and look at Exhibit 34. Is this, again, a depiction of the GOR behavior on this well over time as wells were added -- or on this unit -- as wells were added?

A. Yes, it is.

Q. And do you reach the same conclusions on this exhibit as you did on Exhibit 32?

A. I do. We see a noticeable change in the GOR trend from the two-well time period versus the four-well.

MR. CAMPBELL: Mr. Examiner, could we inquire as to the amount of time we have left?

LEGAL EXAMINER BROOKS: Yes, you may inquire. And the answer is, right now, you have approximately an hour and 15 minutes left.

MR. CAMPBELL: Thank you.

Q. (By Mr. Grable) Well, Mr. Gore, let me just leave it, then, on Exhibit 34.

Do you reach the same conclusions on the increasing GOR as a result of the additional wells added to this unit?

A. Yes.

Q. All right. Let's look at Exhibit 35, quickly, as our third and final of this set of this type of exhibits.

Again, can you explain what you noted here between the two-well indicated ultimate recovery and the actual recovery of four wells and your conclusions?

A. Again, it's a similar graph.

For the two-well time period we would -- based upon that extrapolation over the three years, '98, '99, and 2000, that would indicate an ultimate recovery of 326,000 barrels.

The last reported production on this unit was in -- it looks like March/April/May time period of 2010, so about a year ago. And the total reported production to date from the unit, as of a year ago, was 309,000 barrels, even though we had four wells drilled, and three or four wells were producing over the life of this unit for the majority of the time.

Q. Did you reach the same conclusions on the effect of drilling from two wells to four wells on this unit as you did on the other units that are displayed on Exhibits 31 and 33?

A. I did.

Q. And then turning, finally, to its companion Exhibit 36, displaying the GOR behavior versus cum oil production, do you reach the same conclusions there on Exhibit 36 as you did on Exhibits 34 and 32?

A. Yes.

Q. Okay.

MR. GRABLE: Mr. Examiners, we have also

elected to withdraw Exhibits 37 and 38, which were just -- and 39 and 40, which were just additional wells in this same...

TECHNICAL EXAMINER EZEANYIM: Which ones do you want to withdraw?

MR. GRABLE: 37, 38, 39, and 40 are withdrawn, or more precisely, not offered.

TECHNICAL EXAMINER EZEANYIM: Okay.

MR. GRABLE: So at this time we will offer in evidence Exhibits 28F, G, H, and I, as well as Exhibits 29, 30, 31, 32 -- pardon me -- Exhibits 31, 32, 33, 34, 35, and 36. 29 and 30 were not offered, nor are 37 through 40 or 36 through -- no, 37 through 40.

TECHNICAL EXAMINER EZEANYIM: So you want to offer in evidence 28F, G, H and I, plus 31, 32, 33, 35, and 36?

MR. GRABLE: 31, 32, 33, 34, 35, and 36.

LEGAL EXAMINER BROOKS: Not 32?

MR. GRABLE: Yeah, 32. 31 through 36, inclusive.

TECHNICAL EXAMINER EZEANYIM: Okay. Any objection?

MS. MUNDS-DRY: No objection.

MR. COONEY: No objection.

TECHNICAL EXAMINER EZEANYIM: At this point, Exhibits Number 28F, G, H, and I, plus 31 through 36 will be admitted.

Q. (By Mr. Grable) Now I'll ask you, Mr. Gore, to turn your attention to what has been marked as Burnett Exhibit 41, a four-well -- two-, three-, four-well performance graph from a COG well in Section 19, township 17 South, range 32 East, which is over in what we call the Maljamar area.

Are you familiar with this graph?

A. Yes.

Q. What conclusion, if any, do you draw from this graph?

A. Well, the only purpose of this graph is to -- to point out that we -- we did look at the Maljamar area. And what we were looking for is -- was the change in decline trends, increasing GORs, with a -- either a two-well or a four-well density.

What we found over there is just the way the wells have been drilled, in terms of timing and how quick they have been drilled, we really didn't find any data that we could work with.

This is an example of, you know, you went from two wells to four wells in a very short time period, and we just can't get anything out of the

data.

So the point is, we -- we looked at Maljamar, the timing of the wells being drilled and the quickness of the wells being drilled. The data just didn't lend itself to any sort of interpretation.

Q. Thank you.

MR. GRABLE: Now, Examiners, we're going to go through the other exhibits that are in the second stack you received this morning that aren't in the book, starting with the scatter plot graph.

Have you located that? It should have been the third sheet in the second stack.

TECHNICAL EXAMINER EZEANYIM: These (indicating) ones?

MR. GRABLE: Thank you.

And again I'll represent, I believe, this is a modification of what was offered and admitted into evidence as Concho Exhibit 14.

While I'm attempting to confirm that, I'll walk over here.

It is Concho Exhibit 14.

Q. (By Mr. Grable) Mr. Gore, can you briefly tell the Examiners your understanding of what --

TECHNICAL EXAMINER EZEANYIM: Just a

moment. I haven't gotten that yet.

(Discussion off the record.)

Q. (By Mr. Grable) Mr. Gore, could you tell the Examiners briefly your recollection of what Concho concluded from the data displayed on this Exhibit 14, and what additional information you have added in red up in the upper left corner, and your comments on this exhibit?

A. Well, if I understood their -- their testimony correctly, the conclusion was that they saw no correlation between the productivity of oil and PHI-H. And -- and they indicated that this plot of initial 12-month cum production versus PHI-H, the data is scattered, indicating no correlation.

I think there are several things that we need to know about these data points before we can reach any conclusions. And we don't know those, because they haven't been provided.

Number one, PHI-H is pore volume. What's important here is hydrocarbon pore volume.

We don't have any information regarding saturation. So I think it would be important to know that.

Also, we don't have any indication of where these particular points are in relationship to

the trend. Are they higher on structure or lower? Are they to the east or to the west? So I think that would be important.

Are they on units with four wells, or two wells?

Do these points represent the first well drilled on a unit or the fourth well?

All of those things I think we need to look at before we can conclude that there is no relationship. Because obviously what we want to do is compare apples to apples. And so we don't want to compare first wells and fourth wells or wells high on structure versus wells low on structure or wells with high water saturations or low water saturations.

So that is the problem I have with this exhibit, is there are just too many variables that COG hasn't provided us in order for us to determine is that, in fact, a correct conclusion?

Q. And if these other factors were known and were comparable, such as structural location, first/fourth-well type of stimulation, oil-saturated PHI-H versus gross PHI-H, would you expect to see a relationship between oil-saturated PHI-H and cumulative production?

A. I would expect to see a correlation there.

Q. All right.

Now let's turn to Exhibit 41B which, again, I believe to be a Burnett markup of what was Concho Exhibit 23.

LEGAL EXAMINER BROOKS: Okay. Now, is this (indicating) Exhibit 42? It has a 42 down there, but it's not --

MR. GRABLE: That was our production number. It was 14.

LEGAL EXAMINER BROOKS: Okay. So COG Exhibit 14 is -- are you marking yours with --

MR. GRABLE: It's 41 alpha.

LEGAL EXAMINER BROOKS: 41A.

MR. GRABLE: They're going to be inserted after Exhibit 41 in our notebook.

LEGAL EXAMINER BROOKS: Okay.

MR. GRABLE: And the next one I believe -- 23. Yes, that's it.

LEGAL EXAMINER BROOKS: 23.

MR. GRABLE: Okay. We ask this next one be marked Burnett Exhibit 41B, bravo. And it's a markup of Concho Exhibit 23.

Q. (By Mr. Grable) Can you tell the Examiners, as quickly as you can, what you have

observed from the Concho exhibit and what different conclusions you reach from the data displayed on that exhibit?

A. Yes. This exhibit, Concho -- their conclusion was there was an incremental recovery of 247,000 barrels due to 10-acre infill drilling. And it was based upon these two, what I would refer to as decline profiles, which would be some sort of normalized curve from other data.

A couple of problems. Number one, normalized data is applicable when you don't have information on a particular well, if you have insufficient production data on a well, or a unit, to make an extrapolation.

If you do, I don't see the validity in using a normalized curve from other data, when you have sufficient data on your well or your unit from which to make that extrapolation. So that's problem number one.

But also, when I look at the two-well time period and the four-well time period, if you are just trying to extrapolate when this unit was producing on two wells, while the date is pretty erratic, it starts to flatten out right in here (indicating). That, to me, looks like a fairly good

trend, even though we do acknowledge some erratic production.

But I could see putting a straight-line decline through that data, because it's honoring the actual data from the well, not other wells, and extrapolating that.

The same with the four-well time period. Let's look at that production. It's going to be the last -- roughly, it looks like a year worth of data.

This, to me -- we have this low spike here (indicating), which is probably some sort of operational issue, I don't know for sure. But without that, I mean we see a pretty good trend here of declining oil production over that 12-month time period. And that looks to be a pretty straight line.

And if you extrapolate that, what you see is a change in the slope, indicating interference. And you're not going to get anywhere close to an incremental recovery, if you get any incremental recovery, based upon those two decline profiles.

Q. All right. Thank you, Mr. Gore.

Let's now go to what we asked be marked Exhibit 41C, or Charlie, which I believe was Concho Exhibit 32 as the underlying. I believe it to be

Exhibit 32.

MR. GRABLE: Well, we'll try to find it. It's somewhere in the record, but I believe it to be Exhibit 32.

Q. (By Mr. Grable) Would you again tell the Examiners, from this exhibit, how you differ from the opinions expressed on it by the Concho witness and why?

A. This particular production graph for 30 East, 15G, I note that you have got several well-established long decline trends.

This well -- or I'm sorry -- this unit produced for approximately five years with two wells. This time period here is two wells.

Well, when we get out after about a year to a year and a half, maybe -- really, probably a year -- this is a very straight exponential decline. It fits the data very well, and we can extrapolate that to an EUR.

Then if we look, Concho -- well, yeah, it would have been Concho. Well, I'm assuming it would have been Concho then that would have drilled that well. I forget the timing of their involvement. But a third well on the unit was drilled in late 2007.

And so we have almost two years, probably a good 18 months, of three-well data. We see two peaks during this time period. That's probably some operational change.

But when we go up, we've got a good probably six months -- six to nine months of decline. And it looks -- again, a very nice straight-line trend.

But note that the trend is much steeper than what we had seen with two wells.

Q. What do you see on the four-well decline?

A. In mid '09 the fourth well on the unit is drilled. We have about 18 months -- well, not quite that long, maybe 14 months of data once the fourth well is drilled. Production goes up, as you would expect. But then immediately the well begins to decline.

And if you compare the four-well trend, it's steeper than the three-well trend, which is much steeper than the two-well trend.

Q. And what conclusion do you reach from those steepening decline trends as wells are added?

A. To me, this indicates the third and the fourth wells are competing for reserves from the original two wells, indicating well interference,

and that the wells would be draining more than 10 acres.

Q. All right.

I'll now ask you to turn to what we would ask to be marked as Exhibit 41E, as in echo.

TECHNICAL EXAMINER EZEANYIM: This one is 41E.

LEGAL EXAMINER BROOKS: This is 41C.

MR. GRABLE: Okay. Then 41D, then, delta. Pardon me.

LEGAL EXAMINER BROOKS: That's --

MR. GRABLE: Which I believe is on the base of Concho Exhibit 31.

Q. (By Mr. Grable) Mr. Gore, let me ask you just to comment quickly. Do you reach essentially the same conclusion here as to the effect of adding additional wells on the decline curve on this -- on this Concho unit?

A. Yes, I do.

Q. And does adding wells three and four steepen the decline?

A. It steepens the decline, again an indication that the wells are competing for the same recoverable oil.

Q. All right. Now let's look at what

is Exhibit 41E, echo, which I believe is on the base of Concho Exhibit 24.

I will ask you: Do you agree with the conclusion reached by Concho that adding four wells -- wells three and four results in an incremental recovery of 232,000 barrels as claimed by Concho?

A. Yes, I disagree.

Q. And why do you disagree?

A. Well, number one, for the four-well time period, which is going to be about the last nine months, this -- the actual data looks to be a pretty straight exponential decline, which is going to be much different than a normalized curve from other well data.

The other thing is, for the two-well time period, there's simply not enough data in there to draw any conclusion. I can't put a decline trend on there, and I don't think anyone reasonably can.

So in my opinion, there's no way you can reach a conclusion that there's incremental reserves because you just don't have the data to do that.

Q. All right. Now finally, on these insert exhibits, we'll turn to what I will be asking to be marked as Exhibit 41F for identification.

And, frankly, I haven't located the underlying Concho exhibit, but I'll try to do so during the remainder of your testimony.

Oh, it's Apache, pardon me, Apache Exhibit 6. That's why I couldn't find it in Concho.

Do you believe this is a valid two-well versus four-well comparison? And if not, why not?

A. I don't believe it's valid. We went back and checked the stimulations that were reported on these four wells. And you can see that the first two wells had stimulations that were less than half the size or approximately half the size that the last two wells did.

So I think you -- those much larger frac jobs, slickwater frac jobs, would, in my opinion, account for this big jump in production. So I don't think you would be comparing apples to apples here.

You would need to know what would these wells, the three and the four wells, do with stimulations like the first two wells or vice versa before you could reach any conclusion.

Q. All right. We're about to move to our final two topics, quickly.

So at this point, I'm going to offer into evidence Exhibits 41, 41A, B, C, D, E and F.

TECHNICAL EXAMINER EZEANYIM: Any objections?

MS. MUNDS-DRY: No objection.

MR. COONEY: No objection.

TECHNICAL EXAMINER EZEANYIM: Okay. At this point, Exhibits Number 41 and 41A through 41F will be admitted.

Q. (By Mr. Grable) Let me ask you to refer --

MR. GRABLE: Now we are back in the book of our prefiled exhibits, Examiners.

Q. (By Mr. Grable) -- at Exhibit 42. I hope everybody recognizes the base by now, the color code of the tracks by Burnett/Hudson.

MR. GRABLE: Have you found it? 42 is in your book.

TECHNICAL EXAMINER EZEANYIM: Yes, it is. I've got it.

Q. (By Mr. Grable) Now, here I note that the well code colors are different than the earlier display, which I believe was our Exhibit 3.

How are the wells color coded on this graph, and what conclusions do you draw from the display of color on the graph?

A. Each well is labeled with a color that

corresponds to its cumulative GOR as of January 1st of this year.

So the wells in the darkest green would have the lowest GORs, proceeding up to the wells with the highest GORs are going to have the purple color.

Q. And where do you find most of the high GOR wells to be located?

A. The high GOR wells are going to be located on the COG acreage where they have drilled on 10-acre density.

Q. And how do the Burnett wells appear, in general, on this chart?

A. The Burnett wells, in general, have a GOR between a thousand and 2,000. They're in the acreage that's shaded in yellow.

But you can see that, you know, the lighter the color, the green colors are the lower GORs. And this is the area that Mr. Jacoby discussed the Harvard Federal having those higher GORs right there (indicating). So...

Q. That is a Concho lease within and surrounded by Burnett leases?

A. Correct.

Q. All right. And again, in the areas

between the east boundary of the Burnett Loco Hills properties extending over to the Maljamar properties, where it's more or less on 20 acres, does that appear to be that those GORs are also, on average, substantially lower than over here in the western portion where it's drilled down pretty much to 10-acre spacing?

A. That's correct.

When you look at the Concho acreage that hasn't been as densely developed, you see much lower producing gas/oil ratios.

Q. And then going further east, east of the Maljamar acreage where there are some areas over here that had been drilled down to 10 acres, but not consistently to 10 acres, what conclusions do you draw over there?

A. Again, you see a mixture. You see very high and very low GORs associated with, in my opinion, the density of development.

Q. And then in your opinion, is there a relationship in this reservoir in these pools between the density of drilling and the resulting producing GORs of the wells?

A. Yes.

Q. And what is that relationship?

A. That relationship is not only based on this map, but the other GOR data that we've seen, that as you drill wells three and wells four on a unit, you see a change in the GOR profile with -- with the GOR trend increasing much more steeply than under either one or two wells.

Q. And do you have an opinion as to whether or not this increase in GOR with increased density of development will lead to loss of producible reserves from these reservoirs?

A. I do.

Q. What is that opinion?

A. I think everyone agrees it's a solution gas drive reservoir. If you deplete that energy prematurely the result is going to be lower ultimate recoveries and physical waste.

Q. And do you believe, or do you have an opinion, as to whether or not the commission should -- or the division should remain with the state-wide rule of GOR of 2,000 to 1, as proposed by Burnett, or abandon any GOR rule, as proposed by Concho?

A. I think if -- if you're interested in maximizing recovery, preventing waste, protecting correlative rights, there has to be a gas/oil ratio

limit in this field.

Q. Now, I recall Mr. Cooney asked Mr. Jacoby a question or two on the nine-well comparison up here in the Harvard Federal area that showed that Burnett's wells were producing at a GOR of around 2,500, whereas I think the Concho wells were up to 7,000 or so.

But does the mere fact that a unit is producing at a GOR slightly above 2,000 mean that the well is -- that the unit is violating the allowable rule, even if its GOR rule is 2,000 to 1?

Does it depend on the oil production? If the unit is producing at less than top oil allowable, but at slightly greater than 2,000 to 1, is it still within the rules?

A. No.

Q. All right. Let's say there's a unit that's producing at -- let's say allowable is 187 barrels a day and it's producing at 150 barrels a day, but it's producing at a GOR of 2,100. Would it still be within allowable?

MR. COONEY: Mr. Hearing Officer, I hesitate to object, but isn't this a legal issue to be determined by looking at the rules, as opposed to this witness' opinion of what the rules might say?

MR. GRABLE: It's an application of the rules to fact.

LEGAL EXAMINER BROOKS: Okay. Well, I think we should have the rule in front of us.

Do you happen to know the number?

MR. GRABLE: No. I will come back to that. I don't have it, and I don't want to waste time.

(Discussion off the record.)

LEGAL EXAMINER BROOKS: Okay.

MR. GRABLE: My point -- and maybe it is a legal argument. But I was going to use this witness, since we have a couple of exhibits on allowable calculations. But my understanding of the way the rules work, that if you have got an oil limit of 80 barrels a day and a GOR of 2,000 to 1 your gas limit's 160.

LEGAL EXAMINER BROOKS: Well, I'm going to overrule the objection on the basis that it's a technical rule, so it's appropriate to have technical testimony to us to interpret it. But I do think we need to have the rule in front of us so we can see exactly what language he's interpreting.

MR. GRABLE: I'll see if I can find it.

LEGAL EXAMINER BROOKS: Okay. It is

part -- or Title 20 -- no, Part 20, Section 8 -- Section 12. Part 20, Section 12, 19.15.20.12 of the code.

Q. (By Mr. Grable) Mr. Gore, let me ask it simply this way.

If a unit is producing within its oil allowable and below the gas limit for the unit, even though it's producing at a GOR greater than the GOR, is that unit producing lawfully?

A. I believe it is, yes, if I understand your question correctly.

TECHNICAL EXAMINER EZEANYIM: Can you repeat that question?

Q. (By Mr. Grable) Yes. If a unit is producing oil in an amount below the oil -- at or below the oil allowable, which here in my hypothetical is 100 barrels -- or 80 barrels -- and is producing gas at or below the gas limit, which in mine is 2,000 to 1 on 80 barrels is 160 MCF per day.

So if you have a well that's producing at 3,000 to 1, but only producing 40 barrels, so it would be producing 40 barrels of oil and 120 MCF of gas at a ratio of 3,000 cubic feet per barrel, is that well producing lawfully within the rules?

A. Well, in that situation you would have a

new oil allowable which would be three -- or in your example, I think, 2,000 divided by 3,000 times 80.

Q. Yes. Which is 60.

A. Which is 60. So if it's producing 30 barrels -- if it's producing below 60, then it would be producing lawfully.

I think I understood that correctly.

Q. So -- and that's background for asking: If -- if Mr. Cooney's question to Mr. Jacoby was that the mere fact that the Burnett wells were producing at a ratio slightly above 2,000, does not automatically mean they're producing unlawfully?

A. That is correct.

Q. Okay.

Now, I don't want to spend much time at all on these next exhibits, because they go to the same point.

But Exhibit 43, do you have an example here of how to calculate an oil allowable for a unit that's producing at a gas/oil ratio in excess of the producing gas/oil ratio for the field?

A. I do.

Q. Could you explain that to the Examiners?

A. Yeah. Item Number 1 in our example -- in our situation, 80 barrels a day is the top oil

allowable, and the GOR limit is 2,000 to 1. Then the gas limit would be 160 MCF per day.

If, in this example, a well had a 4,000 to 1 GOR, then the top allowable no longer is 80 barrels a day, but is rather 80 times the ratio of 2,000 to 4,000, so it would be half of 80, or 40 barrels a day.

Q. And that's another example of -- besides my hypothetical question that I asked you about in my previous question, is it not?

A. That's correct.

Q. All right. Now, is Exhibit 44 applying that to how one would calculate overproduction for a well that is producing at -- or a unit that's producing at a high GOR?

A. Yes.

Q. And then let me refer you to Exhibit 43.

Do you recall the testimony of COG in the earlier hearing on how they computed their overproduction?

A. Exhibit 43 or 45?

Q. 45, pardon me.

But if Concho or any operator simply calculated their overproduction on oil based upon 80 barrels a day and gas based upon 160 MCF per day

without regard to the producing GOR, would they be doing it correctly?

A. No, they wouldn't.

Q. And have you looked at how Burnett would calculate its overproduction and COG's overproduction according to the way you have described the rule should work under Exhibits 43 and 44?

MR. COONEY: Mr. Hearing Officer, again I don't mean to be obstreperous, but I didn't think we were going into oil production.

MR. GRABLE: I am doing this only for method, not for numbers. Because if we get into calculating, and asking the operators to calculate overproduction, I think the method by which an operator calculates it is important --

LEGAL EXAMINER BROOKS: Well --

MR. GRABLE: -- if they're using different methods than --

LEGAL EXAMINER BROOKS: -- let me -- let me interrupt here, because I -- these are fairly complicated rules, and I haven't had occasion to deal with them very often, so I'm not following what he is saying in the rules.

And I think if we're going to talk about

the rules we should talk about the specific rules and what the particular provision says.

MR. GRABLE: All right. We will do that, and I think that may be legal argument. His testimony is in. I will leave -- I think I'm going to just withdraw an offer of -- well, I haven't offered them yet, but I am not going to offer 45 or 46 or 47 at this point. Nor am I going to offer 48 or 49.

So I do want to offer at this point --

Mr. Ezeanyim, what was the last exhibit that was admitted?

TECHNICAL EXAMINER EZEANYIM: It was -- it would be Number 41A through F. 41, then 41A through F.

MR. GRABLE: Okay. I am going to offer Exhibits 42, 43, and 44. And I will withdraw and not offer 45, 46, 47, 48, 49, and 50.

TECHNICAL EXAMINER EZEANYIM: So you only want to admit 42, 43, and 44?

MR. GRABLE: Yes. Because the others, 46, 47, 48, 49, and 50 go to calculating the amounts -- they go to the results, not the methods. And I'm not going to offer those at this time.

TECHNICAL EXAMINER EZEANYIM: Okay. Any

objection on those three?

MS. MUNDS-DRY: No objection.

MR. COONEY: No objection.

TECHNICAL EXAMINER EZEANYIM: Okay. Exhibits 42, 43, and 44 will be admitted.

Okay. You may proceed, Mr. Grable.

MR. GRABLE: Let me go with what has been marked as Exhibits 50 and 51.

TECHNICAL EXAMINER EZEANYIM: No, you took off 50.

MR. GRABLE: Okay. I want to put 50 back in. I'm sorry. 49 is the last one I do not offer. 50 and 51 I do want to talk about very briefly and offer.

TECHNICAL EXAMINER EZEANYIM: Okay.

Q. (By Mr. Grable) Mr. Gore, do you see Exhibit 50, the simple schematic diagram of a 40-acre unit with four drilling pads?

A. Yes, I do.

Q. And have you computed the amount of acreage disturbed or consumed for surface use with four drilling pads --

A. I have.

Q. -- in a 40-acre unit?

What percentage of the unit is that?

A. Yeah. That would be -- for four locations, a total of 12 acres, or 30 percent of the unit.

Q. And with a drilling program of two drill pads, two wells per 40, is that cut in half to 6 acres, or 15 percent?

A. It is.

Q. Are you aware that there are threatened or endangered species in this area, specifically the lesser prairie chicken and the desert sand lizard, which are proposed for addition to the endangered or threatened species list?

A. I am aware of that.

Q. And are you aware that surface disturbance or use by oil operators is a matter of contention with the environmental authorities in this area, specifically with respect to those two species?

A. That is my understanding.

Q. And what effect on environmental disturbance and surface use would be caused by four wells per 40 versus two wells per 40?

A. You would disturb less land, obviously, with two wells per 40 than you would with four wells per 40.

Q. Mr. Gore, let me ask you to summarize now

on the competing special field rule proposals between Burnett and Hudson on the one hand, and COG, Apache, Premier, and others who support those on the other hand.

With respect to, first, the allowable issue -- we haven't talked about that much. Have you done a calculation of -- based upon the best wells rule so far and the one-year balancing done by Burnett, to determine what top allowable would be necessary to accommodate production -- oil production at or near capacity over a 12-year period?

A. Yes.

Q. 12-month period, pardon me.

A. 12 months, that's correct.

Q. And do you believe that 187 barrels a day with annual averaging would be adequate to accommodate, without restriction, oil production of the better wells in the field?

A. I believe it would, yes.

Q. Do you believe a 300-barrel-a-day allowable is necessary, even for the very best wells in the field, if we have annual averaging?

A. No, I don't.

Q. And would the effect of having a higher

oil allowable with a gas/oil ratio be to increase the gas limit?

A. It would increase the gas limit.

Q. So with a 300-barrel-a-day top oil allowable and a 2,000 to 1 gas limit, are you -- a 40-acre unit would have a 600-MCF-a-day allowable?

A. It would.

Q. And with 187 barrels a day and 2,000 to 1, the gas limit would be double that, double 187?

A. Yes.

Q. Which is 374, I believe?

A. Right.

Q. And what effect would that have on restricting high ratio gas wells -- gas/oil wells in the field, having a lower gas limit?

A. Having a lower gas limit would restrict the oil allowable on those wells that are high ratio.

Q. Okay. And thereby, also restrict the total amount of gas produced from the well?

A. Correct.

Q. And thereby -- is restricting the high ratio wells preferentially to low ratio wells, in your opinion, beneficial for the reservoir?

A. Since this is a solution gas drive

reservoir, we need to conserve the energy. And so it would be beneficial to those wells drilled on 20 acres.

Q. In your -- do you have an opinion with respect to whether 187 barrels a day or 300 barrels a day is appropriate as an oil limit for this field?

A. Well, based upon production data that we've looked at, and the peak production data, it -- it looks like 187 barrels a day would -- would be sufficient to accommodate the new drilling in the field with the new rates, the horizontal wells, and balancing that out over a year. So I believe the 187 would be sufficient to accomplish that.

Q. All right.

Now turning to the debate over whether or not a GOR limit is indicated, and if so what your limit -- should it be, from all the work you have done in this field, what is your opinion with respect to whether or not a producing GOR rule is indicated as appropriate for this field to prevent waste, and if so, what that GOR should be?

A. Based upon my study, it does appear that as areas are more densely drilled the gas/oil ratio goes up dramatically, the trend of the gas/oil ratio. And -- and that's not a good thing in a

solution gas drive reservoir.

So I think it demonstrates that a -- a gas/oil ratio limit is necessary to provide for the efficient and effective drainage of the field and protect correlative rights and prevent waste.

Q. Finally, turning to the density rule, I want to ask you, over this rather large consolidated area Burnett has proposed, let's ask it this way.

If you were kind of starting fresh -- well, we have proposed -- Burnett has proposed a density rule of two wells per 40, versus Concho staying with the state-wide rule of four wells per 40. And Burnett has also proposed that all existing wells before the final order's effective date be grandfathered.

As between those two proposals, which do you think is better for the prevention of waste in this field?

A. The Burnett proposal.

Q. For the reasons you've testified with respect to the earlier exhibits in your testimony?

A. Yes.

Q. Now, if there is -- we're not starting from fresh, and recognizing that the western part of this area is already largely developed, at least on

the Concho properties on 40 acres, would Burnett have an alternate proposal, hearing the testimony that we have heard from Concho, Apache, and Premier, with respect to perhaps dividing this consolidated area in two and having 20 acres effective in some portion and 10 acres effective in another portion?

A. Well, I think as I stated earlier, most of the field to the west is already drilled up on 10 acres, and we cannot undo that.

There -- there is two areas, primarily in the field, that have yet to be drilled up on 10 acres, so it's not too late there.

And so if the commission wanted to adopt an alternative proposal, then at a minimum, the areas of the field that are still going to be developed, that should be on the 20-acre density with -- with the GOR limit, because it's not too late there.

MR. GRABLE: Examiners, not to be confusing, we may, when we close, amend our proposal to chop the consolidated area in two along the west boundary of Maljamar, that includes some of these other undeveloped sections, and propose the 20-acre density on these undeveloped sections and let the rest of it stay on 10, given the state of

development.

I just wanted to ask this witness about that, so if we make that proposal in our closing, it's not a surprise to everybody.

Thank you, Mr. Examiners.

And I pass the witness.

I need to offer Exhibits 50 and 51.

MR. COONEY: No objection.

MS. MUNDS-DRY: No objection.

TECHNICAL EXAMINER EZEANYIM: Okay. Exhibits 50 and 51 will be admitted.

At this point, let's take a break before we cross -- cross, right?

MS. MUNDS-DRY: Thank you.

LEGAL EXAMINER BROOKS: Okay. Pass the witness at 3:45.

(A recess was taken from 3:47 p.m. to 4:04 p.m.)

TECHNICAL EXAMINER EZEANYIM: Let us go back onto the record.

Mr. Grable, have you passed the witness?

MR. GRABLE: I have passed the witness.

TECHNICAL EXAMINER EZEANYIM: Okay.

Ms. Munds-Dry?

MS. MUNDS-DRY: Thank you, Mr. Ezeanyim.

EXAMINATION

BY MS. MUNDS-DRY:

Q. Good afternoon, Mr. Gore.

A. Hello.

Q. Let's go -- start at the beginning, how about that? Let's go to Exhibit 17.

A. (Witness complies.)

Q. As I understand your testimony, you explained the whole suite of logs that Burnett does in its well. Do you know if it has run these same set of logs on all 85 or 86, however many it has in this application?

A. All of the open-hole logs that Burnett has, they have gone through the same analysis, yes.

Q. And let me make sure I understand your answer. You say "all the open-hole logs."

Has Burnett run open-hole logs on all of its 80-plus wells?

A. I believe so.

Q. Do you know what costs are for running that whole suite of logs?

A. No, ma'am.

Q. Does Burnett collect any pressure data?

A. No.

Q. One thing I didn't see here, and I

wonder -- I just don't know if it's an exhibit or if it's not shown here. In this log are the perforations shown?

A. I don't -- well, I would need a bigger section to see. Generally, I would think they would be on here.

And just so we're clear, these are the log analysis results, so these aren't the well logs themselves that were run in this well but, rather, the interpretation of those in a log format.

Q. Okay. I understand that. I just wondered. I couldn't tell, really -- it's really more of a question -- it's so condensed that I can't see if the perforations are on there or not. And I wondered if you could point that out to me if they were on there.

A. I don't see them, but I probably would need to look at a better scale.

Q. Okay.

Let's go to Exhibit 21, Mr. Gore.

A. (Witness complies.)

Q. I don't recall from your testimony. Was the formation volume factor that you show here, 1.29 -- I believe your testimony is that you got that from Concho, that number. Is that correct?

A. Two sources.
Q. Okay.
A. One, that is what Concho used.
Q. Uh-huh.
A. And then I went through some calculations, some correlations, and confirmed that 1.29 was a reasonable value, so I confirmed the Concho number.
Q. So you don't disagree with using that 1.29 number?
A. No, I don't.
Q. Actually, before we leave that side, you said -- I believe your testimony was something to the effect that you -- you were a little uncertain as to what the recovery factor should be when you were first analyzing this area. Is that correct?
A. Well, that's not exactly correct.
Q. What -- I think you said it was a little hard for you to determine what the recovery factor was, so you ran a Turner calculation to determine that?
A. I don't think that's what I have testified.
Q. Okay.
A. I knew going in, a solution gas drive reservoir should have a range of recovery factors

from 7 or 8 percent up to -- 15 is probably getting close, very close, to the upper end.

Because we know what sort of reservoir this is, low perm, low porosity, the -- in fact, you know, 10 years ago or more, this probably wouldn't have even been considered a reservoir.

Q. True.

A. But knowing those factors, you know, my -- my inclination was to -- to think that I'm going to be on the lower end of the range that I would expect for solution gas.

And then I went through some calculations to see what the recovery factor would calculate to be, and it confirmed my initial impressions. 10 percent is probably in the lower half of the range, and I calculated that 10 percent would be the appropriate value. So that's kind of how I came up with it.

Q. Are you aware of any other operators that use a recovery factor as low as 7 percent in this Yeso shelf?

A. No.

Q. Do you know what other operators use as a recovery factor in this Yeso shelf?

A. No, I don't.

Q. Would it surprise you to learn that most use 15 percent?

A. I guess if most of those are public companies, then that would not surprise me.

Q. Mr. Gore, if we could go to Exhibit Number 24.

A. (Witness complies.)

Q. If I understand this graph correctly, 11 wells went into your graphic representation here?

A. Yes.

Q. And this is for Blinebry producers?

A. Correct.

Q. This is -- 11 wells is 1 percent of the wells that Concho used for its range calculations, do you agree, approximately?

A. I don't know what Concho used, as far as the total number of wells. I haven't been provided that data.

Q. Were you here and present for the testimony of Mr. Reyes?

A. Yes.

Q. And did you hear his testimony about the approximately 12- to 1,600 wells that they have in their inventory?

A. Yes.

Q. So 11 into 1,200 is approximately 1 percent?

A. If you did that math that would be 1 percent.

Q. Would you also agree with me that these drainage areas would depend largely on your oil in place numbers, your volumetrics? That if your oil in place numbers went up or down, that would affect your drainage calculations?

A. Yes. But taking a step back, the oil in place is a result of the porosity, the saturation, that sort -- the EUR, so it would change.

Q. And just to be clear, these are volumetrics on your -- on Burnett wells only?

A. That is correct.

Q. And I'm curious. You show a recovery factor of 10 percent, and you give a chart for that and a recovery factor of 13 percent. But you have no change in the percentage of drainage for the -- well for any of them, for drainage over 15 acres or under 15 acres.

Can you explain why there is no change, even though the recovery factor has changed?

A. I'm not sure I understand your question.

Q. Okay. Well, you use a recovery factor of

10 percent.

A. Okay.

Q. And you have -- you show a drainage of greater than 15 acres is 91 percent of the 11 wells?

A. Yes.

Q. When you go to a recovery factor of 13 percent, you show the same percentage.

A. Yes.

Q. Why is there no change?

A. If you look at the table, which is the next exhibit, and you compare the drainage area calculations for the 11 wells, there's only one well in either circumstance that calculates below 15 acres. So that would be the same percentage.

Q. Okay.

Now, you do show here that there are 9 percent of your wells for both the 10 percent recovery factor and 13 percent recovery factor that do produce less than 15 acres?

A. Yes.

Q. And if you go to a recovery factor of 15 percent you have 18 percent that produce less than 15 acres?

A. Correct.

Q. And so those are reserves that are left in

the ground?

A. No.

Q. How do you figure?

A. Well, the reserves are in the ground and they can be recovered through getting a density exception to drill the wells in the areas where you think there is still sufficient recoverable oil to go drill economically, so they're not left in the ground. They are in the ground ready to be produced once a well is drilled.

Q. But under what Burnett has proposed, two wells per 40, those reserves would be left in the ground, correct?

A. I don't think you can make that assumption, because everyone still has the option to drill those exception wells when needed. So I don't think you can make that statement.

Q. Mr. Gore, have you ever participated in an application to get a density exception with the OCD?

A. No, I haven't.

Q. So you don't know whether that's an easy or a difficult process?

A. I do not.

Q. Under the existing rules you can choose to drill however many wells you want, up to four. Is

that correct?

A. The existing rules do give you that option.

Q. If we could please go to 25, please, Mr. Gore.

LEGAL EXAMINER BROOKS: I'm sorry?

MS. MUNDS-DRY: Exhibit Number 25.

LEGAL EXAMINER BROOKS: 25.

Q. (By Ms. Munds-Dry) This shows the drainage area calculations for Blinebry producers. And it shows here you get some pretty big drainage numbers towards the bottom of the table, if I am reading that correctly.

A. You do.

Q. Under any of the recovery factor percentages you use?

A. That's correct.

Q. Some of these would argue that you need maybe only one well per a spacing unit.

A. In those isolated cases, that would probably be correct.

Q. In fact, if we look at the Jackson A-37, you see a recovery factor of 10 percent. It shows a drainage of 73 acres. So arguably, you would need -- you would need one per 80?

A. Correct.

Q. Do you know -- Mr. Gore, I don't know if you know this. If -- in any of these wells, if a -- say, for example, let's pick one -- Gissler B-59 -- whether a second well was drilled in that spacing unit?

A. I do not know off the top of my head.

Q. Is there a way that we can find that out?

A. I am sure there is.

Q. Is that something that you or someone from Burnett can provide to us?

MR. GRABLE: We could probably get that answer from Mr. Jacoby.

MS. MUNDS-DRY: Mr. Jacoby might be our man to answer that?

MR. GRABLE: Yes. Which unit was that?

MS. MUNDS-DRY: Gissler B-59.

Q. (By Ms. Munds-Dry) While they're looking for that, Mr. Gore, if we can go on with Exhibit 25A, please.

A. Okay.

Q. Now in your curve that you built here using a 10 percent recovery factor, why did you use a 10 percent here rather than a 13 or 15 percent recovery factor?

A. Well, the -- the recovery factor doesn't have anything to do with the curve. But in the drainage calculations for this well, I use a 10 percent recovery factor because I think that is what the data indicates is probably the most realistic recovery factor. The curve just represents the EUR.

Q. Well, now, would you agree with me that if the EUR goes up or down that would change your drainage curve here?

A. Absolutely.

Q. Also on that note, with respect to these drainage exhibits, I assume these drainage calculations are based on what obviously can be seen in the log. You can't extrapolate out beyond what you can't see, in other words.

A. The log analysis is based upon the data that you acquire from the logs. That radius of investigation is probably anywhere from 24 to 36 inches.

The EUR from the well is obviously over the area that that well is recovering from. So it would see out, but the log data is obviously limited to the logging tool itself.

Q. Okay. On Exhibit Number 26, Mr. Gore, you

have done the same process for the Paddock for Burnett's wells. It's 37 at this time, I believe.

A. Yes, ma'am.

Q. Now, this shows significantly more wells that drain less than 15 acres. If we look, for example, at 15 percent, you show that 63 percent of Burnett's wells drain less than 15 acres.

A. Have a drainage area of less than 15 acres. That's correct.

Q. Now, doesn't this support 10-acre development?

A. I don't think it does when you -- when you take into account that you are also developing the Blinebry together. So you would really need to look at those together.

And I believe that -- so you're really looking at 82 percent -- I'm sorry -- 63 percent less than 15, and 18 percent less than 15.

So when you average those numbers out, you are -- I think you're still going to be greater than 50 percent on -- on wells that would drain greater than 15 acres.

Q. So that's, by your calculation -- I'll trust your math, because I'm a lawyer and I don't -- I won't try to guess with you on that.

But that's still 50 percent that you would not be able to develop if you get two wells per 40?

A. And if you drill those wells, and once you've got your performance data and your logging data, and you went through the similar calculations that would suggest there is still recoverable oil on that unit, then Burnett or anyone -- what I would recommend is you then go in for an exception to drill those additional wells to recover that oil that the two wells would not be recovering.

Q. Okay. So Burnett apparently, from what you're saying, is okay with having to seek an exception every time it -- and apparently imposing that on all the other operators to seek an exception, rather than the statewide rule now. Isn't that what you're suggesting?

A. No, not exactly. What I'm saying is a large percentage of the wells that we have analyzed indicate drainage areas greater than 15 acres, so that is where the development should start.

And you drill your wells, you evaluate the performance of those wells, and you see what ultimate recovery is going to be. And as you get that data, you -- you update your studies. And if you reach the conclusion that those wells are not

recovering everything, then you go and request that exception.

But it's -- you know, you have to start big and then evaluate before you go small, in my opinion. Otherwise, you're going to drill a bunch of unnecessary wells and produce at high GORs and lower your ultimate recovery.

So you really have to analyze what your wells are telling you before you go in and -- and just do a -- a denser spacing.

Q. And that's assuming that an operator doesn't analyze the drainage in that spacing unit before they decide to drill a third and fourth well, correct? That's assuming that they just drill four on a 40 without any analyzation of -- is that a word? -- whether analyzing -- analyzing whether they need more wells to drain that 40?

A. I would certainly think that any prudent operator is going to analyze a situation before they go out and drill wells that they don't know if they need or not.

Q. We would both hope so, correct?

A. I would certainly hope so.

Q. Also on Exhibit 27, Mr. Gore, you are comparing how, I believe, Concho and Burnett

calculate their drainage. And you were saying Concho -- you had too many unknowns with how to exactly do Concho's calculations, correct?

A. I can't do Concho's calculations. I don't have any knowns, so everything is unknown.

Q. And did you hear Mr. Reyes' testimony that the core analysis and the logs do go into their calculations?

A. Well, my recollection is he thought they did. I don't believe he knew exactly what went into the calculations.

Q. Okay. Well, I guess the record will reflect what the record will reflect.

A. Absolutely.

Q. If we could go to Exhibit 28, please, Mr. Gore. I want to make sure I understand this.

In your curve here, you show a drainage area of 20 acres on a 10 percent recovery factor for this Paddock Jackson A-26 well.

A. I'm sorry, I'm not with you yet. Which exhibit?

Q. Oh, okay. Sorry. Exhibit 28A. It's the log analysis example for the Paddock member. Do you have that now?

A. Yes.

Q. And again, I'm not good with numbers, but it looks to me like this is a 6,000 to 1 GOR in this well?

A. Based on the EURs?

Q. Yes.

A. Well, the -- based on --

Q. Well it shows here, if you look -- I think you have your oil -- it shows your oil numbers on the right in the green, is that correct, and your gas on the left?

A. Yes.

Q. So if you do your gas/oil ratio, it looks like 6,000 to 1?

A. You're talking about the two EUR numbers, correct?

Q. No. Just looking at your curve here between your gas production and your oil production.

A. Okay. Oh, I'm with you.

It looks like we're at about -- a little over 300 barrels per month.

The gas is about 1,900 MCF for the month.

That would be about 6,000.

Q. And it looks like you used a relatively flat GOR in this curve, pretty consistent in your forecast?

A. Well, typically when you forecast gas, it's usually a ratio based on the history. So typically, your gas forecast will mirror your oil forecast.

So what we're doing is forecasting out that same GOR into the future.

Q. Now, what about taking into account this kind of reservoir, which I understand we all agree it a solution gas drive reservoir. Shouldn't you see the GOR going up?

A. It could go up. Generically speaking, a solution gas drive ratio, or solution gas drive reservoir, you will see a slight increase in the GOR over time to some point, at which it will actually flatten out and then decline. So that's what happens in -- in theory.

Then we would have to look at the PVT data on this well, to the extent we had it, to see where, in that cycle, this particular well was. It may already be to the point that you should be producing at a flat or even at a declining GOR.

Q. So this is a -- I don't want to put words in your mouth -- but I think you said sort of a generic forecast.

A. No. The -- when I used "generic," it was

describing the general trend that you would expect a gas/oil ratio to have on a well in a solution gas drive reservoir. And that would be increasing slightly over time to a point that you would actually flatten out and then decline.

Q. Using the EUR and the PHI-H SO numbers you've listed here for the Paddock, do you say -- do you see a linear or easily-seen trend that supports a good correlation between these two factors?

A. On this well?

Q. Yes.

A. Okay. I'm sorry. Your question again was SO PHI-H?

Q. And the EUR --

A. Okay.

Q. -- for this Paddock.

A. Okay.

Q. Do you see a linear, or an easily-seen trend that supports a good correlation between those two factors?

A. I don't think you can establish a trend from one well, if that's your question.

Q. What if we go to your Paddock drainage calculations on Exhibit 28?

A. Yes.

Q. The same question. Can you use those two factors to establish a linear trend in the Paddock, based on these numbers?

A. For this well?

Q. For all of these wells.

A. Oh, I'm with you.

Well, we also have the wells on the exhibit before it. Those are Paddock as well.

Q. Is that 27?

A. Yes. I haven't looked at that to know if I could establish a trend or not.

Q. So as we sit here today you just don't know?

A. I haven't done that work.

Q. Okay.

On Exhibit 28C, Mr. Gore, which is the calculated Paddock pay comparison --

A. Okay.

Q. -- of the COG log and the Burnett log?

A. Yes.

Q. I believe you were asked by Mr. Grable that if -- if the net pay is overstated, then your -- that affects your drainage area. It will go down?

A. Yes.

Q. Conversely, if the net pay is understated, then your drainage area will go up, correct?

A. Correct.

Q. And you're not suggesting that different operators can't interpret their logs as they see fit?

A. Well, I suppose operators could interpret their logs however they see fit. The trouble I have with that is, if how they see fit doesn't bear on reality, then, you know, it doesn't show you anything.

So I think you have to use good judgment, good tools, all of your data, you know, core data, mud log data, all of that, and do the best analysis you can.

That doesn't mean any analysis, that means an industry-accepted well-established analysis that would give you those results.

Q. And so I guess the point of your slide here is to suggest that Concho is not doing a log analysis on an industry standard?

A. No. My -- my suggestion on this exhibit is, when you compare the net pay that Burnett calculates on this well to what COG has calculated, there's a huge difference.

And we know how we calculate our net pay. We can take you through foot by foot, well by well, and get you exactly the numbers.

What we don't -- we don't know that on the COG calculations because they haven't provided those. But we do know that there's a big difference in net pay. And that --

Q. Based on this log that you provided us?

A. Based upon the COG exhibit that they presented.

And so in trying to figure out what would account for that big difference -- and it's a big difference -- it appears that that could be one of the reasons COG is calculating such low drainage areas, because they're calculating a huge net pay.

But again, we don't know how they're calculating that so, you know, we really don't know. All I can tell you is what I observe when we look at how we do it, and we know how we do it, and compare it to the results of the well.

Q. Okay. If we could go to Exhibit Number 28D, please, Mr. Gore. That's the density/porosity calculation.

A. Yes.

MR. GRABLE: The calculation or --

MS. MUNDS-DRY: Yes. The -- well, the page that gives a description of the calculation.

A. Yes.

Q. (By Ms. Munds-Dry) I believe you stated that you assumed that Concho used a 2.87 grain density.

A. That was my assumption. Because, you know, that is the standard dolomite grain density.

But again, we were attempting to try to reconcile these numbers, and so we had to start somewhere. And so what I was curious about was if there is a very slight difference in the grain densities, what -- could that account for part of this?

And I think what this exhibit was intended to represent is it could account for part of it.

Q. So in your opinion a .03, which I think is what you're trying to illustrate here, could be a significant difference in the outcomes of your data versus Concho's?

A. .03?

Q. You used 2.84, and you assumed 2.87.

A. Oh, I'm sorry. You're correct.

That -- that difference in grain density can result in a porosity difference of one to about

one and a half percent.

Q. Can the grain density change in a well?

A. Depending -- in these wells or in any wells?

Q. In these wells.

A. Within the same formation?

Q. Within the Yeso formation.

A. I suppose there could be variations. That's why you would take measurements at different points and see if there's a trend and an average.

But I don't think it is going to be necessarily repeatable, but you're looking at the overall interval from what the core data is telling you.

Q. And you, I assume, examined Burnett's core data?

A. I did.

Q. And what range did you see in -- grain density did you see in the cores that you examined?

A. Gosh, I would just have to pull that out. I don't recall.

Q. Is that something you have with you that you can pull out at a break or at some point?

A. I -- I could probably get to that.

MR. GRABLE: Maybe we can find that for

you.

MS. MUNDS-DRY: Thank you very much.

Q. (By Ms. Munds-Dry) Do you know, Mr. Gore, if that grain density data was provided to Concho?

A. I don't know.

Q. Were you responsible for any of the production to Concho? That way it helps me limit some of my questions.

A. No, I wasn't.

Q. Okay.

Moving on to Exhibit 28F, please.

A. (Witness complies.)

Q. Do you know, Mr. Gore, if -- I see the representation you have given here of these sort of -- I would call them ellipse -- of -- of an example of a Burnett well, the drainage that you might get from a Burnett well using its completion techniques?

A. Yes.

Q. And do you get the same sort of height out of slickwater fracs as you do out of a gel frac, a gel water frac?

A. I would just have to defer that to Mr. Jacoby.

Q. Mr. Jacoby is the slickwater expert guy?

A. He --

Q. He's writing a paper on it.

A. He's the frac expert of the group.

Q. Okay. So you don't know if the ellipse that you've drawn here is, in fact, accurate as to whether you can get the same height as from a gel frac which Concho uses?

A. This is really just a cartoon sketch, and it's not meant to be to scale or anything like that, but rather just a very generic depiction of what Burnett thinks results from its completion and stimulation techniques, where they contact additional reservoir and achieve greater drainage areas.

Q. If I understand here correctly, this shows you -- and I understand this is a carton -- the drainage area average of 20 acres for Paddock and 35 acres for Blinebry?

A. This does not show that.

Q. That's what you have here in the red box.

A. Well, those numbers are from the drainage area information that we previously discussed. So we just posted those averages --

Q. Okay.

A. -- on this exhibit.

Q. So based on this average you posted here, then, is the suggestion that you only need one well for the Blinebry?

A. The average drainage area of the wells we evaluated is 35 acres. So if that average holds up, then, that would be true. You would only need one well.

Q. Now you understand that Burnett is asking for two wells per spacing unit, although you can have two Paddocks and two Blinebrys, as I understand this computation.

A. Correct. But also keep in mind our data sample on the Blinebry is rather small, only 11 wells to analyze.

So I think as we get additional wells drilled, so we have a good sample or a larger sample -- not a good sample, but rather a larger sample, you know, that -- that number may change.

I would -- I would think that as you drill more wells and get that data, that that average will change.

But based upon what we have today as we sit here those are the results.

Q. Well, based on that answer, isn't it then not a far assumption to suggest that your

application is premature, because we don't know what the drainage will be?

A. No. In fact, I think we touched on this earlier. If we go back and look at the Paddock drainage, and then we look at the Blinebry drainage, these wells -- you know, I think most operators in the field now are going to where they are commingling the two.

So we would really need to look at both of those together and maybe do some sort of averaging, which would bring that overall average down.

But you know, if you just average 20 and 35, what's that going to give you, about -- probably 28?

So I don't think we're premature because we are starting off at a higher density. I think what's premature is starting off on a lower density, when the data we have does not suggest that that's applicable.

Q. For Burnett wells and Burnett acreage?

A. Correct.

Q. Okay.

A. Well, as well as the -- the interference that I believe we have observed in some of the 10-acre units, units that have been drilled up on

10 acres.

Q. Okay. And we'll get to that here. We have got, I think, a little ways in the numbers to get to that.

A. Okay.

Q. Now are you suggesting with this depiction, also, that Concho's drilling unnecessary wells and wasting a whole lot of money by its current operations?

A. I do believe that Concho is drilling unnecessary wells. I believe the oil that Concho is recovering, based upon the data that I have seen, they could recover with two wells, not four. So --

Q. Is that assuming a different completion technique than they use now?

A. Yes, it would. I think they would have to get up on the technology scale and use the best available technology. And when they did that, they would be able to drill two wells instead of four.

So if you can recover the same wells with -- the same reserves with two wells instead of four, then those last two wells, in my opinion, would be unnecessary wells.

Q. But you have already stated you're not the expert in completion techniques. Mr. Jacoby is

the --

A. He is the --

Q. -- the frac guy?

A. He is the frac guy, yes.

Q. So you wouldn't know if there are any potential negatives to slickwater fracking, why a company, for example, may choose not to use slickwater fracking?

A. I don't know of any.

Q. If we could please go to 28H, as in Henry, please, Mr. Gore.

A. (Witness complies.)

Q. You provided data from 213 of Concho's wells for listing its EURs here?

A. Yes.

Q. Okay. So this is only approximately 20 percent of Concho's wells in this area, from doing my math.

A. And "this area" being --

Q. The subject of Concho's application, the 12 pools.

A. The 1,200 wells or...

Q. Approximately 1,200 wells.

A. Yes. That would be...

Q. Now, do you know if these are Paddock-only

wells?

A. I do not.

Q. Do you know if these are Blinebry-only wells?

A. I do not.

Q. If they were Paddock only, wouldn't that affect your EURs?

A. No.

Q. Well, if they were completed in all of the Yeso, wouldn't the EURs be different?

A. No.

Q. How is that?

A. The EUR is determined on well performance --

Q. Okay.

A. -- and the production that's achieved, whether it's from one zone, two zones or 100 zones.

The production doesn't know where it's coming from. It's just produced, and there is a decline trend associated with that.

So we've extrapolated the decline trends for these Concho wells. And the EUR is, on average, as I have listed there on the exhibit. Where the wells are completed, for the purpose of the EUR, is irrelevant.

Q. Referring now, Mr. Gore, to Exhibit 28I.

A. (Witness complies.)

Q. You have these boxes here of the EUR comparison, and now you've broken it out by operator and well treatment?

A. Yes.

Q. Do you know how the Concho 213 wells were treated?

A. I do not.

Q. If we could please go to Exhibit Number 31, Mr. Gore.

A. (Witness complies.)

Q. I think you admitted that -- and I think I wrote this down correctly -- that this is a little bit inconclusive because of the sharp decline at the end.

A. I remember talking about inconclusive. I don't recall it being about this exhibit.

Q. Are you aware that this well in -- or this production decline chart exists in Section 20C, is a part of a water flood?

A. I believe this is in the area that is part of the pilot flood of COG.

Q. So the fact that this has been water flooded, how does that -- how is this helpful in

determining primary recovery production decline?

A. Well, the -- about 90 percent of the data on the graph was before any pilot water flood.

If I recall correctly, I think there has been three years of water injection, if I recall correctly. So if you look back -- so you would look back at the curve before 2007, and that would be under primary production. And that's what I'm representing as the two-well EUR of 262,000 barrels.

Q. I'm with you there.

A. Okay. The --

Q. How do you get your actual ultimate recovery for four wells, if in that time period you had a water flood intervening in that process?

A. Well, I don't know the operational history of this unit in the last couple of years. We do see that in -- starting in 2006, there begins a pretty steep decline once the fourth well is drilled. And then we see the production drop off completely.

There hasn't been any reported production since about the middle part of 2009. So based on that, the -- the total cumulative production from this unit is 245,000 barrels. We don't see anything to indicate that this unit will ever produce any more oil.

Q. Do you know when water flood operations began in this unit?

A. All I know is what was testified to. I think the first water injection, I believe, started in 2007. I don't believe it was discussed exactly where it started, so I -- I don't know specifically.

Q. Okay. Now in fact, I think the next series of slides, where you've given your production decline charts and your GOR versus cum oil graph, are all in this same area.

So if we look at 31, we see it's 20C.

Exhibit 32, is that -- is that GOR versus cum oil graph which is representing a well that you were discussing here, correct?

A. Yes.

Q. And do you have any idea what was going on with the lease that might affect these GOR numbers?

A. Well, we do know that in terms of how many wells are producing. We -- we show, when there are two wells, three wells, four wells, and then we go back to three and then to two.

You can see that when you go back to -- from four wells back down to three and compare that three-well time period to the previous, that there's a big change. So if -- if there was water being

injected in this time period and this decline in production is related to water injection, the water flood isn't working. It's doing the wrong thing.

Q. I don't think anybody would argue with you there.

A. So -- but other than that, I don't know specifics about the history of this lease or unit.

Q. So besides the water flood, there could be other issues, correct, like mechanical issues, operational issues with this well that my affect this trend?

A. Right. And by "this trend" I'm assuming you're talking about where we drop off and production literally goes to zero.

Q. Yeah. And I'm really looking at 31 and 32 together. But I mean we can look at either one.

A. Oh, okay. I'm sorry.

There could be operational issues. But I would expect that if there were operational issues those would be rectified through some sort of remedial procedure to get the wells back on production to the extent they were capable of it.

But I -- I don't have specifics.

Q. And, Mr. Gore, we don't really need to spend any time on them. I see Exhibit 33 is another

production decline chart in a -- in the unit letter over in Section 20D?

A. Yes.

Q. Are you aware that that is also in the water flood?

A. I'm aware that it's in the area. I don't specifically know where the water injection is occurring within that area.

Q. And your answer would be the same for Exhibit Number 34?

A. Yes, ma'am.

Q. And for Exhibit Number 35, it's another unit letter over 20F. Are you aware of whether that area is in the water flood?

A. I believe it may be in the area.

Q. The same answer?

A. The same answer.

Q. Same for Exhibit Number 36?

A. Yes. But you know, I'm -- I want to point out that the area of the curve that we are looking at here is really prior to any water injection that may have occurred occurring. So...

Q. You believe; you don't know?

A. No, I do know. Because -- well, what I know is it was stated in testimony yesterday that

water injection commenced in 2007.

Let's just take Exhibit 35, for example.

Q. Okay.

A. If you look at the production prior to water being injected, you see trends being established. That's during the primary production, assuming after '07 would be considered secondary.

But you can still draw conclusions prior to '07, in terms of -- of decline trends and gas/oil ratio trends, which will not be affected by any sort of pilot water flood operations.

Q. But you said you didn't know if you were aware that there were any other issues, operational and mechanical issues, with these wells.

A. That's correct.

Q. Okay. Have you given any -- I know we're going to get to Exhibit Number 41 in a second.

Have you given any production decline charts for any other areas other than this -- what we call the Jenkins flood area? Or have you focused these production decline charts on that one area?

A. I think we had some others that we took out. But I think this is all -- well, we have the ones later that I've annotated, that I believe were COG exhibits.

Q. Okay.

A. But I think these are the only -- these three were the only ones that I've offered.

Q. Okay. Mr. Gore, Exhibit 41.

A. (Witness complies.)

Q. On Exhibit 41, I'm sorry, Mr. Gore. I'm a little puzzled why you offered this one, given your -- given that you said that there's really not a lot of data to work with, and you can't interpret much from this.

Is there -- is there -- I guess I'm just puzzled as to what you think you're showing from this, if you're not -- if you don't have very much data.

A. That is really the only purpose. I wanted the commission to know that we looked heavily at the Maljamar area. But the way -- the timing of the wells being drilled and looking at the production data, it really doesn't lend itself to any sort of interpretation. So the fact that we didn't submit anything on Maljamar isn't -- doesn't necessarily mean that there's no data there to suggest well interference on 10 acres.

Rather, there is no data presented there because the data that we have does not lend itself

to interpretation. That's the only --

Q. Okay. Mr. Gore, I'm sorry to do this, to back up for a second.

If we could go back to Exhibit 27, please.

I'm sorry to take these out of order.

MR. GRABLE: Which one is 27?

MS. MUNDS-DRY: It's this Paddock drainage area, Paddock producers, page 1.

THE WITNESS: Okay.

Q. (By Ms. Munds-Dry) Or 2, is it?

A. 27 would be 1 of 2.

Q. Well, we'll come back to that a little later, when I can figure out what they are asking me to ask you.

A. Okay.

Q. Okay. Where were we? Exhibit 41A, please.

A. (Witness complies.)

Q. These are some annotations you did of a Concho exhibit, correct?

A. Yes.

Q. And you noted here that there are several variables that would be helpful to know to help support the data that Concho has presented?

A. Yes.

Q. You've indicated structure is an important variable.

Why is structure important?

A. Well, it could be important.

Q. Is it important for this Yeso shelf?

A. I think that we see saturations -- as we go down structure we see changes in saturations to the east, so I think in that regard it's important. That would kind of be: Where is the well physically located in the area? But then also structurally, where is it located?

If it's to the west, then perhaps you are looking at higher water saturation or higher oil saturations, lower water saturations, versus a well to the east that may have the converse.

So I think it could be important.

Q. Now, I believe both Burnett and Concho agree that there are no real structural issues in this shelf that affect that -- have any great effect on production, correct?

A. Right. I don't think that from a well, necessarily in the heart of the trend, necessarily structure plays a huge role. However, we do know as we go to the east and we go lower structurally we have a higher water saturation.

So that's why where the location of these dots representing wells are, I think, would be important to know before reaching the conclusion that there is no correlation.

Q. So really, that addresses your variable here, the water saturation question, your last point here?

A. I -- I think location/structure and water saturation or oil saturation, those are interrelated.

Q. Okay.

MR. GRABLE: Pardon me. Mr. Ezeanyim, Mr. Gore had informed us at break that he needed to take a short break around 5:00. Is that true or...

MS. MUNDS-DRY: We can do that now if he needs to do that.

MR. GRABLE: Are you okay or --

THE WITNESS: We could keep going for a little bit. I just, you know, needed to --

MS. MUNDS-DRY: What time do you need a break?

TECHNICAL EXAMINER EZEANYIM: Are you okay, Mr. Gore?

THE WITNESS: Yeah, I'm good for right now.

TECHNICAL EXAMINER EZEANYIM: We can take a break.

THE WITNESS: No, that's fine.

TECHNICAL EXAMINER EZEANYIM: Like I told you before, we are rather informal here.

THE WITNESS: Sure.

TECHNICAL EXAMINER EZEANYIM: Okay. Do you want to go a little longer?

THE WITNESS: Yeah, we can go a little bit further.

Q. (By Ms. Munds-Dry) Please, Mr. Gore, tell me when you need a break.

A. Okay. I will. Thank you.

Q. Let's go to Exhibit 41B, please.

A. (Witness complies.)

Q. I'm curious as to how you forecasted this. Help me understand this.

I believe Burnett's -- and I don't recall at this point whether it was Mr. Haiduk or Mr. Jacoby, so I apologize. But I believe Burnett testified that they used -- similar to Concho, they have an initial period where they use a hyperbolic curve and then they use an exponential curve, correct?

A. We do see that.

Q. So I'm curious as to how you forecasted this. Would you call this an exponential curve that you used here?

A. Well, the red-dashed lines that I put on there do represent an exponential decline. And the way I have forecasted it is that the first part is the two-well part of the graph when two wells are present.

So just this (indicating) part of the curve, if you look at that -- in other words, put yourself back in time.

Q. Is your laser working? I'm not sure it's --

A. Yeah, mine was.

Q. Okay.

A. So did you see where I was talking about?

Q. Yes, thank you.

A. Right in there (indicating).

If you put yourself back in time, and all the production data that you had on this well stopped right there, what I'm saying is you would -- you would put a line on -- on that production history that would be similar to this red-dash line that I've placed on there.

That does not -- the well data does not

exhibit, in my opinion a hyperbolic component there.

Similarly, when you go to the other red line, that's only for this period of time with four wells, so you're looking at this production data in isolation.

And if you look at that trend, again, we don't see, given the data, a hyperbolic component. While we do see that generally across the field, that doesn't mean you always have to see it. But this, to me, appears to be -- in fact, I have -- I probably could have been a little bit more pessimistic. But that, to me, appears to be a pretty good -- with the exception of the one low point -- a pretty good straight-line decline through roughly that 9 to 12 months' worth of data.

Q. Now, why did you start the forecast, the red -- the first red dotted line on the top red line there (indicating), why did you start it there?

A. I didn't really start it there.

Q. Is that just a function of the --

A. Yes, the --

Q. -- program you used?

A. The important part is -- is -- is the trend through this data. What is the production from this well telling you? It's telling you that

the trend is more like this (indicating), as opposed to some curve.

So my point is, if you look at just the two-well and the four-well, you wouldn't get anything near an incremental recovery of 247,000 barrels if you honor the data from this well -- or I'm sorry, this unit.

Q. So in your opinion, you don't see a hyperbolic decline, so you went straight to an exponential decline?

A. We went straight to -- I don't see, in either one of these areas, any hyperbolic component to the decline from those wells.

Q. Okay.

Let's go to Exhibit 46C, please.

A. (Witness complies.)

Q. The same question here, Mr. Gore. Why do you use an exponential decline? Do you not see hyperbolic behavior here, if you're looking at the beginning of this well here (indicating)?

A. Sure. You -- I mean you see a hyperbolic component for probably nine months. And then once we get to late 2003, about right there (indicating), that well flattens out and goes on a very -- very much a straight line or exponential decline trend.

And we can extrapolate that red-dashed line back all the way through that data.

So that is a well-established trend for the two wells that were producing on the unit at that point in time.

When we go to three wells, again we see the -- the well jumping around here (indicating), and then it -- there's an increase, probably some sort of operational issue, whether they -- it was another stimulation, changing the pump or something. But anyway, we jump up.

But from that point where we jump up in mid 2000- -- mid 2008, we've got -- we've got about 12 months of very steady exponential decline there. So we could feel real comfortable with that extrapolation.

Q. Now, I'm curious about your third line that I'm sure you are going to get to here.

Why didn't you use that last data point where it sort of jumps up?

A. Well, typically, when you're projecting decline curves, you're not going to change your projection based on one point.

What we would want to see, for example, is what is it going to do two or three months after?

If this keeps going up, then perhaps we would make a change.

But look over in this (indicating) area. You can see that it is not unusual to -- to get some spikes, if you will, both high and low. So with simply one data point I didn't feel it was reasonable, because we had almost 12 data points prior to that that established a very good trend.

Q. Now, why did you stop the production graph there (indicating)? Why didn't you include the production after January of -- late January -- late in 2010?

A. This -- this was a Concho exhibit. So I guess the question is, why did they stop the production there?

Q. Okay. That's fair.

A. All I did was take their exhibit and place these trends on there which, again, my conclusion is highlighted there in the yellow box.

Q. Are you aware whether these wells were shut in for any period of time?

A. I do not know.

Q. Would that affect your decline curve, if the wells were shut in for a period of time?

A. No.

Q. Could we please go to Exhibit Number 42, please, Mr. Gore?

A. Okay. The GOR map?

Q. Yes, sir.

A. Okay.

Q. How did you come to these averages that you've listed here in the red box? Are these cum or current averages?

A. Oh, here (indicating)?

Q. Yes.

A. I'm sorry. That's simply an average of the Concho wells in this area, their cumulative production through January 1st.

So cum oil or gas/oil ratio cum gas divided by the cum oil for both COG and Burnett, all the COG wells and all the Burnett wells.

Q. I believe you used this exhibit to show that, in your opinion, you're seeing higher GORs on 10-acre density?

A. Yes.

Q. Wouldn't older wells also show a higher GOR?

A. You're going to see a higher GOR, generally, but it's going to be very slight. You're not going to see wells typically going from, you

know, 1,800/2,000 to 1 to 20,000 to 1. You may see them go from 2,000 to 1 to 2,500 to 1, 3,000 to 1.

So you -- while you will see some increase, it's not going to be dramatic, or it should not be dramatic unless there is something else going on.

Q. We get to go all the way to Exhibit 51, please.

A. Okay.

Q. Your counsel asked you if you were aware of surface disturbance issues on some of Burnett's lands. Is that right?

A. In the area, yeah.

Q. In the area?

I believe you answered you were aware that there were endangered species issues?

A. I was aware that there are issues related to that issue.

Q. Are you aware of whether BLM, in fact, restricts surface use because of these endangered species, namely the lizard and the chicken?

A. I'm not aware if they actually restrict at this point or not. I think it's an issue that may be pending, but I don't know the answer to that question.

Q. Are you aware of whether Burnett has a conservation agreement with the BLM that would allow it to drill any wells on its acreage?

A. I don't.

Q. Now, we're going to go back to 27 or 28. We're going to have to look for that. I apologize.

Exhibit 28, please.

A. Okay.

Q. I'm looking at the Gissler A-19 well. Do you see that almost at the bottom?

A. I do.

Q. And you show, using the various recovery factors, anywhere from 25 to 37 acres, correct?

A. I do.

Q. Are you aware of whether there has been an offset well drilled from the Gissler A-19?

A. Specifically, no, I'm not aware.

Q. Do you know if it was the Gissler A-26?

A. I do not know.

Q. At the end of the exhibits, Mr. Gore, your counsel asked you some opinions about what you thought the allowable and the GOR should be.

A. Yes.

Q. Do you know if Burnett has overproduced the 187 allowable that's been proposed by Burnett?

A. I believe they have, yes, for -- during the initial cleanup phase of a well after it was -- after it would have been fracture stimulated. While it was cleaning up, I believe they probably have produced over the 187.

Q. And do you believe that damage was caused to the reservoir when Burnett overproduced?

A. Initially, no. We don't see any GOR issues during -- during that period, to my knowledge, or that I have seen. So I -- I don't believe there was any reservoir damage caused.

Q. Do I understand correctly that the 187 allowable is for two wells?

A. The 187 would be for a 40-acre unit. So that would apply, whether it was -- whatever the density was. Now we're advocating 20 acres, so under our proposal, that would be for two wells.

Q. So it wouldn't change, in your mind, if you had four wells on a 40-acre spacing unit?

A. No.

Q. Have you done any calculations to determine, if the division doesn't accept the annual balancing rule, whether Burnett could meet the 187 allowable that you've proposed?

A. I have not.

Q. Have you done any calculations to determine, if the division does not accept the balancing rule that Burnett has proposed, that you could meet 2,000 to 1 GOR?

A. Well, the 2,000 to 1 GOR would be met, because that's a gas limit that you can't exceed. If your wells did exceed that your oil allowable would be penalized. So I don't -- I don't think that would have anything to do with the GOR limit.

Q. What evidence have you shown here today that a high GOR negatively affects the reservoir energy?

A. Well, we know in a solution gas drive reservoir, basic reservoir engineering principles are that you want to preserve the reservoir energy.

What that means is producing at the lowest gas/oil ratio possible. And what we've demonstrated is, as you downspace to 10 acres we see increases in the -- dramatic increases in the GOR trend.

And then when we look back at the map, cumulatively speaking, the areas of the field that have been drilled on a denser spacing exhibit higher GORs.

What that means is they are producing more gas, they are drawing more reservoir energy in those

areas. And what that directly results in is a lower ultimate recovery. And that's just a basic reservoir engineering principle.

Q. Wouldn't that also mean that you are depleting the area around that well bore, so you are getting a higher GOR?

A. You absolutely are depleting the area around the well bore. The problem is that you are depleting it, in effect, too fast from the gas standpoint. You're taking the gas off and you're not producing all the oil that should be coming with it. But you absolutely are depleting the area around the well, and that's the problem.

Q. If you have a lenticular reservoir, as we do here, how do you know that you're affecting the reservoir energy elsewhere?

A. You are going to be affecting the reservoir energy, and I'm -- I guess I'm talking generally here, because we haven't seen any data on how these lenticular bodies within the Yeso interconnect.

But if you are in a lenticular body that has a larger aerial extent, then you'll be affecting that area. If you are communicated either naturally or through your fracture stimulation to other

lenticular members, then all of that is going to be acting as one reservoir.

So if your GOR trend in the area that you've contacted is increasing abnormally, then by definition, you're going to have to be depleting the reservoir energy in those members; and, therefore, lowering the ultimate oil recovery in those members.

Q. Is it fair to say that what you call a member is what we may call a lens?

A. The same thing, yes.

Q. So for those lenses, you're depleting reservoir energy, in your opinion, if you have too high of an allowable?

A. No.

Q. Okay.

A. If you are producing at an abnormally high gas/oil ratio then you are depleting the reservoir energy within those lenses or members.

Q. Okay. Mr. Gore, I want to make sure I understand what you're asking for. Because towards the end of your testimony you noted that there was a number of areas, a lot of areas, in fact, that are already in 10-acre density.

A. Yes.

Q. And I believe your testimony was that at

least let us, for those undeveloped areas, start on 20s.

A. Yes.

Q. And if we could pull up that map that showed -- I think it's 15.

If we are looking at this map here, Mr. Gore, we see what I would characterize as an undeveloped area in Sections 12, 13, 24, 25, and 17 South, 31 East. Do you agree?

A. I'm not sure. Could you point those out on the big one?

Q. Yes, right here (indicating).

A. Oh, yes.

Q. Is that the area you would like to see developed on 20-acre spacing?

A. That's an area of the field that has not yet been developed. Development there is just starting, so that would be an area where instead of starting low and realizing later that you've drilled too densely, my recommendation would be to start higher, evaluate your wells before you decide if it needs to be drilled on a denser pattern, as the data in the Loco Hills area indicates.

Q. Are you aware, Mr. Gore, of any precedent that the division has set that actually decreases

density in any 40-acre spacing units?

A. No. I don't know one way or the other.

TECHNICAL EXAMINER EZEANYIM: Please ask that question again.

MS. MUNDS-DRY: I asked him if he was aware of any precedent set by the division in decreasing density in any 40-acre oil pool?

TECHNICAL EXAMINER EZEANYIM: Okay.

MS. MUNDS-DRY: I pass the witness.

Thank you.

TECHNICAL EXAMINER EZEANYIM: Okay. At this point, I think Mr. Gore wants to take a break. I think everybody wants to take a break here.

(A recess was taken from 5:24 p.m. to 5:40 p.m.)

TECHNICAL EXAMINER EZEANYIM: We'll go back on the record.

And, Ms. Munds-Dry, you passed the witness?

MS. MUNDS-DRY: Yes sir.

TECHNICAL EXAMINER EZEANYIM: So, Mr. Cooney.

MR. COONEY: Thank you, Mr. Hearing Examiner.

EXAMINATION

BY MR. COONEY:

Q. Good afternoon, Mr. Gore.

A. Hi, Mr. Cooney.

Q. Have you done similar work in calculating drainage areas in the Yeso formation in New Mexico before?

A. No, sir.

Q. Have you done similar work calculating allowables or gas/oil ratio in the Yeso formation in New Mexico before?

A. No.

Q. Now I was struck as a layperson, not an engineer, by the number of variables that go into calculation of the drainage area: Recovery factoring -- or factor, excuse me -- the grain density, the oil in place, and the estimated ultimate recovery.

And isn't it true that engineers can have different opinions on those factors?

A. They can have different opinions.

Q. Operating in good faith and trying to do the best job they can?

A. Hopefully so.

Q. All right. Now, would you bring up

Exhibit 15 please?

A. (Witness complies.)

Q. Now, we're going to turn to -- not right now, but in a while we're going to turn to exhibits 25, 27, and 28, which are the listings you put together of the Blinebry and Paddock producers of the Barnett -- excuse me -- Burnett Oil Company and the drainage areas that you calculated for them.

A. Okay.

Q. You described the four-section area over near a Maljamar pool as being undeveloped. Is that correct?

A. That's correct.

Q. But the other portions of the field out here embraced within this consolidated area you have drawn, or that Burnett has drawn, you believe has been largely developed?

A. It has been developed primarily on 10s with -- with the other area, or a couple of areas here in yellow, and there (indicating), on a less dense pattern.

Q. Okay. And that when you say "here," that's the middle part that I have just tried to illustrate are where Burnett has a number of wells?

A. Correct.

Q. And Burnett has wells that -- in that area that are on a two-well per 40-acre proration unit basis?

A. Yes, sir.

Q. So many of the wells -- if we could go now, please, to Exhibit 25.

A. (Witness complies.)

Q. Many of the wells listed on Exhibit 25, for which you have calculated drainage areas, are located in 40-acre proration units in which Burnett has two wells?

A. I believe that's correct.

Q. All right. Now if we look down towards the bottom of that chart, for example, we see the -- I don't know whether it's Gissler or Geesler -- I have heard it both ways -- A-35, for example, you have calculated using the recovery factor you favored of 10 percent of 60.5 acres, and that's per well, isn't it?

A. That is per well. Well -- yes. These -- these drainage areas are for those specific 11 wells.

Q. Okay. So if there are -- if that well is located in a proration unit that has two wells, two Burnett wells, depending upon what the other well's

drainage area calculation may be, it could be draining well in excess of the 40-acre proration unit?

A. One, if you assume there is a second well.

And, two, if you assume that it has a similar drainage area, then you are correct. It would be draining in excess of the 40-acre proration unit.

Q. In fact, other than the very first well listed, the next one is 21 acres. So we add 60 and 21, I get to 81, that's two 40-acre proration units, if there is another well in the same proration unit where that Gissler A-35 is?

A. Again, with those same assumptions, that's correct.

Q. And if those assumptions are correct and your calculation is correct then, and this is in the developed area, wouldn't that be adjoining offsetting proration units in which there is already development?

A. We would just have to look at where those are on a map. It could be, but I couldn't tell you for sure.

Q. But if it's in the area where the wells have been developed -- and there are no Burnett

wells we know over near the Maljamar. If they are in the middle of the map area which is largely developed by Burnett on two wells per 40, and everyone else mostly on four wells for 40, the probabilities are that those proration units in which Burnett's wells are located, for which you have calculated drainage areas, are next to a proration unit which have been developed by somebody else on a 10-acre -- or excuse me -- yeah, on four wells per 40 acres?

A. That's possible. But one thing you need to keep in mind is we're talking about the Blinebry section of the Yeso.

Q. That's right.

A. And Burnett has just started to complete the Blinebry. So I -- I think it would be -- we would have to look, but I think it would be very possible that there wouldn't be a second Blinebry well on the same unit, since we are in the early stages of the Blinebry development.

So -- but assuming all of those things that you just gave me, it is possible, but I don't expect that would be the case.

Q. Okay. We'll get to the Paddock in a moment.

If that -- if those -- if my assumptions are correct, and I believe they are based on the evidence, then you would expect to see a substantial impact on the production of the wells in the offsetting proration units by the drainage being caused by the Burnett wells on two wells per 40-acre proration units, wouldn't you?

A. If you have a unit -- 40-acre unit with two Blinebry producers both draining in -- together in excess of the 40, and then the offset unit also has Blinebry production, then perhaps you would see that effect.

But again, there are a lot of assumptions there that would have to hold up to see if that would, in fact, be the case.

Q. Well, wouldn't that be a way to validate your drainage area calculations, to go and look to see if there are adjoining proration units and whether the production in those adjoining proration units had been affected by the large drainage area of the two wells per 40-acre proration unit drilled by Burnett?

A. It would -- it could. Assuming those assumptions are correct, it certainly could be one way.

I think there could be many ways that we could go about looking for interference drainage areas. I think we have presented some of those here. We are not saying what we've done is the only way. What you -- you bring up a good suggestion. That could be another way. We didn't do that, but that is something you could do.

Q. And you didn't do that?

A. No, sir.

Q. Okay. Now, let's turn to Exhibit 27 -- or rather Exhibit 28.

A. (Witness complies.)

Q. Now looking down towards the bottom portion of this chart at the recovery factor of 10 percent, starting here with the Gissler B-35 and actually a little further up, you also get the situations, wouldn't you, where if there are two Burnett wells in the Paddock in this developed area in a 40-acre proration unit they would be draining more than that 40-acre proration unit?

A. Again, if -- if there are two Paddock wells and you had your analysis, and those both showed greater than -- in summation, greater than 40 acres, then, yes. Those two wells would be draining more than the 40-acre proration unit.

Q. Well, if we look -- and we don't have to go back to it -- but Exhibit 27, towards the bottom, we're looking at 16, 17, 18 acres of drainage here in the Paddock. Is that correct?

A. I'm sorry. You're looking where?

Q. At the previous exhibit, 27.

A. Okay. I'm with you.

Q. Okay. So it wouldn't take much, if you have a Paddock well with a drainage area of 48.9 acres, right there you're more than the 40-acre proration unit?

A. That's correct.

Q. And if you had, for example, the 30.5-acre drainage area for a Paddock well and you added that to 14 or 15 or 16 or 17, you would be beyond the 40-acre proration unit?

A. You're correct.

Q. And you mentioned a little while ago that Burnett has just started developing the Blinebry?

A. It's been recently.

Q. But that's not true of the Paddock, right?

A. No, sir. That's correct.

Q. It's been developed for quite some time by Burnett?

A. Yes.

Q. And in fact, the producers on offsetting locations, offsetting proration units, you also understand have been producing from the Paddock?

A. Correct.

Q. So once again, sir, wouldn't you expect to see, if the Burnett wells are draining more than the proration unit 40 acres, an effect on the production of the adjoining or offsetting proration units which are also producing from the Paddock?

A. Again with all of your assumptions, if those are true, then you may see that effect on the offsetting units. It would -- it would be dependent upon where or how those wells are completed, their location. Are they a direct offset, you know, or are they off center a little bit. So you would have to take that into consideration.

But again, under all of your assumptions, that is possible.

Q. And in fact -- we don't have to go back to it. But isn't it true that if we look at Exhibit 15, a large portion of the acreage operated by Burnett, with the two wells per 40, adjoins proration units developed by others on a four-wells per acre [sic] with wells close to the line, close to the boundary?

A. I lost you there. I'm sorry. Could you repeat that?

Q. Okay. There are proration units adjoining the Burnett proration units which are developed on a four-well per proration unit basis?

A. Okay.

Q. And you would expect many of those to be 330 feet from the line?

A. I would, yes.

Q. Okay. And that would have been another way for you to validate these drainage area calculations, would it not, with respect to the Paddock?

A. That would have been another way, yes.

Q. And you didn't do that, did you, sir?

A. I didn't do that. We did the other work that we presented.

Q. All right. Now, had Burnett done any drainage calculations before this hearing?

A. I -- I could not answer that. I'm not sure what all work they had done in that regard prior to the hearing.

Q. Have you advised Burnett that, on the basis of your drainage area calculations, they may be producing other folks' oil?

MR. GRABLE: Objection. Any offset acreage would lawful under the rule of capture. There is nothing illegal about producing across the lease line if it's done lawfully.

LEGAL EXAMINER BROOKS: Well, yeah. I think that it's obviously intended to be a prejudicial question, so I will ask you to rephrase.

MR. COONEY: All right.

Q. (By Mr. Cooney) Let's turn now to Exhibit 41C.

A. Okay.

Q. I don't think that's 41C. 41C is entitled "17 South, 30 East, Section 15G, Yeso production Dale H. Park lease."

I just have a few followup questions to Ms. Munds-Dry's questions on this exhibit, if you will bear with me, sir.

A. Okay.

Q. I understood you to say that you didn't think that this curve I'm trying to illustrate right here (indicating), after the drilling of the fourth well --

A. Third well.

Q. -- the third well, was a hyperbolic curve.

A. It does not exhibit that, no.

Q. Because you don't always see a hyperbolic component in all areas of the Yeso formation in New Mexico?

A. Well, I haven't evaluated all areas of the Yeso formation in New Mexico. But I have seen, in what I have looked at, that you don't always see a hyperbolic component. And sometimes you do, sometimes you don't.

Q. And that would vary area to area within the Yeso formation in this area that we are talking about?

A. I would suspect it could. But again, I -- I haven't looked at all areas.

Q. Okay. Well, let's look at this area.

A. Okay.

Q. Let's look at the drilling of the first well.

Doesn't that look like a hyperbolic curve to you?

A. Yes.

Q. And if you were to use that curve to construct a red line, wouldn't it just -- I'm being blocked by the computer here, plus, I'm not very good at this -- wouldn't that show that red line going down a lot further?

A. I'm sorry. If you project this (indicating)?

Q. Yes. If you project it -- we look here from the start there (indicating), out to that point, it looks like about six or eight months' worth of production, right?

A. Okay.

Q. And if we just stopped there and took that trend, wouldn't that line just trend on down that way (indicating)?

A. It would. I don't think it would be a proper decline trend with that limited amount of data. But if you put a line through there, ignoring everything else that's happened, then, yeah, it would.

Q. Okay. Let's move over here now to the drilling of the third well. And that looks to me also to be about six or eight months' worth production. Would you disagree?

A. I would disagree with the six to eight months. It looks like it's closer to 10 or 12 to me, but this area right here (indicating)?

Q. Yeah. If we compare the -- from here (indicating) to there (indicating) --

A. Right.

Q. -- with from here (indicating) to there (indicating), they look pretty comparable?

A. Time-wise, I would agree, yes.

Q. Okay. But while this (indicating) is a hyperbolic curve, that's (indicating) not?

A. Correct. What you see here is -- hyperbolic is -- obviously, the hyperbolic exponent is the curvature of the line. So when you see that changing, then you don't know where it's going to flatten out.

When we -- when we have, you know, 10 or 12 months of data that line up in almost a straight line, then you know that is a well-established trend.

Right here (indicating), we haven't established what that trend is. You wanted me to put a line through there, and I told you I did not think it would be proper to do so.

But that (indicating) definitely is hyperbolic. This (indicating) is not, in my opinion.

Q. Okay. Now, if that -- if the fourth well had not been drilled, you don't know where that curve would have gone, do you?

A. Well, I don't know, because the fourth

well was drilled.

Q. Right.

A. But in decline curve analysis you project future production based upon history. And so the recent history that we had for the three wells is this 10- to 12-month period. And so your projection would extend the line, as I have. And so we would project that this is what those three wells would have done.

Q. Okay. Because you see no hyperbolic curve there.

Let's go over to the next well, the fourth well. We've also got a comparable period of time, don't we, to the hyperbolic period of time over here (indicating) and the nonhyperbolic period of time over here (indicating). Now we have maybe a couple more months of production, but very close?

A. Very close.

Q. Okay. And that's not a hyperbolic curve either?

A. No, it's not.

Q. Even though it's in the same area, it's in the same proration unit?

A. Oh, yes, absolutely.

Q. Okay. And it is not a hyperbolic curve

because it's different than that (indicating) curve. Is that right, sir?

A. Absolutely. It's different.

Q. Okay. Now, would you turn to Exhibit 25A please?

Before we leave this, let's see if we can agree that this Exhibit 41C relates to a well in 17 South, 30 East, Section 15G, Unit G. Is that right?

A. Yes. All four of those wells are on that unit.

Q. Okay. Now, let's turn to Exhibit 25A.

I have one more question.

It's your testimony here that in this particular proration unit two wells are going to produce more gas than four wells and more oil than four wells?

A. Well, I didn't say that, because I -- I did not calculate the EUR with these three curves. But what we do know, when we look at the trends, we were talking about the differences.

Q. Right.

A. And they are different. Keep in mind that this trend was early in the life of this section. The Yeso had not been produced, it was an undrained area.

What we see here -- the reason these go -- in my opinion, the reason these go exponential at increasing rates is wells three and four begin to compete with wells one and two for the same reserves. So that's why you -- you're not necessarily going to see or expect this to be hyperbolic at four wells or three, if those wells are in competition for the very same reserves. And that's what we observe here.

Q. And that's dependent upon your assumption of the drainage area?

A. No, it's not. It is directly dependent on the actual well performance of the four wells on this section. It doesn't have anything to do with the drainage area calculation.

Q. You can tell from these curves and the fact that you don't interpret them as being hyperbolic that the drainage areas of these four wells are such that they're competing for reserves?

A. One more time. I didn't --

Q. You can tell from these curves, which you tell us are not hyperbolic, although this (indicating) one is, that the drainage areas of these four wells are such that they're competing for the same reserves?

A. Yes, sir. If you recall -- I believe he was an Apache witness, Mr. Barnes, I believe the engineer, reservoir engineer. He stated that what he would expect, if there is well interference, meaning wells are competing for reserves, a change in the decline profile.

That's exactly what we're observing here (indicating), in my opinion.

Q. Well, if we accept your opinion that this is not a hyperbolic curve.

Let's move on. Let's look at Exhibit 25A.

A. (Witness complies.)

Q. Now the previous exhibit, 41C, was -- I'm sorry. Let me wait until he gets to that exhibit, sir.

Now we agreed the exhibit we just spent a little time on, 41C, was Section 15, 17 South, Range 30 East. Is that correct?

A. Yes.

Q. Now this one has to do with a well in Section 13, Township 17 South, Range 30 East, two miles away.

A. Okay.

Q. This shows, in your calculation of the EUR, a pronounced hyperbolic curve changing into an

exponential curve, does it not, sir?

A. Yes, it does.

Q. So in this area two miles away, you do encounter the hyperbolic curve. But you don't with -- over in Section 15?

A. Right. And what we're saying is that the well performance dictates to you whether it's hyperbolic or exponential.

And so in my opinion, this well is exhibiting a hyperbolic component. And this is an individual well as opposed to a unit.

Q. I understand.

A. Yes.

Q. Okay. Now, let's turn to Exhibit 41F.

A. Okay.

Q. That's it. This was your critique of Mr. Barnes' exhibit, Apache Exhibit 6.

A. Yes. Was he the one who sponsored this?

Q. He was.

A. Okay.

Q. And your critique was that he didn't take into account, or that somehow the accuracy of this exhibit was affected by the fact of how these wells were fracked.

A. Okay.

Q. Is that correct?

A. Well, I think -- I think I recall that he testified that -- that the early part for one and two wells, when you -- when you drill -- well, yeah. When you go from two wells to four wells you see this big jump. And -- and apparently it -- it didn't have any impact on -- on the -- the previous two wells.

And he was drawing some, as I recall, some distinction about this large increase in production. And then -- and then the trend from that point on.

And -- and my point on this exhibit was that, you know, these wells were completed in different manners, and I think that should have been considered in any sort of conclusion reached on this exhibit.

Q. On this exhibit it does show that the drilling of wells three and four found substantial new oil, correct?

A. The drilling of wells three and four dramatically increased the production from the unit, realizing that the frac jobs were twice as big as -- as the other two wells.

So what we don't know is if these first two wells had been fracked in a similar manner would

they have recovered the oil that wells three and four are now seeing?

Q. And this kind of goes back to the -- your desire that everybody producing in the Yeso has to use Mr. Jacoby's slickwater frac formula?

MR. GRABLE: Objection, argumentative.

LEGAL EXAMINER BROOKS: Sustained.

Q. (By Mr. Cooney) Now, sir, it's true that the wells three and four encountered substantial new oil reserves. Is that correct?

A. They substantially increased the production, yes.

Q. Okay. Do you recall Apache Exhibit 5 sponsored by Mr. Barnes?

A. Not right off the top of my head.

Q. Well, rather than put it up, I'm going to hand it to you.

I've drawn a little circle around part of it.

A. Okay. Oh, yeah. I recall this.

Q. Okay. Doesn't that show that the drilling of wells three and four had no impact on the production of wells one and two?

A. It -- that's what it appears to show, yes.

TECHNICAL EXAMINER EZEANYIM: I don't know

what you're looking at.

MR. COONEY: Pardon me?

TECHNICAL EXAMINER EZEANYIM: I don't know what you are looking at. I need to see what you're looking at.

MR. COONEY: Okay. It is Apache Exhibit 5. And rather than --

TECHNICAL EXAMINER EZEANYIM: I just want to have a look. And I may have it, but I don't know.

MR. COONEY: I know you have it, but I didn't want to take the time to put it up here.

TECHNICAL EXAMINER EZEANYIM: What was your question?

MR. COONEY: That the drilling of wells three and four --

TECHNICAL EXAMINER EZEANYIM: Okay.

MR. COONEY: -- did not affect the performance of the existing wells one and two.

TECHNICAL EXAMINER EZEANYIM: Okay.

THE WITNESS: And I think you're correct, that's what he said. And it was because these wells continued on their same decline trend and he didn't see any change in that.

MR. COONEY: Okay. I pass the witness.

TECHNICAL EXAMINER EZEANYIM: Thank you very much, Mr. Cooney.

Redirect? Do you want to redirect? I can go ahead and ask questions.

MR. GRABLE: I may have one question, but...

FURTHER EXAMINATION

BY MR. GRABLE:

Q. Mr. Gore, I have one question for you.

In Mr. Cooney's questions he asked you a series of questions going to the issue of the drainage areas in the Blinebry, in particular, was large, as you had calculated, and wouldn't you expect to see some interference in offsetting units, and -- without giving you any more details.

But I wanted to ask you simply: Isn't time a function of how far out in a drainage area a well's withdrawal of fluids from the reservoir will affect it, and isn't the outer boundaries of that drainage area effected later than the immediate areas closer to the well bore?

A. Absolutely. And that's a very good point to remember on those drainage area calculations. That is the drainage area at the end of the economic life of these wells, so it's many, many years out

into the future.

You would not necessarily expect to see in the early life of the well, whether it be a well on the same unit or an offsetting unit, affected.

So I'm glad you brought that up, because that's a very good point.

MR. GRABLE: That's all I have. Thank you.

TECHNICAL EXAMINER EZEANYIM: When you are using an EUR, we know it's at the end of the useful life of the well.

Okay. Let me give an opportunity to COG or Apache, any redirect?

MS. MUNDS-DRY: No questions, sir.

MR. COONEY: No more questions.

TECHNICAL EXAMINER EZEANYIM: And you are done?

MR. GRABLE: I am done.

TECHNICAL EXAMINER EZEANYIM: Okay.

LEGAL EXAMINER BROOKS: I have no questions.

TECHNICAL EXAMINER EZEANYIM: Okay.

Mr. Gore, I think like I told you, I think we want to have fun. And I have, you know, tons and tons of questions, but I don't think I'm going to

ask you all of those questions. Most of them have been mentioned. But still, I need to mention something.

See, I was afraid that this hearing would produce this effect, there would be a dichotomy in data analysis. I mean as you all can see now, you put me in a difficult position, because you didn't send it and state to us what you want.

And the other guy, we take the same data, state to us what they want, and then I'm in the middle to make a determination here, which one do I believe? Who will answer that question except me? Okay.

Other than that, I'm going to have to make some -- you know, ask you little questions and then go back and assimilate whatever your data is.

What I'm going to do is to maybe -- if I have data I can try to fix in the -- you know, put in this data, do some calculation to see who's saying a little -- giving me a little truth.

Because as you know now, if you were sitting here where I am sitting, what are you going to be talking -- you know, talking about this. Okay. You are giving the same data but you're getting different results. Which one do you trust?

Do you see my predicament? But we're going to come with a decision.

Anyway, I don't want to put you there, and everybody is tired. But however, I am going to ask you -- there were a lot of questions I wanted to ask, but I'm not going to ask you all of them. I think I have heard enough to be able to go back and do some determination.

However, I am going to ask you some few questions, because you've been there for a long time, and I don't want you to think I didn't notice.

What I really want to ask you, some may be conventional, some of them are conventional. In a way, you are trying to deplete porosity. You use the letter F. I don't see anywhere where we use the letter F. Sometimes you use the letter PHI in the designation, sometimes in the -- it confuses me, because I'm traditional. That's what we were taught, you know.

We're talking about porosity. I look with that zero with the cross, and I can see where you use that F, is that fractional recovery? Is that -- you know?

If you do say "porosity," I will be wondering, what is that?

There are some conventions when we -- in different areas of what we use in some of your calculations what you use is PHI, is PHI-H, you know, whatever, which is very important for volume calculation.

It's not anything, but you define it as an F. Of course you can use this as an S or a Y or anything. But to be in, you know, compliance with the -- what we know, you know, of course you -- you know. The reason is -- I think you should know that.

THE WITNESS: Yes, sir. I've never used F either. I'm -- I'm with you on the convention. It was simply a formatting issue with the software.

TECHNICAL EXAMINER EZEANYIM: Okay.

THE WITNESS: So the only reason F was used, I think, was for the letter PHI, so -- it sounds like an F.

TECHNICAL EXAMINER EZEANYIM: Yeah.

THE WITNESS: But that's the only reason.

TECHNICAL EXAMINER EZEANYIM: I am glad you told me that. Because when I see that I -- you know -- I don't know.

Okay. Let's go back to this. You know, the object of contention here is what recovery

factor. We're talking about recovery factor, because the recovery factor that was used is different. The other party used 15 and the other party used 10.

In this original it was -- I mean the -- the range is from -- and I realize the condition is from 10 to 25 percent. That's the lowest recovery factor of all the drive mechanisms, all of you know that. That is -- all of you know that.

So the range is from 10 to 25. So it's up to the operator to see from the geology, from their logs, and what recovery factor they think they have. And those recovery factors will play a very large part in the ultimate recovery and all kinds of things. So I don't know. I will have to go back and look at the recovery factor and see who is using the correct recovery factor.

As I told you, you just put me on that corner now, because there's no information that is really correlating with the other. Everybody is -- you know, they are running from the other. So it's for me now to piece this together to see what is correct, or what I think is correct, because I am not working that pool myself. I have to depend on what you give me.

Mr. Gore, when you were calculating your recovery, you used this BO. Is that BO or BOI? As you know, those things depend on the -- the BOI, I think, is 1.29. BO may be 1.1. So what do you use in your calculation here on your drainage area? Do you use BO or is that BOI?

THE WITNESS: BOI.

TECHNICAL EXAMINER EZEANYIM: It should be BOI.

THE WITNESS: Yes.

TECHNICAL EXAMINER EZEANYIM: Because we don't know what BO is --

THE WITNESS: Correct.

TECHNICAL EXAMINER EZEANYIM: -- at this point.

THE WITNESS: It's the initial -- the initial conditions.

TECHNICAL EXAMINER EZEANYIM: You see? So that's why I went in there and put BOI, because you said BO was 1.29. And I'm not working that pool, so I'm thinking that BOI is 1.29.

THE WITNESS: And you're correct.

TECHNICAL EXAMINER EZEANYIM: Okay. In calculating your -- in looking at Exhibit Number 23. There's some differences between 2.84 and 2.87, and

then also the -- okay.

Well, anyway, I don't know. Exhibit Number 28D, we have the grain density is 2.87, the other is 2.84.

And then your low fluid is 1.0. In most cases it's more than 1.0. It's like 1.05. It depends on the validity of the information, so I don't know.

But we -- we're taking that low F is 1.0. That's where -- you know, the water.

And then -- then we're going to compare it now, the calculations here on your log, the bulk density and all kinds of things, to calculate the porosity. Because there is -- there is your calculation of porosity.

I see the other party used at least 3 percent cutoff, and your porosity is up to 8 percent, 10 percent in some cases.

So I will go back and see what porosity is more believable. Because those that we add in to your calculations are those that have a higher porosity in this. So I'm trying to make that point, so that you understand we can put it in that simple equation to calculate your density.

THE WITNESS: Yes, sir.

TECHNICAL EXAMINER EZEANYIM: On these Exhibit Numbers 24 and 26, where you use your drainage area to show how much -- I think you use the wells on the Blinebry and Paddock, right?

THE WITNESS: Yes. 24 is Blinebry and 26 is Paddock.

TECHNICAL EXAMINER EZEANYIM: Okay. So I can use them. I think I understand, but what are you trying to demonstrate there?

THE WITNESS: Really, all I'm trying to demonstrate here is give you a graphical representation of the actual drainage areas.

So the Blinebry piecharts are the -- show the statistical variation in piechart form from the very next exhibit -- I'm assuming it is 25.

So all we do is add up the number of wells that have drainage areas less than 15 acres and more than 15 acres and graph those and calculate the percentage. So it's just a graphical representation of the tabular data.

TECHNICAL EXAMINER EZEANYIM: Okay. And you got those numbers from those wells -- where did you get those? IHS? Where did you get the information on these wells?

THE WITNESS: These wells -- those wells

are the Blinebry wells that we calculated drainage areas for.

TECHNICAL EXAMINER EZEANYIM: Oh, okay.

THE WITNESS: I think it -- yeah, it's -- I show it to be Exhibit 25 --

TECHNICAL EXAMINER EZEANYIM: Okay.

THE WITNESS: -- that table. So you can see here on the piechart we have 11 wells. So if you go to Exhibit 25 there are 11 wells on this exhibit. So it's the same 11 wells. So...

TECHNICAL EXAMINER EZEANYIM: Okay. That makes it clear.

You know, like I said, I didn't want to, you know, be asking you all of these questions. But the question was asked about the decline curve, for instance, this reservoir, from hyperbolic to exponential. And are you of the opinion that there is no hyperbolic decline in these pools?

THE WITNESS: No.

TECHNICAL EXAMINER EZEANYIM: There is no hyperbolic decline?

THE WITNESS: No, I'm not of that opinion.

TECHNICAL EXAMINER EZEANYIM: Okay. So --

THE WITNESS: There is a hyperbolic.

TECHNICAL EXAMINER EZEANYIM: Okay.

THE WITNESS: Or there can be. I'm sorry.

TECHNICAL EXAMINER EZEANYIM: All declines are exponential. Is that what you're saying?

THE WITNESS: I'm sorry?

TECHNICAL EXAMINER EZEANYIM: All of the declines from this pool are all exponential declines?

THE WITNESS: No, sir. There is a hyperbolic component, or there can be. And we see that, and we saw it in a lot of the wells we analyzed.

My point was every well does not have to exhibit a hyperbolic component, especially when we believe the wells are competing for reserves. But all the wells are not hyperbolic and all of the wells are not exponential. You can have a mixture.

TECHNICAL EXAMINER EZEANYIM: I understand that. But as you learn now, most of these wells, they only decline for, if you see, some 12 months. So if you see some for 18 months, you can't begin to imagine what the decline is going to do. You know, I see a short span of production and people will extrapolate into the future without hyperbolic or exponential, you know. Or, by law, no hyperbolic, using exponential.

So it bothers me that we don't really know what these wells are doing, you know, because of the shortness of production. We need to have about 6 months to be able to know what that unit is doing. If you have a 6-month production you can then extrapolate whether it is exponential or hyperbolic or both.

But now we have a very short period of production. Some of you extrapolate after 6 months, when the well has not even stabilized, so we don't know what that well is going to do.

THE WITNESS: And that is a very good point, and you're exactly right.

When you go back and look at our Burnett -- our analysis on the Burnett wells, we only analyzed 35, 45 -- 46 wells total, so that's about half.

TECHNICAL EXAMINER EZEANYIM: Uh-huh.

THE WITNESS: The reason we didn't evaluate the other half is because I was not comfortable, because of what you just said. We have a very short time period, and I did not believe it would be reasonable to project those. So that's why we didn't present drainage areas on all 85 wells.

So you bring up a very good point. I only

extrapolated those wells that I thought we had sufficient data from which to determine a reliable trend.

TECHNICAL EXAMINER EZEANYIM: Okay. In some of your explanation, this is just typographical, or I don't know. If you use a capital M, that means a thousand. If you use two capital Ms that means million.

But if you use one small M, that's not million right there. You know, once you say MM, small letter MM, that's a billion, a billion something, when you use that small MM. I think in convention it's M.

I'm saying this because when I read small letter MM I will not know it's one million, because that's how it is. But if I see capital letter MM, that's million in what we're talking, and that's the Roman numerals.

But if you use a small letter -- and people make mistakes in using that. In convention you don't use a small letter for thousand. That means million. This capital letter is what we use in this convention.

I think most of you -- anybody would realize that M, you know, that is what we use to say

I got 1,000, it could be feet of gas, you know, or 1,000, you know, barrels of oil, it's capital M.

So when I go through this, and when I see a small letter M, I have to take it that it means thousand, right?

THE WITNESS: Yes, sir.

TECHNICAL EXAMINER EZEANYIM: That's why I say a small letter M, it was -- I am very meticulous about this is the way you do it.

Okay. On this 28G, is this accurate or fictional the -- on this, you know, the PHI-H?

THE WITNESS: It's just a generic example, so it's not actual. It is not any actual well or data.

TECHNICAL EXAMINER EZEANYIM: What are you trying to demonstrate?

THE WITNESS: What I'm trying to demonstrate here -- let me, if I could, find it.

This one (indicating), correct?

TECHNICAL EXAMINER EZEANYIM: Yes.

THE WITNESS: What I'm trying to demonstrate here is the effect of PHI-H on drainage areas.

TECHNICAL EXAMINER EZEANYIM: Uh-huh.

THE WITNESS: So in our assumption, I've

assumed hy- -- three hypothetical wells, with the red square, the blue diamond, or the green triangle.

And these hypothetical wells have different EURs.

TECHNICAL EXAMINER EZEANYIM: Uh-huh.

THE WITNESS: 50,000 barrels, 100,000 barrels, 200,000 barrels. And we graph that against PHI-H, assuming a constant water saturation.

And so what we show is we see that at a lower PHI-H you're going to calculate -- or I'm sorry, at a higher PHI-H. So a PHI-H of 20, you're going to calculate a very low drainage area as opposed to a PHI-H of 10, where you are going to calculate a much higher drainage area.

So I'm just trying to demonstrate the effect that PHI-H has on your drainage area calculations.

TECHNICAL EXAMINER EZEANYIM: Yeah.

THE WITNESS: And so if you underestimate or overestimate PHI-H, that could have a big impact on what you calculate.

TECHNICAL EXAMINER EZEANYIM: That is the problem here. Because I know PHI-H is universally proportional to drainage area.

THE WITNESS: Correct.

TECHNICAL EXAMINER EZEANYIM: Of course if you do that, that's what you're trying to show here, I mean, I think everybody knows that.

Please bear with me. Because since you put me here, I need to get some information to be able to make some of the decisions here.

Let's go to Exhibit Number 41B.

Mr. Gore, that's where we are at. Did you get that, 41B?

THE WITNESS: Yes.

TECHNICAL EXAMINER EZEANYIM: Okay. If you look at that now, if you look at the way you drew your red lines, you know, it appears that if you have two wells, if you have a higher EUR than four wells, for the way the red lines are drawn, did you calculate any EUR when you drew those red lines?

THE WITNESS: I did not on these exhibits, because this was just rebuttal to a Concho exhibit.

TECHNICAL EXAMINER EZEANYIM: Oh, okay.

THE WITNESS: I do have -- or we did do that exercise on some other units, which I didn't present to you, but we could certainly pull those out if you wanted to. But for this particular example, I did not do that.

But when these trends cross over, what

that says is, you know, you're going to minimize that incremental recovery, if there is any incremental recovery.

TECHNICAL EXAMINER EZEANYIM: Yeah. If you extend all of those to an X axis, those two lines, I anticipate you'll get more possibly from two wells than for four wells. Is that possible?

THE WITNESS: Yes, it is.

TECHNICAL EXAMINER EZEANYIM: How?

THE WITNESS: Because we have -- it is possible because, in my opinion, if you drill four wells and they start interfering with one another and competing for the same reserves --

TECHNICAL EXAMINER EZEANYIM: Yeah.

THE WITNESS: -- what we have seen is, we see that increase in the GOR trend.

In my opinion, when you see that decrease in ultimate recovery from when -- you go from two to four, it's because the four wells are producing at increased gas/oil ratios. In the area of that unit you're depleting the reservoir energy and you are actually lowering your ultimate recovery. So by drilling more wells than are necessary, you are causing physical waste.

TECHNICAL EXAMINER EZEANYIM: But

initially, when you add those four wells, it seems to go up?

THE WITNESS: It goes up immediately. Because if you imagine when you put those wells three and four, you put those holes in the ground, those wells are encountering rock that no -- that are not right next to a well bore, so you see that incremental increase.

But what you see is that dramatic decrease in -- or increase in decline, or a rapid dropoff, like -- this isn't the best example, but you see that the flush production, when you drill wells three and four. And if the wells three and four were not competing for the same reserves, they're -- they're going to decline on the same trend.

But when you see this dramatic change and steepening in decline, those wells are competing for what those wells are already producing.

So after you get out -- and timing is critical. Once you get out several months you're going to see this peak production, this increase in production, rapidly drop off. That's how that can occur.

TECHNICAL EXAMINER EZEANYIM: See, the data there is not really conclusive because you

don't have enough.

THE WITNESS: I think we actually have some better examples, but that -- that is how that occurs.

TECHNICAL EXAMINER EZEANYIM: Okay. Like I said, I don't want to -- if I start asking questions on all of these, we're not going to go home until 12:00 midnight, and I don't want that to happen. I think I've heard enough.

But I want to remind you that when I start looking at these, it means that I'm trying to do some calculations and I might need some more data. So in that case, you know, we do have to send e-mails to everybody saying I need this data, you know.

If we have -- even if it's confidential, we're not going to divulge it to whoever is not supposed to see anything. But I don't think there is anything confidential here that we haven't taken care of, you know. So I might be needing some more information, you know, to be able to come to a conclusion on this case.

Mr. Gore, you testified that sometimes you have a declining GOR. On what stage of depletion do you have a declining GOR?

THE WITNESS: Well, if you look at, for example, Craft & Hawkins, on -- for solution gas drive reservoirs, you'll see a typical GOR profile.

And what you see for -- you know, I will just try to draw it. You will see a very small, slight increase over time in the GOR. And it gets to the point -- and it's all dependent on reservoir pressure. The GOR will flatten out.

And then at the end of the life of the well, when pressure has been reduced and you have actually produced that gas, so there's -- there's not much, if any, gas left in the reservoir, you'll actually see that GOR start to decline. I think that's just a textbook generic description of a solution gas drive reservoir.

TECHNICAL EXAMINER EZEANYIM: You are right. That's the first stage. But most operators don't even get to that first stage. Before you get to the first stage you are already doing water flood, because you don't want to get to that stage.

Most operators don't get to the fourth stage. The fourth stage is -- you know, before you get to that fourth stage most operators are interested in water flood, which is more prevalent in the solution gas drive.

So -- but, yeah, you're right. Sometimes it might decrease, but that -- the fourth stage is very way back in the future. But I don't think it's correlated right here in this reservoir. It's not there yet.

THE WITNESS: We've not reached that point. You're correct.

TECHNICAL EXAMINER EZEANYIM: We haven't. But before we get there, I think even Burnett/Hudson will put in their water flood before we get to that stage you're talking about.

THE WITNESS: Well, I would disagree with you there, because Burnett/Hudson have no plans for a water flood. So...

TECHNICAL EXAMINER EZEANYIM: Oh, okay. Yeah. I mean --

THE WITNESS: But you're right. Assuming that a water flood -- the reservoir that you are talking about is a good candidate, you're right. You would implement that before you get to that point.

TECHNICAL EXAMINER EZEANYIM: Yeah. That's what I'm saying. But I am not telling Burnett/Hudson to do what I'm talking about.

THE WITNESS: Oh, sure. I understand.

TECHNICAL EXAMINER EZEANYIM: Okay. Now we come to the crux of the matter. This may be the last question before we wrap it up here.

The fourth application that was filed by Burnett/Hudson, there was a request for 240 barrels of oil per day, and then it was amended to 187.

I didn't see something today to see how Burnett/Hudson had arrived at 187 or, for that matter, 240.

Let's forget about 240, because they're not talking about 240 now. You took it off.

But I would like to know why you changed your mind. Isn't that going to help me? But now you're asking for 187. I didn't see any evidence presented today to show that that's what exactly the pool is going to make.

So did you have any study to demonstrate why -- how did you come up with 187? That's a simple question.

THE WITNESS: We looked at -- I believe it was the first 12 months of production on all the wells, to look at the peaks. And to -- and also what's important is how those decline off.

And what we observed is that if you had an allowable that was 187 barrels a day, you would

account for those peaks with the initial decline, and that would give you sufficient production averaged over a 12-month time period and balance, where operators would not have overproduction issues.

But that's -- that was the basis for the 187, by just looking at the first 12 months of production for the Burnett wells and -- and seeing where, given the decline of the wells, where those would fall off. And 187 looked to be about the average rate.

TECHNICAL EXAMINER EZEANYIM: Oh, yeah. Is that the average -- average of the production?

THE WITNESS: It wouldn't be the exact average. Rather, it would be the rate at which the peak rates that we saw would -- would -- again, balanced over 12 months.

If you were able to produce at 187 barrels a day for 12 months, you would -- you would account for not only the peaks but the decline. And so in effect, it would be an average. It's not a mathematical average.

TECHNICAL EXAMINER EZEANYIM: Okay.

THE WITNESS: But in effect, it would be an average over those 12 months.

TECHNICAL EXAMINER EZEANYIM: Okay. Is there any harm -- if you are asking for 187 and I give you 200, is there any harm to you if I give you 200?

THE WITNESS: No, sir.

TECHNICAL EXAMINER EZEANYIM: I mean it's an example.

THE WITNESS: As an example, I don't think 200 would be any harm. The key, in my opinion, is the gas/oil ratio limit. If you went to 200 with a 2,000 to 1, I don't think there would be any harm in that. The gas/oil ratio is the key component here.

TECHNICAL EXAMINER EZEANYIM: I understand that. We're talking about -- we are going to come back to the gas/oil ratio. We are going to come back to that.

But let me see if I have something else here.

So actually, the 187 was just peaked by looking at the data, the production data?

THE WITNESS: The first 12 months.

TECHNICAL EXAMINER EZEANYIM: It wasn't just a calculated?

THE WITNESS: That's correct.

TECHNICAL EXAMINER EZEANYIM: Okay.

I have a bunch of questions, but I don't want to keep asking you. Let me make some statements here.

Okay. I don't want to go back to you. I think you have been there for a long time, and I don't want to ask you more questions.

But I want to make a statement before closing statements, before we talk about closing statements, unless anybody has anything else to say before I say what I want to say now.

MS. MUNDS-DRY: Mr. Ezeanyim, we do have two witnesses we'd like to call in rebuttal.

TECHNICAL EXAMINER EZEANYIM: To what?

MS. MUNDS-DRY: To do rebuttal.

TECHNICAL EXAMINER EZEANYIM: Oh. Rebuttal on what?

MS. MUNDS-DRY: On their presentation today, as we discussed.

TECHNICAL EXAMINER EZEANYIM: How long is that going to take?

MS. MUNDS-DRY: I have cut it down to the bare bones. It will take 15 minutes.

TECHNICAL EXAMINER EZEANYIM: Okay. All right.

Mr. Gore, you may be excused.

THE WITNESS: Thank you.

TECHNICAL EXAMINER EZEANYIM: Okay. Call your witness.

MS. MUNDS-DRY: We would like to call Richard Prentice.

RICHARD PRENTICE,

after having been previously duly sworn under oath, was questioned and testified further as follows:

EXAMINATION

BY MS. MUNDS-DRY:

Q. Mr. Prentice, you've been previously sworn?

A. Yes, I have.

Q. And you were previously qualified as an expert in petroleum engineering?

A. Yes, I was.

Q. I'd first like to turn, if we could, to Burnett's Exhibit 18, please.

A. (Witness complies.)

Q. Thank you.

Mr. Prentice, were you present for the testimony of Mr. Jacoby, when he discussed the difference in completions between Concho and Burnett?

A. Yes, I was.

Q. And could you please explain to the Examiner the effect of these large frac jobs, in your opinion, on secondary recovery operations?

A. Well, the impacts that I see on large fracs -- and he testified to frac lengths of over 900 feet. Clearly, it is not -- and they just testified that they have no plans for secondary recovery.

There may be other people who do have plans for secondary recovery. Large frac lengths do not encourage sweep efficiencies. In fact, they decrease them dramatically. As you all -- as everybody knows, in the classical secondary recovery, you put water in the ground, you want to sweep.

With large frac -- large frac half lengths you're not sweeping anything, you're encouraging breakthrough. You are damaging the reservoir for potential secondary operations, in my view, with large frac jobs.

Q. And I know that Burnett's witness, Mr. Gore, just testified that Burnett has no present plans to conduct secondary recovery operations.

Does Concho have plans to conduct secondary recovery operations in this Yeso shelf?

A. Yes, we do.

Q. There was a number of slides -- and we don't need to turn to them necessarily, because I think --

MS. MUNDS-DRY: Actually, Mr. Ezeanyim, you asked earlier for the order number for that water flood. You asked for that yesterday, I believe.

TECHNICAL EXAMINER EZEANYIM: Yes.

MS. MUNDS-DRY: And for the record, we have a copy of this that we can give you if you'd like. But it's Order Number R12792.

TECHNICAL EXAMINER EZEANYIM: 12792?

MS. MUNDS-DRY: And Case Number 13898.

TECHNICAL EXAMINER EZEANYIM: Okay.

Q. (By Ms. Munds-Dry) Mr. Prentice, Burnett presented a number of slides in what I referred to as a water flood area in Section 20. And the letter numbers were B, C, D, E, and --

A. D, E, F, and G, I believe.

Q. Yes. Thank you for helping me with that.

Are you responsible for that water flood for Concho?

A. Yes, I am.

Q. What can you tell the Examiner about the

operations, the secondary recovery operations in the Jenkins and how they may impact those slides that were presented?

A. Those -- the Jenkins water flood was a water flood established on 160 acres, those four 40-acre units that we talked about.

It was established in 2007 as a 5-acre -- I mean as a 20-acre, 5-spot pilot water flood. Over -- and over -- over time, as we learned to our dismay -- this was a science experiment. And as you all know, not all science experiments work out like you want them to.

This was a 5-spot; that is, four injectors with a producer in the middle.

As it turns out, the water went north and south, so a perfect setup to water out each and every well in our 160-acre pilot.

We have since realigned that on a north/south directional -- north/south line-drive type water flood, and we are waiting for a response.

Q. So has the initial response you've received in that water flood deterred you from future secondary recovery operations?

A. Oh, no. We are -- we are a company of persistence, and we are trying again to get it

right.

Q. Mr. Prentice, before we turn to the next topic, Mr. Ezeanyim has asked a couple of times, I think throughout this hearing, if anybody had any PVT analysis, bubble point numbers, and initial pressure.

Could you please share with Mr. Ezeanyim that information which he's been asking for?

A. Yes. As you are aware, we have taken PVT analysis. The compositional analysis that we submitted earlier was part of that PVT analysis.

Another PVT part of that was the bubble point data. We have bubble points ranging from about 2,100 pounds to about 2,600 pounds, again depending on where you are on the whole Yeso shelf area.

Q. What do you -- what can you tell us about bubble point?

A. We have a -- in a -- typically in a reservoir like this, you are either very close to or maybe a little bit above bubble point when you start production. We have indications that we have bottom hole pressures in the range of 26- to 2,700 pounds, initially. So we are perhaps in a classical dilemma, or classical situation, where we are right

at or perhaps a bit above bubble point, it appears to us to be the picture right now.

Q. And did you mention what analysis, if any, you've determined as to what initial pressure was?

A. Yes. We ran bottom hole buildups on some of our new wells recently, in the last year or so.

Q. And what numbers did you see?

A. 2,600, 2,700 pounds.

Q. Okay. Let's turn to the next topic, if we could. I want to talk about the density requests by Burnett, if we could.

MS. MUNDS-DRY: And I'll ask Mr. Rankin to pass out these documents, if you would, please.

Q. (By Ms. Munds-Dry) Mr. Prentice, if we could, I'm looking at, first, the paper titled SPE 27640.

A. Yes.

Q. Could you identify what this -- what this document is?

A. This is a document on the Fulton Clear Fork unit in Andrews County, Texas, a Clear Fork unit that is operated -- was operated by Exxon at one point in time, I believe.

Q. And do you recall -- and we don't necessarily need to put the slide up -- Burnett's

Exhibit Number 6, which showed the Yeso Clear Fork productive trends?

A. Yes. I think testimony has been presented by both companies that basically agrees that the Clear Fork in Texas is the same as the Yeso in New Mexico.

Q. And if you could, I would point you to the first page of the introduction, about two-thirds of the way down. I would like to ask you to summarize or read for us -- it's easier just to read there -- it starts with "A pilot."

A. "A pilot 10-acre unit" --

MR. GRABLE: Pardon me.

THE WITNESS: Yes.

MR. GRABLE: Mr. Brooks, before he starts reading this in the record, I will object to introduction of large portions of this paper, either as an exhibit or by reading them, on the ground that it's hearsay. The authors, who are one, two, three, four people, are not here to testify. There's no evidence that this Clear Fork in Texas on the Central Basin platform is anywhere close to comparable to the rock quality and the fluid saturations in the Yeso in this part of New Mexico.

The conclusions reached by these authors

in a different field hundreds of miles away with different rock properties, saturations, is, in my view, of no relevance, and it is hearsay, and I object to it.

MS. MUNDS-DRY: Well, for one thing, we know that one of the exceptions to the hearsay rule is learned treatises, which this is a peer review. All the engineers in this room will recognize this as a very well-respected publication. It's a treatise that these engineers rely on. In fact, earlier, Mr. Jacoby mentioned that he was part of this process.

In addition, Burnett, first of all, has never testified -- in fact, the testimony earlier today was that they were not aware what the porosity or permeability was. So Mr. Grable's suggestion that they're different, there's no -- there has been no evidence of that today given by Burnett.

MR. GRABLE: Well, there's certainly no evidence that they're the same. And she is the proponent of this evidence, and she would have to connect it up to show relevance.

Even if it -- if they could get over the hearsay example, and I don't think this comes within learned treatise, because it's not -- it's first got

to be on the same point that we've got in. So I mean I just think it's far-fetched and --

MS. MUNDS-DRY: The testimony earlier today was that this was -- the Yeso was a Clear Fork equivalent.

LEGAL EXAMINER BROOKS: Well, the -- I remember that testimony.

I'm going to overrule the objection. The learned treatise exception is somewhat obsolete, I think in character, given the subsequent development of the proposition that hearsay evidence that an expert relies on in forming his opinions, if it's reasonable for an expert to rely on it, is considered admissible.

I am a little concerned about bringing in a large mass of new evidence this late in the proceeding by way of rebuttal, but I guess we'll leave that to discretion.

If you -- you said that the rebuttal would take 15 minutes with two witnesses, and you've already used 10 with one witness.

MS. MUNDS-DRY: Well, we have argued a great deal already about whether this should be admitted or not.

LEGAL EXAMINER BROOKS: Yes. Well, I'm

going to overrule the objection. We'll need to get these marked if you're going to put them in evidence.

MS. MUNDS-DRY: We will do that. And we promise to be very brief with them.

LEGAL EXAMINER BROOKS: Okay. Continue.

MS. MUNDS-DRY: Thank you.

Q. (By Ms. Munds-Dry) Mr. Prentice, if we could, I would direct you again to the first page, the introduction. It starts with "A pilot."

A. "A pilot 10-acre" --

TECHNICAL EXAMINER EZEANYIM: Wait a minute. Where are you reading?

MS. MUNDS-DRY: I'm reading -- if you go down to the introduction, where it says introduction.

TECHNICAL EXAMINER EZEANYIM: Okay.

MS. MUNDS-DRY: At about two-thirds down it starts, "A pilot."

TECHNICAL EXAMINER EZEANYIM: Okay. Go ahead.

MS. MUNDS-DRY: Do you see it, Mr. Ezeanyim?

TECHNICAL EXAMINER EZEANYIM: Yes. Go ahead.

MS. MUNDS-DRY: (Reading) A pilot 10-acre infill drilling program was initiated in 1986. Current development is occurring on 10-acre spacing in the developed areas of the field, in addition to the drilling of selected 20- to 40-acre locations in less developed areas of the field.

Q. (By Ms. Munds-Dry) Mr. Prentice, is that your experience in the Clear Fork area?

A. Yes. It is my experience that typically Clear Fork water floods in Texas operate on 10-acre spacing.

Q. And I think, for the sake of brevity, we're just going to do one more of these so we don't tax the Examiners' patience.

A. That's fine.

TECHNICAL EXAMINER EZEANYIM: So what is the point of reading that?

THE WITNESS: The point is that there are two points here. A, the Clear Fork is -- is clearly a candidate for secondary recovery.

B, it is usually done on 10-acre spacings. Those are the two points that we want to make, sir. It crosses over all four papers.

Q. (By Ms. Munds-Dry) Thank you, Mr. Prentice. And if I could next direct you to

what is titled SPE 84282.

A. Yes.

Q. And if I could direct you to the first page of the introduction, about three or four sentences in, where it starts with "Consequently," I'll read it for the court reporter.

(Reading) Consequently, infill drilling is required not only to increase recoveries from primary production, but also to enhance sweep efficiencies and improve recovery from secondary and tertiary enhanced oil recovery operations.

Mr. Prentice, do you agree with that statement?

A. Yes, I do.

Q. And is that the recommendation you have for the Yeso shelf in New Mexico?

A. Yes, it is.

MS. MUNDS-DRY: I have nothing further for Mr. Prentice.

Oh, I would like to mark these, if I could. The document entitled SPE 27640, Exhibit 44, and the document SPE 84282, Exhibit -- Concho Exhibit 45. We ask that they be admitted into evidence.

MR. GRABLE: I thought the first one was

43.

MS. MUNDS-DRY: I think it's 44. I think that is where we are numerically.

LEGAL EXAMINER BROOKS: Now, which was which?

MS. MUNDS-DRY: 44 is SPE 27640.

LEGAL EXAMINER BROOKS: 27640?

MS. MUNDS-DRY: Yes, sir.

TECHNICAL EXAMINER EZEANYIM: Okay.

LEGAL EXAMINER BROOKS: And that's 43?

MS. MUNDS-DRY: 44.

LEGAL EXAMINER BROOKS: 44.

And 84282 is COG Exhibit 45?

MS. MUNDS-DRY: Yes, sir.

TECHNICAL EXAMINER EZEANYIM: Okay.

LEGAL EXAMINER BROOKS: You're proposing to admit these papers in their entirety?

MS. MUNDS-DRY: Well, you know, we can do the first pages of each. I mean that's what we read. If that's more palatable to you, then I have no problem with that.

MR. GRABLE: The first pages coming in under -- I don't think it's a rule of optional completeness. I'm too tired at this point.

There may be some useful stuff in here,

like what the porosities and permeabilities are in these reservoirs that have produced since the 1940s, as traditional reservoirs without hydraulic fracture, that are utterly completely dissimilar from those tight Yesos. So there may be some data buried in here that I think would be helpful to Mr. Ezeanyim. And it seems --

LEGAL EXAMINER BROOKS: Well, I'm not -- as an examiner, I'm not objecting to anything. I was just anticipating that you might.

MR. GRABLE: I don't know whether I want it all in or -- I don't want any of it in, but I kind of lean toward if any of it comes in, just let it all come in, because we might point out some good stuff in here.

And I may ask Mr. Ezeanyim to file a late-filed exhibit showing the reservoir characteristics of these reservoirs, and showing how they are markedly different from the reservoir in question, since have I not had the opportunity to do that. But anyway, my preference would be --

MS. MUNDS-DRY: They submitted an exhibit earlier today, Exhibit Number 6, where they showed the trend of the Yeso and the Clear Fork. They had every opportunity to testify about the similarity or

the differences.

LEGAL EXAMINER BROOKS: Well, there's no need for argument, because there is not really an objection before us.

So Exhibits 44 and 45 will be admitted.

MS. MUNDS-DRY: Thank you.

MR. GRABLE: I have some questions for you, Mr. Prentice.

TECHNICAL EXAMINER EZEANYIM: Go ahead.

EXAMINATION

BY MR. GRABLE:

Q. Mr. Prentice, in your opinions that you have expressed with respect to Exhibits 44 and 45, are you intending to tell the Examiners that the rock qualities in the Fork and Clear Fork in Andrews, Texas, are similar to the rock qualities in the Yeso field in Eddy and Lea County, New Mexico?

A. It's my opinion that the Clear Fork in the -- across the shelf area, across the basin, is probably very similar to the Clear Fork and Yeso in Southeast New Mexico.

Q. As far as the porosity, permeability, and fluid saturations?

A. It's probably very likely, yes.

MR. GRABLE: Well, we may want to

challenge that with some late-filed exhibits.

Q. (By Mr. Grable) Let me ask you this. If they are not similar, if the Texas Clear Fork fields are more porous, more permeable, and have higher oil saturations, would they be comparable to these Yeso fields?

A. I can't see them being more. I would tend to think they would be much less.

Q. Maybe we'll find out.

A. Maybe we will.

TECHNICAL EXAMINER EZEANYIM: You want me to go to Texas now?

Q. (By Mr. Grable) One other question. In your first bit of testimony about objecting to long frac half lengths in this field, because of its possible adverse effect on a potential water flood, do you remember that testimony?

A. Yes, sir.

Q. Isn't it a fact that every geologist and engineer, for that matter -- and I believe yours, if we could look back at your testimony -- is that this reservoir, some thousand feet thick, is actually a series of lenticular stratigraphically separate accumulations?

A. Yes, sir, I do.

Q. So the only way you could sweep that with a water flood is if you connect those various stratigraphic pods, right?

A. My point is, on the frac length itself, you've extended the frac lengths to the point that you -- if you do, indeed, conduct secondary operations, you provide a path for breakthrough between a potential pressure sink and a pressure source.

Q. But they're not going to put -- didn't Mr. Midkiff put up his little cloud exhibit --

A. Yes, sir.

Q. -- or his pod exhibit?

And unless those separate lenses are connected by fracking, you cannot sweep from one to the other, can you?

A. On 10-acre spacing you probably can, sir.

Q. You can sweep from one lenticular stratigraphic accumulation of hydrocarbons that's not in actual communication with another without fracking between them?

A. Fracturing and -- as a combination of infill drilling to 10 acres. That's the idea of infill drilling and water flow, sir. It's a well-established principle, sir.

Q. Thank you.

MR. GRABLE: That's all I have of this witness.

THE WITNESS: Thank you.

TECHNICAL EXAMINER EZEANYIM: Thank you. Anything further?

MR. CAMPBELL: No questions.

TECHNICAL EXAMINER EZEANYIM: You may be excused.

MS. MUNDS-DRY: I would like to call Mr. Midkiff, please.

TECHNICAL EXAMINER EZEANYIM: Okay.

TJ MIDKIFF,

after having been previously duly sworn under oath, was questioned and testified further as follows:

EXAMINATION

BY MS. MUNDS-DRY:

Q. Mr. Midkiff, do you recall -- and I'll put these in front of you -- Burnett's Exhibits 41B through E?

A. Yes, ma'am.

Q. And as we understand, the point of those exhibits was to show interference on 10-acre spacing?

A. Yes, ma'am.

Q. And do you happen to know what the -- and since I gave them to you, I don't know which one is the Park lease. Is it 41C?

A. Yes.

Q. Do you happen to know what the current production rate is on that lease?

A. Yes. The current production rate for that -- that lease for those four wells is approximately 100 barrels a day.

MR. GRABLE: Which exhibit is this? I'm sorry.

MS. MUNDS-DRY: 41C.

THE WITNESS: The fourth well drilled within that proration unit was the strongest well and cum'd 48,000 barrels in the first year.

TECHNICAL EXAMINER EZEANYIM: 100 barrels a day for the well?

THE WITNESS: No, no, no. 100 barrels a day total for the proration unit.

TECHNICAL EXAMINER EZEANYIM: Okay.

THE WITNESS: So the forecast there indicates it's probably around 30 barrels a day, but that's actually producing at 100 barrels a day right now.

Q. (By Ms. Munds-Dry) You presented a -- in

your original testimony, which we don't need to go back to -- cross-sections showing what you show as 10-acre offsets in some Burnett wells, correct?

A. Yes.

Q. And that was on Exhibit Number -- let me pass that out. That was Exhibit Number -- do you happen to know that number off the top of your head?

A. No, I do not.

Q. It was the Burnett wells and the Stevens wells.

A. Yes.

Q. I've handed you what we're going to mark as Concho Exhibit 46.

Would you identify and review this display for the Examiner please?

A. Yes. There seems to be some sort of confusion between 10-acre horizontal development and 10-acre vertical development.

If you drill two horizontal wells through a proration unit, and if you look at where that well is completed, you're seeing multiple completions. In fact, I've represented -- with dots there, I'm representing the horizontals that -- where those vertical wells would exist had that been developed vertically.

So you can see that there are completions in that exact same spot within the reservoir. There is no difference. In fact, this is probably tighter than 10-acre spacing, because their typical perforation spacing is approximately 200 feet.

So there is an attempt there -- those perforations cost money, so there is an attempt there to complete the well bore on -- on tighter than 10-acre spacing. There's no difference, or there's -- that cannot be considered only two well bores. That's 10-acre spacing.

Q. And again, your point there was to show what, with respect to interference between 10-acre spacing?

A. There was no interference in those wells in 10-acre spacing. In fact, one of the exhibits show that wells that were within 140 feet of each other, perforations within 140 feet of each other, there was no interference.

Q. I'd like to turn now to the issue about whether high GOR prematurely exhausts reservoir energy.

A. Yes.

Q. I'm going to hand you what we're going to mark as Concho Exhibits 47, 48, and 49, please.

Mr. Midkiff, for the record, I have marked as Exhibit 47 a document entitled "COG Total Yeso Production Curve."

A. Yes.

Q. Could you please identify and review this for the Examiner?

A. Yes. What this shows is --

LEGAL EXAMINER BROOKS: Just a minute.

MS. MUNDS-DRY: I apologize.

THE WITNESS: Oh, I'm sorry. You told me to be fast, so I was --

LEGAL EXAMINER BROOKS: Well, we can't be too fast. We need to know which of these is which.

MS. MUNDS-DRY: Exhibit 47 is COG total Yeso production. I apologize.

LEGAL EXAMINER BROOKS: Okay. COG total Yeso total production curve. That's 46?

MS. MUNDS-DRY: 47.

TECHNICAL EXAMINER EZEANYIM: 47.

Okay.

MS. MUNDS-DRY: I'll wait until opposing counsel gets their copy of that.

LEGAL EXAMINER BROOKS: Okay. Which is 48 and which is 49?

MS. MUNDS-DRY: 48 is the Burnett total

Yeso production curve.

TECHNICAL EXAMINER EZEANYIM: Burnett?

MS. MUNDS-DRY: 49 is the total Yeso production curve.

TECHNICAL EXAMINER EZEANYIM: Okay.

MS. MUNDS-DRY: Thank you.

Q. (By Ms. Munds-Dry) Mr. Midkiff, please review, first, Exhibit 47 for the Examiner.

A. That's the COG plot?

Q. Yes, sir.

A. A representation was made earlier that I guess this was supposed to apply across this entire shelf and that, you know, as we drill on 10 acres that everywhere our GORs are going out the roof. Well, a large portion of Concho's drilling is on 10-acre spacing.

And if you look down at the bottom, it's difficult to see, that our -- that's the GOR line down at the bottom. If you actually look, our GOR is trending down.

Q. And that's sort of a -- I would call it a fuchsia color or a pink color?

A. Yes. It's hard to see there, yes.

TECHNICAL EXAMINER EZEANYIM: Are you talking about 47?

THE WITNESS: Yes, the COG curve, the one that says COG.

TECHNICAL EXAMINER EZEANYIM: Okay. COG curve. What is that -- this one here (indicating)?

THE WITNESS: Do what? I'm sorry?

TECHNICAL EXAMINER EZEANYIM: This one here (indicating) --

THE WITNESS: That's the GOR right there (indicating), yes, sir. That is every well that Concho produces within the Yeso, summed up right there.

TECHNICAL EXAMINER EZEANYIM: Okay. That is the GOR?

THE WITNESS: Yes, sir.

TECHNICAL EXAMINER EZEANYIM: Okay. The average or total of what --

THE WITNESS: Yes, sir. Yes, sir.

TECHNICAL EXAMINER EZEANYIM: All the way from 1993 to 2011?

THE WITNESS: Yes, sir.

TECHNICAL EXAMINER EZEANYIM: Okay.

Q. (By Ms. Munds-Dry) And what does this show you with respect to what the GOR has been in COG's Yeso production?

A. Yes. Since COG took over operations, you

have seen our total GOR decrease over that time frame. This is every well, and you have seen our GOR decrease.

Q. Let's go to Exhibit 48, of Burnett.

TECHNICAL EXAMINER EZEANYIM: Before you go, I need to understand the axis so I can read this.

THE WITNESS: On the -- the Y axis is in daily rates, and you've got oil, gas, and water on there with a well count. So it's a -- and then down at the bottom, it -- it's all on the one axis to the right -- or to the left.

TECHNICAL EXAMINER EZEANYIM: Okay. Daily production?

THE WITNESS: Yes, sir.

TECHNICAL EXAMINER EZEANYIM: And that's -- okay.

Q. (By Ms. Munds-Dry) Let's go to Exhibit Number 48, please.

TECHNICAL EXAMINER EZEANYIM: I want to understand what this is.

MS. MUNDS-DRY: Oh, I'm sorry, Mr. Ezeanyim. I didn't mean to interrupt you.

TECHNICAL EXAMINER EZEANYIM: Okay. The first one is gas/oil ratio, the first column, that

is not very clear?

THE WITNESS: Yes.

TECHNICAL EXAMINER EZEANYIM: What is this one (indicating)?

THE WITNESS: That is well count.

TECHNICAL EXAMINER EZEANYIM: Well count. And then the green is the oil production?

THE WITNESS: Yes, sir.

TECHNICAL EXAMINER EZEANYIM: And then what are the other two colors? What are those?

THE WITNESS: The blue is water and the red is gas production.

TECHNICAL EXAMINER EZEANYIM: Okay. I am just troubled by the gas/oil ratio. What's the highest gas/oil ratio you have there?

THE WITNESS: It looks to be, right before we took over operations, approximately 4,000 -- it's difficult to see on that axis, but it's right there around 4,000, yes, sir.

TECHNICAL EXAMINER EZEANYIM: Okay.

THE WITNESS: And that is -- that is down now to approximately -- I guess maybe 2,500, since we began operating.

TECHNICAL EXAMINER EZEANYIM: When did you start, 2007?

THE WITNESS: Yes, sir. The majority of our -- our operations began around 2006/2007.

TECHNICAL EXAMINER EZEANYIM: Okay.

Now, you are -- go to the next.

MS. MUNDS-DRY: Thank you.

Q. (By Ms. Munds-Dry) Mr. Midkiff, if you will review Exhibit 48, please.

A. Yes. This is a total plot for everything that Burnett operates within the Yeso. It's the exact same plot as before. And you can see that their wells are not quite as old as ours, and so you probably don't expect as high of GORs as ours. But that -- that's a total curve for their Yeso production as well.

Q. And what does it show as their -- I know it's hard to read there -- the current GOR for their wells?

A. Well, we -- they actually have the same current GOR as we do across their entire production. It's right there around 2,500.

Q. And, Mr. Midkiff, assuming the Examiner is ready, if we can go to Exhibit 49.

What does this show us?

A. This is just the total Yeso curve for everybody across the shelf. This is all wells.

There's a couple of erratic points where it seems that the public data was a little bit incomplete, but that is representative of all Yeso production across the shelf.

Q. And there's a spike here at the end before we get to 2011. Do you have any explanation for that?

A. No. That just appears to be -- like I say, sometimes the data is a bit -- it has -- they have to catch up, and that appears to just be an error there at the end.

Q. So, Mr. Midkiff, what can you conclude from Exhibits 47, 48, and 49?

A. Well, that there -- there seems to be no -- no negative effects on the GOR. In fact, you know the main point is that -- that the majority of Concho's operations are drilling on 10-acre spacing, and you can see the effect that that has had on our GOR. You can't take a couple of data points and extrapolate that out across the entire play. You have to look at the whole picture, as I stressed in my main testimony.

And if you look at the whole picture you can see what we're doing to our GOR.

MS. MUNDS-DRY: Unless Mr. Ezeanyim has

any questions on that, I'd like to move on to a new topic.

TECHNICAL EXAMINER EZEANYIM: Do you have more topics?

MS. MUNDS-DRY: One more.

TECHNICAL EXAMINER EZEANYIM: Okay. Go ahead.

Q. (By Ms. Munds-Dry) Mr. Ezeanyim and others in this proceeding have talked about the effects of PHI-H.

A. Yes.

Q. And I'm handing out what has been marked as Concho Exhibit Number 50, which is titled "Paddock EUR versus SO PHI-H."

And Concho Exhibit 51, which is titled "Paddock EUR versus PHI-H."

And we will wait until everyone gets a copy of those.

LEGAL EXAMINER BROOKS: Okay. The one that's "Paddock EUR versus SO PHI-H," that is Exhibit 50?

MS. MUNDS-DRY: Yes, sir.

LEGAL EXAMINER BROOKS: The one that's marked "Paddock EUR versus PHI-H" is Exhibit 51?

MS. MUNDS-DRY: Yes, sir.

LEGAL EXAMINER BROOKS: Okay. Thank you.

Q. (By Ms. Munds-Dry) And, Mr. Midkiff, I would like you to explain this. And if you could, I believe -- I'll direct everyone's attention to what is Burnett's Exhibit Number 25, which is the Blinebry producer drainage calculations.

A. Yes. Well, one of the -- the main focus that seemed to be of Burnett's testimony was on log interpretation and PHI-H calculations and how that allowed them to target zones within the reservoir.

And there's -- you know, I presented testimony on -- on -- in my main testimony about how those -- those correlations, you know, seem to be invalid.

And there was an attempt to invalidate, I guess, the correlation I made there. So what I did was I looked at it using the data that Burnett provided using their PHI-H numbers and their EURs.

And if you look at these, there was -- you know, they mentioned that SO PHI-H was probably the better way to look at it, so they did provide us those numbers. And you draw the same conclusion. There is absolutely no correlation.

And the problem with that is, if you're only targeting what shows up at the well bore, you

run a significant risk of not capturing other reserves within the reservoir.

Q. I think I meant to refer to Burnett Exhibit 28. That's the -- you got these numbers from the table -- the drainage area calculations?

A. Yes. That was straight from their exhibits.

Q. And the second side, Exhibit 51, what does this show?

A. Just the EUR versus PHI-H?

Q. Yes.

A. The same -- the same correlation. Like I said, there's -- you know, there was a question about how to look at it, whether PHI-H versus SO PHI-H. Either way you look at it there's absolutely no correlation.

Q. Based on what we have been presented here today, Mr. Midkiff, have you looked at -- I don't know if you have looked at the calculations. But if you were to -- if all the operators in this pool, in these pools the subject of Concho's application, were to avoid overproduction, what would the allowable have had to have been?

A. To -- you probably would need at least 300 barrels a day, and at least a 4,000 to 5,000 to

1 GOR.

Q. And if we were looking back and looking at Burnett's application, and they requested a 187-barrel allowable, without the balancing rule, would Concho be overproduced?

A. Everybody within the shelf would be overproduced -- well, I say that. I don't know if each individual operator was. But I do have a total overproduction for the shelf, and a large part of that would be Concho's. And that number, you would -- you would -- total overproduction for the shelf would still be -- I believe it's about 750,000 barrels of overproduction and approximately 1.6 BCF of overproduction.

Q. Thank you.

MS. MUNDS-DRY: I pass the witness.

TECHNICAL EXAMINER EZEANYIM: Mr. Grable?

MR. GRABLE: I will be very brief. I'm about out of time, anyway.

EXAMINATION

BY MR. GRABLE:

Q. Mr. Midkiff, I put up on the board here Burnett Exhibit 42, the GOR map. Did you review that considering Mr. Gore's testimony?

A. Yes, I did.

Q. And you see down here that he had computed the average produced GOR of COG and Burnett, cumulative production, the first barrel to the most recent month.

And there's a big difference between the two operators in cumulative production, isn't there?

A. Yes, sir. Our production is much older, and you would expect a higher GOR.

Q. Now, in -- I confess I can't read, and I would like -- it would be useful if you could either give us the data or give us drafts that have -- that are readable. I can't tell what the numbers are.

But assuming that the numbers are what Mr. Midkiff testified to, wouldn't your GORs be coming down because of some of this more recent drilling up to the north that produces at lower GORs with your newer wells?

A. That is possible. But if you actually look at some of my main testimony, you can see that as a third and fourth well was added in many of those proration units, you saw GOR drop total across those proration units, indicating that you were intersecting new reserves there.

Q. Are you now adopting the view that GOR is important, by offering this evidence?

A. I -- I still believe that -- and again, I'm not aware of anybody that has a -- has had a strict habit of -- of curtailing production or restricting production. I have not seen that.

But I have looked at production across the shelf, and there has been no indication of harm through that total unrestricted production.

Q. On your exhibits -- I think they are 50 and 51, but I can't remember what the numbers are -- did you correct for any of the factors that Mr. Gore mentioned, other than using oil-saturated PHI-H rather than gross PHI-H?

A. Well, I believe -- you know the first one there is location and structure. Obviously, all of these wells are within the same area.

The first well versus fourth well, that's not applicable because you only have two wells, as they claim.

The type of stimulation, I believe that they -- what he claimed was the reason he did drainage calculations on these wells is because they had all had similar characteristics. And I guess if they weren't stimulated similarly, I guess maybe the drainage calculations wouldn't even be accurate.

But I believe the interp- -- or the

presentation was that these were similar wells.

Q. I don't think that was the presentation, but we'll let the record stand for it.

But if only a few of these wells received a slickwater frac and a lot of them had hot acid fracs, they wouldn't be comparable, would they?

A. Well, you -- again, you could pull out a few data points if you wanted to, but I don't know how many data points you pull out to begin seeing a correlation there.

Q. Well, you heard the testimony about the better results Burnett has achieved with its recent slickwater fracs, didn't you, Mr. Midkiff?

A. I did see that they had higher initial production, yes, sir.

Q. And if -- if that's true, why -- why would Burnett's wells be better unless it is related to their selective perforations and different stimulation techniques?

A. Well, I believe it was stated earlier that they were getting approximately 900 feet of frac half length. And if you're -- if you're connecting that much reservoir, there's a good chance you're going to get some IP -- I mean some pretty good IPs.

MR. GRABLE: I pass the witness.

TECHNICAL EXAMINER EZEANYIM: Okay.

MR. COONEY: No questions.

TECHNICAL EXAMINER EZEANYIM: Okay.

Now, what do you want me to do with these Exhibits Number 46 through 51?

MS. MUNDS-DRY: We'd ask that they be admitted into evidence, please.

TECHNICAL EXAMINER EZEANYIM: Any objection?

MR. GRABLE: All right. Now, we're dealing with --

MS. MUNDS-DRY: 46 through 51.

MR. GRABLE: No objection.

TECHNICAL EXAMINER EZEANYIM: Okay. Exhibits 46 through 51 will be admitted.

Any more questions for this witness?

MS. MUNDS-DRY: No, sir.

TECHNICAL EXAMINER EZEANYIM: Okay.

Before we go to closing statement, which we may not do today, let me make some comments here.

I think the way I will handle it, I have a few comments, one or two or three. I want to make a comment that -- of all we understand to be undisputed facts.

LEGAL EXAMINER BROOKS: Is the witness

excused?

TECHNICAL EXAMINER EZEANYIM: Yeah, you're excused.

THE WITNESS: Thank you.

TECHNICAL EXAMINER EZEANYIM: When I make this statement, I want everybody -- you know, you can stand up and then make a comment after we go through them.

One of them is that almost all operators in this pool have overproduced in one way or the other.

If I don't hear anything, it means that is true. Okay?

MR. GRABLE: You're asking under the current rules?

TECHNICAL EXAMINER EZEANYIM: Yes, under the current rules. Well, you don't have any other rules.

MR. GRABLE: Yes. I believe that to be true.

TECHNICAL EXAMINER EZEANYIM: Okay. Almost all operators in this pool overproduce in one way or the other under the current rule.

MS. MUNDS-DRY: We agree.

TECHNICAL EXAMINER EZEANYIM: Okay.

There are five pools here that need to be consolidated by one of the -- I think I'm right. And of those five there was notice and there was no objection.

So is there any objection in consolidating those five pools?

MS. MUNDS-DRY: No objection.

TECHNICAL EXAMINER EZEANYIM: Okay. We are making progress.

I'm trying to put down, you know, undisputed facts. And if you want to dispute, you have to stand up and tell me why.

From the evidence I heard today, it appears that some percentage of units in this pool may produce -- some of them may produce anywhere from 100 to 300 barrels of oil per day.

It's just a statement. I mean it doesn't mean anything. I'm not writing an opinion, I'm just making a statement.

Is that a fair statement? I said some units in these pools may produce anywhere from 100 to 300 barrels of oil per day. Some of them will produce below that, but I am making a statement.

Is that a fair statement?

MR. COONEY: Some units or wells?

TECHNICAL EXAMINER EZEANYIM: Some units, yeah.

MR. COONEY: Yes.

TECHNICAL EXAMINER EZEANYIM: Some units in these pools may produce from 100 to 300 barrels of oil per day.

MS. MUNDS-DRY: Or over. The data that we've looked at shows at over 300.

TECHNICAL EXAMINER EZEANYIM: Okay. 100 to 400 barrels a day.

MS. MUNDS-DRY: Yes, sir.

TECHNICAL EXAMINER EZEANYIM: Okay.

MR. GRABLE: I don't think that -- the evidence, as I recall it, is that for one or two months some of the units may touch 300 barrels, and then they decline rapidly from that. But the evidence is what it is.

I thought your statement was generally true.

TECHNICAL EXAMINER EZEANYIM: Yeah, okay. I'm just giving the parameters, and so I'm not going to give that in a range. I have to give you a certain -- you know, how to -- how to say what the pool is going to do. So I'm going to do 100 to 400 now, because otherwise somebody will -- you know,

that's not a rule.

Okay. So that other one is gone.

Is there an agreement between the parties, the applicants, that this reservoir is -- has the solution gas drive. Is that correct?

MS. MUNDS-DRY: Yes.

TECHNICAL EXAMINER EZEANYIM: Is there any other type -- you know, that's what we are dealing with, right?

And is it also a fair statement to say that this reservoir has very low porosity and permeability, it's tight?

MS. MUNDS-DRY: Yes.

MR. COONEY: Yes.

TECHNICAL EXAMINER EZEANYIM: I want anybody that will dispute to come out and say no, because all of these are being recorded.

So it's a solution gas drive that is tight, low porosity, low permeability.

In a solution gas drive reservoir, this is the position I make. In a solution gas reservoir, especially when it's producing below the bubble point, rate of withdrawal does not damage or harm the reservoir.

I'm going to do it carefully, because this

is the crux of the matter, because my decision will be based on what I just said last.

I said, in solution gas drive reservoirs, rate of withdrawal, especially if it's producing below the bubble point, does not harm or damage the reservoir.

I'm trying to state undisputed facts. If there's a dispute I want to hear it.

MR. GRABLE: We can't agree to that statement.

TECHNICAL EXAMINER EZEANYIM: Okay. Good. I need somebody to dispute it and tell me why.

MR. GRABLE: Well, in our view, it depends, at least in part, on the gas/oil ratio. Our view is that production at high gas/oil ratios is harmful to the reservoir.

TECHNICAL EXAMINER EZEANYIM: When it's below the bubble point. I'm not talking about when it's being saturated. I'm talking about when it's below the bubble point.

If you don't want to answer that question, you can answer that question later.

I want to go back -- because this is very, very important to me, that everybody agrees with me. Because if you don't agree with me, then there's

something wrong somewhere. So I want -- if you -- you don't have to do it today.

I want you, Mr. Gore, to go back and see whether you can say yes or no to this. And if you say no, I don't want you to just hastily agree or disagree now. I want you to go back -- Mr. Gore, you're very, very well qualified to do this. I want you to find out whether -- I am not talking about the first stage, when the solution gas drive reservoir is saturated, if you do this, they're going to harm the reservoir.

I'm talking about here, where I am suspecting that when you drill these wells they have -- you know, they are identical. Their bubble point failure is very close to identical to the reservoir failure.

So a little bit of -- you know, before, when you got to -- you see those -- that bubble point, because it's mobile before -- one month is mobile, and you are producing those things.

I want you to go back and send an e-mail to all of us. I don't want you to answer that question today, because it's very important, because I want to use that format to look at all of this to see what I can do.

I just made a statement. I'm going to repeat that statement. I'm going to repeat it to you. Take it home and then answer that question.

I'm saying that when a solution gas drive reservoir is producing below the bubble point, the rate of withdrawal does not harm or damage the reservoir. That's really what I'm saying.

And I don't want you to answer that, because I know you're not prepared for it. I want you to answer that question and then send it to everybody. And then from there, I can take it and make my recommendations.

I'm not an attorney, I'm just a technical engineer.

MR. GRABLE: We will respond as you have requested.

TECHNICAL EXAMINER EZEANYIM: Yes. I want to do that because it's very important. Because if you make a hasty decision here, I mean -- do you see what I mean? I mean I'm trying to satisfy everybody. And that -- you know in that case, I can say, okay, these five points I've made is undisputed, so those will be fine. At least that helps me a lot. That's why I wanted to read that out to you.

That does not mean I have made up my mind. That doesn't mean anything. It's just some undisputed facts.

MS. MUNDS-DRY: Mr. Ezeanyim, you -- you may have other things you are requesting. When would you like an e-mail response? Can you set a deadline?

TECHNICAL EXAMINER EZEANYIM: As soon as you could get it, because this is important, and I have a very tight schedule. The earlier I can get this the better.

The court reporter has promised that by this week we're going to get the -- you know, all of this, you know, maybe an inch thick. He said he can get it to me, too. We want to go ahead and work -- and start working.

Because -- I don't know. I don't want to use the word -- I don't know whether all of those wells that were shut in, whether they have been put back to production, even though we have an order. So the earlier I can get this order out, at least, you know, those wells can be, you know, put into production. I trust you have done it.

And you know, based on what we have heard now, based on what we have heard, I really want you

to work with me, the two applicants. I want you to draft another draft order.

MS. MUNDS-DRY: That was one of my questions for you, Mr. Ezeanyim.

TECHNICAL EXAMINER EZEANYIM: Yes. I want you to have another draft order, which will be very, very different from what you gave me before. And I want you to -- we're going to write one order on these two cases. I want both applicants to give me a draft order.

MS. MUNDS-DRY: And, Mr. Ezeanyim, you may be getting to this, and I'm sorry if you are.

I haven't had a chance to confer with opposing counsel. I wonder, instead of closing statements this evening, you might entertain written closing statements.

TECHNICAL EXAMINER EZEANYIM: Oh, yeah, I'm coming there, yes. You are just jumping the gun.

MS. MUNDS-DRY: Oh, I'm sorry. Okay.

TECHNICAL EXAMINER EZEANYIM: I'm coming there.

MS. MUNDS-DRY: I'll hold my horses. Sorry.

TECHNICAL EXAMINER EZEANYIM: Well, I am

not ending yet.

MR. GRABLE: Mr. Ezeanyim, I do have a clarifying question on your very important question, and that is a two-part question.

In rate of withdrawal from the reservoir, do you mean rate of withdrawal of oil or gas, and does the ratio of oil and gas, in the sense of the gas/oil ratio, matter?

TECHNICAL EXAMINER EZEANYIM: I'm talking both.

MR. GRABLE: Okay.

TECHNICAL EXAMINER EZEANYIM: So, yeah.

MR. GRABLE: When you say "damage to the reservoir," what that says to me is would result in a lower ultimate recovery; and, therefore, cause --

TECHNICAL EXAMINER EZEANYIM: Waste.

MR. GRABLE: -- waste.

TECHNICAL EXAMINER EZEANYIM: Yes.

MR. GRABLE: Ultimate loss of production.

TECHNICAL EXAMINER EZEANYIM: Yes. That is -- really, I should have used that word. Thank you, Mr. Grable. Because this time -- because when the reservoir is harmed or damaged, then you're incurring waste.

MR. GRABLE: I just wanted to make sure I

understood your question.

TECHNICAL EXAMINER EZEANYIM: Yes. Yes, you are correct. That's what I'm trying to -- and remember what we're talking about here, a solution gas drive reservoir. This is a typical one.

I want you to go and study it and tell me, you know, whether the rate of withdrawal, whether that is a ratio of -- are we talking about this or rate of withdrawal from that reservoir, when you are below the bubble point, whether it will damage the reservoir, harm the reservoir, and then incur waste.

I don't want waste. That is why I'm here. Otherwise, you know, there is no point in being here. We are here to make sure I prevent that waste.

So you see why -- that was my last comment.

And including you. If you think it's going to harm or damage the reservoir, let me know.

This has to be on the record. This will be the key words of the -- of the conversation.

Okay. Now, let's go to closing statement. I think everybody is tired. My head is full. I cannot actually let in any more.

So what we're going to do -- and I think

Ms. Munds-Dry is -- and I think it's more beneficial if the counsel will submit their closing statement in writing. I think that -- that will be better. I mean I think that will be okay, so that I can read it. If you tell me now I won't even remember a word.

MR. GRABLE: We would prefer, then, to do it after we get the record from Mr. Baca.

TECHNICAL EXAMINER EZEANYIM: Okay. Yeah. You know what? He has promised to get the record when?

(Discussion off the record.)

MR. GRABLE: These will be simultaneous closings, some amount of time after receipt of the record? Is that --

MS. MUNDS-DRY: And I would suggest we do the closing and the proposed orders and submit those all at the same time.

TECHNICAL EXAMINER EZEANYIM: Yes. I think by Friday you will get whatever you want from him, right?

MS. MUNDS-DRY: By Monday at the latest.

TECHNICAL EXAMINER EZEANYIM: By Monday at the latest. So I'm looking at next Monday.

LEGAL EXAMINER BROOKS: Which will be a

holiday.

TECHNICAL EXAMINER EZEANYIM: Oh. Next Monday is a holiday. Okay. Okay.

The end of that week, you know, we'll see how that goes. The end of that week, two weeks from the time you get it. Two weeks from Monday.

MR. COONEY: Two weeks from when we get it?

TECHNICAL EXAMINER EZEANYIM: Yeah, two weeks from Monday.

MS. MUNDS-DRY: Two weeks from Monday?

TECHNICAL EXAMINER EZEANYIM: Yeah. I would like to see your -- your drafts -- your draft order. But I need to get your closing statement before that draft order. Can you do that, Mr. Grable?

MR. GRABLE: Well, I don't know, frankly.

MS. MUNDS-DRY: I prefer we do it at the same time.

MR. GRABLE: Pardon?

MS. MUNDS-DRY: I'm sorry.

TECHNICAL EXAMINER EZEANYIM: Does anybody have a calendar here?

MR. COONEY: I'm out for my granddaughter's graduation from May 28 until

June 2nd.

TECHNICAL EXAMINER EZEANYIM: Oh, okay.

MR. COONEY: I don't want to slow things down, though.

TECHNICAL EXAMINER EZEANYIM: Oh, yeah. But you are going to provide a closing statement?

MR. COONEY: Yeah.

TECHNICAL EXAMINER EZEANYIM: Now, could you provide it before you leave on May 28? Today is the 17th.

MR. COONEY: Well, if we don't get the transcript until --

TECHNICAL EXAMINER EZEANYIM: Monday.

MR. COONEY: Next Monday, which is the 23rd, that would only give us three days.

TECHNICAL EXAMINER EZEANYIM: Okay. You know, I don't want to hurry anybody. I want everybody to take their vacation. So let's do it after the vacation. June what?

MS. MUNDS-DRY: Friday, June 10.

TECHNICAL EXAMINER EZEANYIM: Okay. So what are you giving me June 10?

MS. MUNDS-DRY: As the deadline to submit our closings and our proposed orders.

LEGAL EXAMINER BROOKS: That's -- okay.

TECHNICAL EXAMINER EZEANYIM: Yeah. Well, we are not in a hurry. I mean we are in a hurry, but not that -- you know, it's up to you. You are the guys making millions, so you need to get to work.

So anyway -- so I am going to write down here that we're going to get the closing statement by June 10, and then draft order on June 10, right?

MR. GRABLE: Right. Okay.

MS. MUNDS-DRY: Do you want the e-mail in response to your last question as soon as possible?

TECHNICAL EXAMINER EZEANYIM: I'm sorry?

MS. MUNDS-DRY: The e-mail you requested on the -- on our opinion on the rate of withdrawal below the bubble point.

TECHNICAL EXAMINER EZEANYIM: Yes. I would like to -- yeah, by him -- Mr. Gore to send that e-mail. Any time he's ready, he can send it. That's what is intended. But that one is different. We're going to send it to everybody.

Now, what else haven't we covered?

This is important, because I don't want everybody to leave here and then say, Oh, we didn't cover this. I'm going to the commission. I want to know about it now.

MR. RANKIN: Okay, Your Honor, I want to just make statement for the record.

Based on the testimony from Burnett/Hudson, Premier did have some issues it wanted to raise in rebuttal. But given the late time and the issues of the duration, you said -- and some of them were addressed with the rebuttal testimony regarding Exhibit 41C -- Premier has decided to forego that for now.

TECHNICAL EXAMINER EZEANYIM: Okay. Thank you very much for saying that, too, because I think we are done.

MR. RANKIN: I just wanted to let you know.

TECHNICAL EXAMINER EZEANYIM: Okay. Thank you. I appreciate that.

MR. CAMPBELL: I have a list of what our exhibits are, and we will coordinate to make sure we get a complete copy to Mr. Baca.

TECHNICAL EXAMINER EZEANYIM: Right. Because all that you see here is trash. It's only what you give him that we will use.

MR. GRABLE: Mr. Brooks, you were going to let us --

LEGAL EXAMINER BROOKS: You can have all

of mine back. I was trying to get them in order, but it will be easier just to give them to you.

MR. GRABLE: Thank you.

TECHNICAL EXAMINER EZEANYIM: Okay. We are not yet done.

I know everybody is ready to go for dinner, everybody is hungry.

Okay. Well, but I want to thank you all for the opportunity to take the testimony. We were all civil to each other, and that's what we like. We're going to do our best to make sure we find a better way to produce good hydrocarbon from these pools. So thank you very much.

Please do your part and get any information that we need to be able to make that decision. So as you go on, you see it's a lot of material that we are hearing. We are not in a civil court. And that always -- we want to explore the truth, get the evidence, and make a decision. That's all we do.

So -- because most of you will show up in another pool, we have a lot of those pools, and we want to make sure we do them right.

Thank you very much for coming. This case -- or this hearing is over.

(Proceedings concluded.)

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 14613 heard by me on 5/17/11

Examiner
Oil Conservation Division

CERTIFICATE

I, Paul Baca, RPR, CCR in and for the State of New Mexico, do hereby certify that the above and foregoing contains a true and correct record, produced to the best of my ability via machine shorthand and computer-aided transcription, of the proceedings had in this matter.

PAUL BACA, RPR, CCR
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