NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date JANUARY 25, 1996 Time: 8:15 A.M.

NAME	REPRESENTING	LOCATION
Robert Bullock	Yates Pet Corp	Artesia
Paul Owen	Campbell, Carr	Santa Fe
John McKee	Yates Pet	Artesia
M. Kellahin	Kellahin + Kellahin	Santa Fe

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 OXY USA, INC., FOR AN UNORTHODOX GAS WELL LOCATION, EDDY COUNTY, NEW MEXICO

CASE NO. 11,453

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

January 25th, 1996

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, January 25th, 1996, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

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I N D E X

January 25th, 1996
Examiner Hearing
CASE NO. 11,453

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* * *

WHEREUPON, the following proceedings were had at 8:18 a.m.:

EXAMINER CATANACH: At this time we'll call Case 11,453.

MR. CARROLL: Application of Oxy USA, Inc., for an unorthodox gas well location, Eddy County, New Mexico.

EXAMINER CATANACH: Are there appearances in this case?

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of the Santa Fe law firm of Kellahin and Kellahin, appearing on behalf of the Applicant, and I have two witnesses to be sworn.

EXAMINER CATANACH: Will the witnesses please stand to be sworn in?

(Thereupon, the witnesses were sworn.)

MR. KELLAHIN: Mr. Examiner, our first witness is Bob Doty. Mr. Doty is a geologist with Oxy, Inc.

He resides in Midland, Texas. His last name is spelled D-o-t-y.

BOB DOTY,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Doty, for the record, sir, would you please

state your name and occupation?

A. My name is Bob Doty. I'm a petroleum geologist for Oxy USA.

Q. On prior occasions, have you testified before the Division as a petroleum geologist and qualified as an expert?

A. Yes, sir.

Q. With regards to the Application involved before the Examiner this morning, describe for the Examiner what it is that you have been involved in doing.

A. Yes, sir, if I can refer you to Exhibit Number 1, this is a production map which shows the current status and history of the production within the area of our proposed Government "S" 9.

Section 3, Oxy has the entire section under lease for the deep zones from Wolfcamp on down. The purple wells on the map in Section 3 are Bone Spring completions. Oxy does not have the Bone Spring rights for the west half of Section 3.

If you'll notice in the east half of Section 3, there's two remaining 40-acre spacing units for Bone Spring that have not been developed, one of which has a well on it, the abandoned Oxy Government "S" Number 1, which basically condemned the Bone Spring at that location. It had a very poor reservoir development. And our proposed

Government "S" Number 9 in the northeast quarter of Section 3.

What we're requesting today is an unorthodox location for the deep zones -- Wolfcamp, Strawn, Atoka, Morrow -- to allow us to take our last remaining Bone Spring location deep to test these deeper zones so that we might package the risk and increase the chance of having an economically viable project.

Q. Were you and others involved in making the technical decision with regards to where to locate this well and to what formations it would be accessible?

A. Yes, sir.

Q. As part of that effort, did you develop and analyze the geologic data available in the area?

A. Yes, sir.

Q. And as a part of that study, did you come to certain geologic conclusions with regards to the appropriateness of this location insofar as it concerns these multiple reservoirs?

A. Yes, sir.

MR. KELLAHIN: We tender Mr. Doty as an expert petroleum geologist.

EXAMINER CATANACH: He is so qualified.

Q. (By Mr. Kellahin) Let's set aside the locator map and probably leave it for reference so that we can keep

track of our wells by name and location, and let's turn to your second display, which is marked Exhibit Number 2. And before we discuss the details, simply identify that display for us.

A. Yes, sir. Mr. Examiner, this is an isopach of the net pay in the producing Bone Spring zone of Old Millman Ranch field. Also, there's a structure map that's overlaid on this isopach. Structure for the purpose of the "S" 9 is really not relevant to the producing capability of that location.

The most important aspect is the net pay isopach. The colors are representing net pay at a 30-foot interval. The area in brown at the far extent of the field is from zero to 30 feet of net pay. That pinkish color is from 30 to 60, and then it increases on up to greater than 120, is the yellow. And you'll note that the Government "S" 9 location is near the edge of the productive limit.

Based on experience with other wells drilled in the field, we believe that we have to be greater than 30 feet in order to achieve an economic payout of a well to the Bone Spring, so we feel like we're close to the edge of the Bone Spring development at this location.

Q. Take a moment, Mr. Doty, and refresh the Examiner's recollection about the relevant rules for the Old Millman Ranch-Bone Springs Pool.

A. Yes, sir, Old Millman Ranch is on 40-acre spacing for oil, 80-acre spacing for gas.

Q. This is an associated pool, is it not?

A. Yes, sir. We are in the oil leg, we're not in the gas cap. There's no -- We're sufficiently downdip to the gas cap. We're definitely in the oil leg. And we are --

Q. Standard well location for an oil well location would be within what you propose for the subject well, which is 660 from the north and 660 from the east line?

A. Yes, sir, that's the standard location for the Bone Spring.

Q. Summarize the concept here. Have you and others with Oxy come to a conclusion about whether or not the drilling of this well can be justified from an investment point of view if it only accesses the Bone Springs reservoir?

A. We believe that we're really -- The heart of the Old Millman Ranch Bone Spring field has been developed, and we're now at the edge of the field. We feel like there are recoverable reserves at the Bone Spring location, however we feel like the risk that we would be below our cutoff is sufficient that we need to package that kind of a well with the deeper zones in order to achieve economic payout of the project.

Q. As the Examiner begins to look at the geologic presentation, summarize for him at this point what reservoirs he's about to examine.

A. Yes, sir. I have some amount of detailed geology on the Morrow, the Strawn and the Wolfcamp for this location that will demonstrate the viability that there are potential for reserves in these deeper zones and that also we'd be unable to recover those reserves from an orthodox location.

Q. Have you concluded that it's simply going to be impossible to access any of the deep gas reservoirs, those being below the top of the Wolfcamp, with a wellbore at a standard location, under current statewide deep gas spacing rules?

A. Yes, sir, that's true. We won't be able to recover those reserves at a standard location.

Q. Let's turn back to Exhibit Number 2 again, and describe for us what you're trying to do in the Bone Springs under this interpretation.

A. Under this interpretation, we do feel like there are recoverable reserves in the Government "S" 9 40-acre spacing unit. However, we do feel that we are very close to the edge of the productive limit of this field, based on pay.

The well immediately south to our location is the

old abandoned Government "S" Number 1, which has very poor pay quality. There are other wells within the field that have less than 30 feet of pay, which were not economically viable wells.

Q. It's your anticipation that the Bone Springs well at this location is going to be oil productive as opposed to being a gas well?

A. Oh, absolutely.

Q. Let's turn now to the topic of the Morrow reservoir -- I believe that's the next geologic discussion -- and let's look at Exhibit 3. Again, before you describe the details, identify for the Examiner what we are looking at when we see Exhibit 3.

A. Yes, sir. Mr. Examiner, this is a structure map contoured on the Morrow "A" horizon. There's a ubiquitous marker bed that regionally you can map throughout a large area, and structure is really not a significant portion of the trapping mechanism for this particular Morrow reservoir. However, this exhibit is included for completeness.

Q. It does indicate a line of cross-section for which we will identify and describe that exhibit later; is that not true?

A. Yes sir.

Q. When we look at the Morrow here, has the Division

identified this Morrow with any particular pool nomenclature?

A. Yes, sir, this is Winchester-Morrow, 320-acre spacing

Q. The caption for the displays talked about this being the north Burton Flat area. I know the Division associates that name with a nomenclature as to reservoirs, including the Morrow.

To give the Examiner perspective about where he is, where would he be in relation to what we know to be the North Burton Flat-Morrow Pool?

A. We're due north of the north -- of Burton Flat-Morrow. Some of the wells -- I'm not really sure how the distinction was made, but some of the wells are Winchester, and just to the south some of the wells are Burton Flat-Morrow.

Q. For purposes of your study, which of the particular Morrow zones has the best potential prospective ability for you?

A. There's a particular sand in the lower Morrow "B" interval, which is really the pay sand for this immediate area.

Q. If there are other Morrow sands present, they would be substantially more risky than the Morrow "B", and so you focused on that Morrow interval that has the

greatest opportunity to be produced?

A. Yes, sir.

Q. Let's turn, then, to the Morrow isopach -- it's Exhibit Number 4 -- and again take a moment to identify the display, and then let's talk about your conclusions.

A. Yes, sir. Mr. Examiner, this is an isopach, a net sand isopach, of a particular Morrow "B" sand. Annotated on the map are, in red, the cumulative production from the Morrow, which may include other zones. However, in my opinion the majority of the gas has come from this particular sand. It seems to be the main pay maker out there. Also is included the structure top and the thickness of the sand underneath each well location.

Q. Let's take a moment and describe the color codes. There's a legend at the bottom of the display that gives us an understanding of that code, but verbally describe what significance you're attaching to the differences of color on the display.

A. Yes, sir, I've interpreted the depositional model for this Morrow "B" sand based on gamma-ray response, basically based on the log response.

The center portion in the thickest part I've interpreted as a fluvial channel. In that channel is where is located the best cumulative production. It seems that it has excellent porosity on the logs, excellent storage

capacity, but also excellent permeability.

The darker brown on either side of the channel are overbank deposits. Primarily these sands are shalier, have a hotter gamma-ray response. They also have excellent porosity, but appear to have very poor permeability.

As you go to the southeast, this channel is basically meeting up with the shoreline and fanning out into a channel mouth bar where there's also excellent sands, but some portions of the sands appear to be cemented with marine cement as it interacts with the tidal environment.

Q. Geologically, then, why would you not want to put your proposed well at a standard location which would penetrate the Morrow reservoir in the darker brown area?

A. We have pretty good evidence from the performance of wells drilled in that darker brown overbank area that there is gas in place. However, the permeability is too poor for sufficient rates to make an economic Morrow completion.

If we were able to get a wellbore within the channel area, we do feel like we can recover a great amount of that gas that's in the overbank, but only if the wellbore itself is in the channel area where the permeability is greater.

Q. Do you perceive that that location in the Morrow

will gain you any unfair advantage over the offsetting operators or interest owners?

A. No, sir, we feel like this is the only location where we can drain the significant gas in place in the north half of Section 3.

Q. This is your only opportunity, then, to recover any of your Morrow share of recoverable gas within this spacing unit?

A. Yes, sir.

Q. To give the Examiner a sense of the stratigraphic relationship of these Morrow wells, let's turn to Exhibit 5. You've got a line of cross-section on Exhibit 4 that corresponds to the stratigraphic cross-section that we're about to look at when we examine Exhibit 5?

A. Yes, sir.

Q. Let's take a moment and use Exhibit 5, then, and set the stage so the Examiner has an understanding of your geologic conclusion.

A. Yes, sir, this is stratigraphic section A-A', which is hung on a stratigraphic datum, the Morrow "B". You'll note that I had a little bit of trouble with the drafting on getting the colors to exactly match.

The red portion on the cross-section corresponds to the thickest part of the channel. The -- I don't know what kind of color that is. In the channel sequence on the

map, the kind of pinkish area on the map --

Q. All right, let me make sure, if I can clarify it. When you look at Exhibit 4, that area in tan, which is the center of the channel, corresponds to the red color, I guess it is --

A. Yes, sir.

Q. -- on Exhibit Number 5?

A. Yes, sir.

Q. And the tan or the brown color on Exhibit 5 corresponds to the light color on Exhibit Number 4?

A. Yes, sir.

Q. All right. Conclude for us your opinions on Exhibit 5.

A. Yes, sir. The well at the A location on the cross-section, the Parker and Parsley ARCO Federal Number 1, is located in the channel sequence. You can see excellent porosity on that log. Gamma-ray response is very clean, and due to its performance -- It's made over 3 BCF of gas, and it's been an excellent performer, and it appears to be in the part of the section that contains the excellent permeability.

The next well on the cross-section is the DWU Federal Number 4. You'll also note that it has excellent porosity on the logs. That's a neutron density log. However, the gamma ray has a hotter gamma-ray response.

It's indicating a little bit shalier nature. And this is in the overbank deposit. And that well performed very poorly, made 200 million cubic feet.

This is not a simple matter of drainage from the Parker and Parsley ARCO Federal Number 1. The well to the north of the DWU Federal Number 4 is the DWU Federal Number 1. It also was a very poor performer, and it basically came on at the same time as the ARCO Federal Number 1, and it just was unable to complete due to low permeability in that part of the section.

The next is our proposed Government "S" 9 location, where my interpretation indicates that we should be in the porous and permeable channel.

And then the final well on the cross-section is to the southeast in Section 2, the Hillin JCW State "2" Number 1, which again is in the channel sequence and has recovered 1.6 BCF of gas.

Q. When you're making recommendations to your reservoir engineer by which he does his economic analysis to determine whether or not there is sufficient potential reserves to justify the risk of this wellbore, you've identified for him an opportunity in the Bone Springs, you've identified an opportunity at this well location in the Morrow. What will be the next reservoir for which you have an opportunity identified?

A. I have the Strawn mapped and can identify an opportunity there.

Q. Let's look at that, then. That will be Exhibit Number 6. Again, identify the display, and then we'll talk about your conclusions.

A. Mr. Examiner, Exhibit 6 is an isopach of the clean carbonate in a particular producing mound in the Strawn. The Strawn produces from algal mound buildups, and I've identified one particular mound which is productive in the immediate area and mapped the amount of clean carbonate in it based on a gamma-ray cutoff.

Also included is a structure map which really -- This is a stratigraphic trap, and the structure is just added for completeness.

You'll note on this map that the producing wells from the Strawn are marked in red, and in the vicinity of the proposed Government "S" 9 to the east in Section 35 there's an excellent Strawn well that's made over a BCF. Due south of it in Section 2, there's an excellent Strawn well that's made 3 BCF. And due south of our proposed Government "S" 9 location there's a very poor Strawn well that's made 147 million.

Within this Strawn sequence, I can predict where the clean carbonate will occur.

Q. And how have you demonstrated that on Exhibit

Number 6?

A. Based on the mapping of the clean carbonate throughout the area and shaping the mound in a fashion to similarly better expose examples.

Q. So when we look at the display, if we're looking at footages of clean carbonate in excess of ten feet, that is what has been shaded in blue?

A. Yes, sir.

Q. But that gives you no indication of what is going to be the relative porosity development within the blue area?

A. No, sir, that's a very risky aspect of this play. I can identify where the mound is, but I can't identify where the porosity development in the mound is. There's several wells -- for example, in Section 4, the Winchester Federal Number 1, which had excellent well development but it was tight. Likewise, our Government "S" Number 1 in Section 3 south of our location was also tight.

So I can tell you that there's a chance if there were to be any Strawn porosity development, it would be within the blue area.

Q. Describe for the Examiner why you have concluded geologically that it is not suitable to locate this wellbore at a standard location to penetrate and potentially produce the Strawn reservoir.

A. For the Strawn, the aspects of the Strawn are such that the risk is so great on being able to predict porosity development that I cannot really comment on the relative value of an orthodox versus an unorthodox, it's such a high-risk play. We can get Strawn contribution if we take a well deep, but there's no way that the economics for a Strawn would support a stand-alone location at an orthodox location. It's such a risky play that the orthodox location has no economic value unless it's packaged with the other zones.

Q. Do you recall, Mr. Doty, if the Division has assigned a pool nomenclature to the Strawn reservoir in this area?

A. Yes, sir.

Q. If my memory serves me right, I think it's the Winchester-Strawn Gas Pool, but I could be mistaken. Is that --

A. That's correct.

Q. -- the reservoir?

A. Yes, sir.

Q. All right. Having now defined those three reservoirs we've just described, what is the remaining reservoir that you've analyzed with regards to this location?

A. Yes, sir, I've made a map on the Wolfcamp

reservoir.

Q. Well, let's talk about that. If you'll turn to Exhibit 7, let's look at the Wolfcamp. Again, when the Examiner directs his attention to the Wolfcamp, what particular nomenclature within a pool description will the Division know this Wolfcamp reservoir?

A. Let's see --

Q. I think it should be the North Burton Flat-Wolfcamp Gas Pool?

A. Yeah, I'm trying to just confirm that myself. Mr. Catanach, I'll have to examine Exhibit 1 to confirm that on what specific --

Q. Well, let's leave that point for a moment, and let's look -- Without regard to a specific name, describe for us the Wolfcamp analysis that you've gone through and what conclusions you've reached.

A. Yes, sir, I've constructed a net-pay map of the Wolfcamp. The Wolfcamp in this portion of the reservoir, in this portion of Eddy County, is fairly complex. It's quite a bit different than North Burton Flat to the south. The porosity distribution is a bit more erratic, located in smaller algal mounds.

I have been able to construct a net-pay map, however, that seems to fairly well define the producibility of the reservoir. You'll notice the red circles are the

wells that are produced from this reservoir. None of these wells are currently active. The field's been basically abandoned, but there have been wells that have produced.

For example, in Section 35, the DWU Federal Number 2 has produced 712 million, to the southeast, 1.5 BCF. Southwest of that in Section 35, the Dero Federal "A" Com Number 1 has produced 520 million. And then over in Section 34, the DWU Federal Number 4 has produced over 1.2 BCF.

So -- Also, our Government "S" Number 9 location appears to be within that 30-foot contour, so there's an excellent chance for reservoir development in the Wolfcamp. That is the only chance for a Wolfcamp reservoir in that section. The orthodox locations are out of the Wolfcamp development.

There is a fair amount of risk on what's left in that reservoir after years of depletion from the offset, so...

Q. When you look at a net-pay isopach for the Wolfcamp, what cutoff values did you use to get a net-pay map?

A. I used a 5-percent porosity cutoff on the Wolfcamp, and I believe 30 feet of net pay represents the areal extent of the best production or the economic production in the Wolfcamp.

Q. You described this as having a complex Wolfcamp depositional environment. What are you saying?

A. It's not a specific mound that's producing. There are several stacked carbonate mounds that are very thin. So I can't particularly -- I can't predict a continuous porosity zone that's continuous throughout that area.

Q. Is the net pay, then, in terms of thickness a sum of those various Wolfcamp lenses?

A. Yes, sir, exactly.

Q. And that adds a significant factor of risk in determining well locations?

A. Yes, sir.

Q. Describe for us, then, in conclusion why you have chosen the proposed unorthodox location as being substantially preferable to the closest standard location.

A. Yes, sir. We feel like we have one viable Bone Spring location remaining on our leasehold in Section 3, which is the northeast quarter of Section 3, the Government "S" 9 location. We also feel that that location is near the edge of the Bone Spring Pool, and there's a substantial risk associated with that, but we do feel like there are recoverable Bone Spring reserves at that location.

Q. If you are required to drill at a standard location, as opposed to this proposed unorthodox location,

would it be a risk that you would assume to drill this well?

A. No, sir, we wouldn't have the Bone Spring potential to back us up to increase the chance for an economic payout.

Q. So you would simply pass on the opportunity to drill for this reservoir?

A. Yes, sir, those reserves would not be recovered.

We also feel like we have substantial potential for a Morrow reservoir, but only at the unorthodox location. The orthodox location left to us in Section 3 are in the insufficient kind of rock to produce those Morrow reserves.

We feel like the Strawn is very risky but may contribute to the economics of this project, and we feel like we do have an opportunity for some Wolfcamp reserves that could also contribute, but again only at the unorthodox location.

Q. When we look at the proposed spacing unit for the deep gas, you're proposing that this be oriented to the north half of Section 3?

A. Yes, sir.

Q. Within that spacing configuration, will this be the only deep gas wellbore producing if it is in fact capable of production?

A. Yes, sir.

Q. So these other wells that we see on this Wolfcamp display and the other displays have been abandoned wellbores?

A. Yes, sir.

Q. That completes your geologic exhibits, does it not, Mr. Doty?

A. Yes, sir.

Q. Summarize for us your geologic conclusions with regards to the Application.

A. Therefore we feel like we have reserves that we can recover from both the Bone Spring and from the deeper zones. However, the risk is sufficient and also the geologic model is such that only at the unorthodox location can these reserves be recovered.

MR. KELLAHIN: That concludes my examination of Mr. Doty.

We move the introduction of his Exhibits 1 through 7.

EXAMINER CATANACH: Exhibits 1 through 7 will be admitted as evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Doty, to make an economic well in the Wolfcamp, how much pay do you think you need in that

interval?

A. Mr. Kovarik has summarized all that material. I'm not sure if I recall exactly the results of his analysis. If I might defer to his testimony...

Q. Okay, in the Wolfcamp there's currently no other production in the north half of Section 3?

A. No, sir.

Q. Those wells have been abandoned?

A. Yes, sir, and in fact all the Wolfcamp producers in that field are no longer active.

Q. That includes the wells that you've shown in Section 34 and 35?

A. Yes, sir.

Q. And there's no Wolfcamp production in Section 2?

A. No, sir.

Q. Do you know what the closest Wolfcamp production might be?

A. It would be Burton Flat, North Burton Flat, to the south in Section 10 -- 10 and 11.

Q. Now, as I understand it, the Strawn -- You can't really differentiate between a standard and an unorthodox location in the Strawn --

A. No, sir, I can't.

Q. -- as to which would be better?

A. No, sir, I can't. I wish I could do more on

predicting the porosity development, but I haven't -- there's just -- there's nothing evident.

Q. The way you've got it mapped, it's possible that you could have the same amount of net pay at both locations; is that correct?

A. Net clean carbonate, yes, sir. The mound is probably at the orthodox location, but I have no --

Q. Typically --

A. -- evidence of that.

Q. Yeah. Typically in Strawn algal mounds, don't you have a better porosity development toward the center of the mound?

A. Yes, sir. I was disappointed on this well in Section 4, however, the Winchester Federal Number 1. It failed and it was in the heart of the mound. That's a very disappointing well.

There's also a well to the north in Section 33 with 26 feet of clean carbonate, but again tight. So this is a very risky development.

So -- For some reason, the thickest part of the mound is tight, and I don't know if that's important or not. That may or may not be significant. I'm defaulting to serendipity on porosity distribution within the Strawn mound.

Q. The Government "S" Number 1 well, it's no longer

producing from the Strawn?

A. Yes, sir.

Q. It's been abandoned?

A. Yes, sir.

Q. So there's no Strawn production in the north half?

A. No.

Q. In Section 35, do you know if that well is still producing from the Strawn?

A. No, sir, the only active well in the Strawn is the one in Section 2, the JCW State "2" Number 1.

Q. And that's a Hillin well?

A. Yes, sir. Oxy has an interest in that well also.

Q. Is that well still producing at pretty good rates, or --

A. Its current is about 300 MCF a day. That well is on Exhibit 5, cross-section A-A', and it shows its current rate as 316 million cubic feet a day, which is obviously wrong.

Q. Okay.

A. I can correct that, take out an M.

Q. Okay, in the -- Let's talk a little bit about the Morrow, I guess.

Let me ask you this first. What would you consider to be the primary and secondary targets in this

well?

A. Actually, I think the primary is the Morrow and the Bone Spring, those two. Secondary would be Wolfcamp and Strawn.

Q. Okay. Within the channel portion of that reservoir and the overbank portion, what's the difference in the permeabilities?

A. I don't have any measurements. What I do have is -- Mr. Kovarik has an exhibit that shows a cumulative rate-time plot on the ARCO Federal Number 1, that excellent well up in Section 34, and the DWU Federal Number 1. On the logs those wells look very similar, very similar porosities, just that the overbank -- my interpretation of the overbank is shalier. And it's clearly -- Those wells were totally different in their producing capabilities. The ARCO Federal was an excellent well, it came on the same time as the DWU Federal Number 1, and it was just unable to compete.

But I don't have any measurements of permeability.

Q. The -- That overbank portion that you have mapped in the northern part of that structure seems to follow that 30-foot contour line, and then when you get down into Section 3 it takes off?

A. Yes, sir.

Q. How do you explain that?

A. That's an observation. In Section 35 I have a well, the Dero Federal "A" Com Number 1, with 22 feet of sand, but also excellent recoveries. And as we start to get closer to the channel mouth bar it's just flat out cleaner sand down there. It's an observation beyond that. That's what I observe. I don't know exactly the process that does that.

Q. So that interpretation, is it based on that well in Section 35?

A. Yes, sir, I might point out that the well in Section 3, the Oxy Government "S" Number 2, is not producing from this specific sand, it's producing from a deeper Morrow sand. I should have noted that, so it's not germane to this specific sand.

Q. I'm sorry, the well in Section 2?

A. No, I'm sorry, the one in Section 3, in the south half of Section 3, the Government "S" Number 2. That isn't producing from this specific sand; that's producing from a Morrow "A" sand that isn't productive in any of the other wells. That's an anomalous well, that's the only well in the area that produces from that specific sand.

So the volumes recovered from that well do not reflect its position on the map, because it's another sand.

Q. Offset Morrow production, we've got -- Are all

those wells producing currently, that you've shown in Section 34, 35 and 2?

A. No, sir, the ARCO Federal Number 1, the Parker and Parsley well, at the A location on that cross-section, that's currently active in the Winchester Morrow.

Q. Arco Federal Number 1?

A. Yes, sir.

Q. That's a current producer in the Morrow?

A. Yes, sir. It's near depletion and 8 MCF a day is the current rate.

The other two wells in Section 34 are no longer active in the Morrow. They're now Bone Spring wells. Oxy now operates that lease.

In Section 3, that well that we just talked about, the Government "S" Number 2, that's still an active Morrow well on a south-half spacing unit. Again, that's not in the -- in that particular sand, it's not producing from that particular sand.

And both wells in Section 35 are still active in the Morrow, the Dero Federal "A" Com Number 1 in the southwest quarter and also the Dero Federal Number 1 in the southeast quarter.

Q. And the well in Section 2?

A. Yes, sir, the well in Section 2 is a Strawn well, the one in the north half of 2. That's active in the

Strawn, it's no longer active in the Morrow.

The well in the south half of 2, that Boatright Number 1 JCW State, is active in the Morrow. That's a very poor well. It's in the -- what I'm interpreting as the marine cemented channel mouth bar.

Q. So the well in the north half of Section 2, that's been depleted in the Morrow?

A. Yes, sir.

Q. Okay.

A. That well had a very strange production history. That well was depleted like in two years, whoosh. And subsequent to that, the well in Section 5 was developed, and it's proved to have recovered additional reserves that were not drained by that well in Section 2.

Q. I believe you said that you have -- or there's Bone Spring wells that have less than 30 feet of pay that are --

A. Yes, sir.

Q. -- that are noneconomic?

A. Yes, sir.

Q. There's just one in Section 3; is that correct?

A. Yes, sir. There's one in Section 34. It's a new well, the Parker and -- well -- Kind of lost in the brown. It's the Parker and Parsley ARCO Federal Number 2. Oxy participated in that well, and it's a marginal well. I

can't specifically say if -- you know, I don't have an economics run for post-audit, but it was a very disappointing well.

We also have two wells in Section 4, which again are lost in the brown. On Exhibit Number 1, they're the Strata Aguila Federal and Garza Federal, both of which had -- I think one had nine feet of pay, the other one had three feet of pay, which were very disappointing also, in the Bone Spring.

Q. So you feel like you need at least 30 feet?

A. Yes, sir. That seems to be the best estimate for the economic cutoff at this time.

Q. Mr. Doty, do you know how the well is going to be completed?

A. We really don't know. It just depends on what we encounter. We would probably -- If possible to dual some of the zones mechanically without damaging the producing characteristics, we may attempt that.

We are always concerned, however, about making a completion in the Morrow and then having to get it wet and to open up another zone and plumb the well for a dual completion.

The basis of our risk analysis, however, is that when we stack the potentials for all these zones, we then can add value sufficient to economically justify the

project. We probably won't -- Obviously we won't produce all the zones at the same time. If we have a Morrow -- If we have a Morrow zone, we will start with Morrow, because we are gravely concerned about damage to the Morrow zone.

Q. Do you feel like any single zone would justify the drilling of a stand-alone well?

A. No, sir. And it sort of comes into how we run our risk economics.

Well, this is Mr. Kovarik's testimony. I'm way ahead of him. Maybe I should defer to him.

Q. That's fine. If you want to, you can --

A. Yeah, I'll just...

EXAMINER CATANACH: Mr. Kellahin, would it be this witness or the next witness that will talk about offset operators? Do you --

MR. KELLAHIN: In terms of who they are?

EXAMINER CATANACH: Uh-huh.

MR. KELLAHIN: I believe Mr. Doty's map will reflect their identity. We have a certificate of mailing as to all those operators. I'm not aware of any objection to any of those parties.

There's an Oxy landman present, as well as Mr. Foppiano who's worked on the notices, any one of whom could identify those parties, but I believe Mr. Doty could probably tell you.

EXAMINER CATANACH: Okay. Well, let's just go with that, then.

Q. (By Examiner Catanach) Mr. Doty, can you tell me who the offset operators in the various zones would be?

A. To the northeast, in the east half of Section 34, Oxy is the operator of that lease. So we now operate the DWU Federal Number 4 and the DWU Federal Number 1. Those are now Bone Spring completions.

The west half of Section 34, Parker and Parsley operates that Bone Spring location and the Morrow location. Oxy has an interest in that Bone Spring location.

Penroc is the operator in the west half of Section 35, in that Morrow well, and we don't have an interest in that.

And Hillin is the operator for that Strawn well in the north half of Section 2, and Oxy has an interest in that also.

I'm not really sure about the south half of Section 2. It says Howard Boatright.

Q. Okay, I'm not sure I'm concerned with the south half of Section 2.

A. Yes, sir.

Q. As far as you know, there's not a west-half standard proration unit, Section 2, dedicated to anything?

A. Sir, I'm making judgment based on location of the

well, and my assumption based on that is that it's a north-half laydown.

Q. All these offset operators have been notified of your Application?

A. Yes, sir, and we have spoken to Mr. Hillin about it, and also one of his partners spoke to me and he agreed that we were trying to get something done by testing these deep zones with that last Bone Spring. So otherwise we didn't do that. This area is over-width on the deep. There are a fair amount of deep penetrations.

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

MR. KELLAHIN: For additional clarification, Mr. Examiner, when you look at Section 2, we identified Hillin as the operator of the Strawn. As to other reservoirs, we have notified the adjoining lessee in Section 2.

So when you look at our notice list, you're going to find some additional names. Those names reflect the base lessee or mineral owner, in addition to the operator of that section.

EXAMINATION

BY MR. CARROLL:

Q. Okay, who is the operator in the west half of Section 35?

A. Penroc.

MR. CARROLL: I don't see a copy of the notice sent to Penroc here, or the receipt.

MR. KELLAHIN: If you'll give us a moment, we'll confirm. It says Penroc Oil Company at this point. We need to confirm that that's in fact the right identification for that party. I'm not certain it's correct, Mr. Carroll. We'll check on that.

EXAMINER CATANACH: This witness may be excused.

MR. KELLAHIN: All right. We'd like to call Mr. Mike Kovarik. He spells his name K-o-v-a-r-i-k.

MICHAEL KOVARIK,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Kovarik, for the record, sir, would you please state your name and occupation?

A. My name is Michael Kovarik. I'm a reservoir engineer with Oxy USA, Inc., in Midland, Texas.

Q. Mr. Kovarik, on prior occasions have you testified before the Division as a petroleum engineer?

A. No, I have not.

Q. Summarize for us your education.

A. I have a bachelor's degree in chemistry I received from Marietta College in 1979, a bachelor's degree

in petroleum engineering, also from Marietta College, in 1981, and a master's in business administration I received from the University of Tulsa in 1989.

Q. Summarize for us your employment.

A. I'm -- My history?

Q. Yes, sir.

A. Okay. I began work with Cities Service in Tulsa in the Research and Technology Center. I spent two years there. I was transferred from that position to -- again, in Tulsa, with the Reserves Valuation Group where I was responsible for calculating reserves for SEC reporting and for financial reporting. I spent eight and a half years in that position, was transferred to Midland as a reservoir engineer in late 1991, and that's the position I currently hold.

Q. When the Examiner expresses interest in the economic viability with the appropriate risks attached to each of these reservoirs for wells drilled at this proposed unorthodox location, versus a standard location, that is a topic within your expertise?

A. Yes.

Q. In fact, for this well, as well as many other wells, that is one of your primary duties, is it not?

A. Yes, it is.

Q. Have you conducted such an economic investigation

with regards to this particular activity that Mr. Doty has described for us?

A. Yes, I have.

MR. KELLAHIN: We tender Mr. Kovarik as an expert engineer.

EXAMINER CATANACH: He is so qualified.

Q. (By Mr. Kellahin) Before we look at the displays, give us a general understanding and a sense of what you examined and what your ultimate conclusion was.

A. Well, my goal -- Well, in order for Oxy to assume the risk of drilling this well, we've got to be able to spread the risk throughout the hole, from the Bone Springs into deeper zones.

Q. Did you ultimately conclude that you could not economically justify and propose to your management the drilling of this well, if it was a stand-alone well for any reservoir?

A. Yes, I did.

Q. Regardless of whether it's at a standard location or at this proposed unorthodox location?

A. Yes, that's true.

Q. And what was your conclusion?

A. My conclusion was that Oxy -- It's not an economically justifiable project for Oxy to drill a well to the Morrow, to the Strawn, to the Wolfcamp or the Bone

Springs, either in a standard deep location or in the standard Bone Springs location on their own.

Q. For example, the Examiner was interested in the Strawn formation where he was looking at Mr. Doty's isopach. It shows a certain thickness which makes no distinction in the clean carbonate between the standard location and the unorthodox location. Under either analysis that you have made with regards to that location, can you justify that well as a stand-alone well in the Strawn?

A. No, I can't, because -- although Mr. Doty mapped the clean carbonate, he testified that he cannot map the porosity. It's too erratic, and it's a great source of risk in drilling a Strawn well in either location.

Q. With that exception, then, you need to package all these other reservoirs at the proposed unorthodox location?

A. Yes, I do.

Q. And when you assign the appropriate level of risk, it becomes a project that you could fund and drill at that unorthodox location if it includes all these reservoirs?

A. Yes, if -- There's inherent value in the Morrow and the Wolfcamp and the Strawn and the Bone Springs, but there's risk involved in trying to extract that value.

If we are able to recognize the potential of those zones with the cost of one well, even with the heavy amount of risk that's involved in each of the zones, it makes it an economically justifiable project.

Q. All right. We'll commence the details of your reasoning that got you to those conclusions.

Before we start that, let's look at Exhibit 8 and have you help us fit this exhibit into the analysis of the project. When we look at Exhibit 8, what are we seeing?

A. Exhibit 8 is a production curve for five Morrow wells. If you can refer, please, to Mr. Doty's exhibit -- Which one is that?

Q. It's his Morrow map, it's his Exhibit Number 4.

A. Exhibit Number 4, the lower Morrow "B" net sand isopach.

Q. He was particularly concerned about what was happening in Section 34 with relation to the ARCO Federal 1 well, and then that Reeves Federal 4?

A. Yes. These production curves graphically illustrate what Mr. Doty testified to with respect to depositional environment, the main channel portion of the reservoir and the bank deposits.

Q. And how is that illustrated?

A. Well, if we can look in Section 34, the ARCO Federal Number 1 well, on Mr. Doty's map, on Exhibit Number

8 the ARCO Federal Number 1 production curve is the black curve that begins approximately 1973, and you'll notice that it was a very good well. We could tell that by the cumulative production of 3.1 BCF.

Q. Not only does it have a cum production that's high, its initial rate was higher than the other wells?

A. Its initial rate approached 2 million cubic feet per day.

Q. And he's concluded that that well was in the best portion of reservoir development for the lower Morrow "B" channel?

A. That's true.

Q. And he distinguished it from what other well?

A. He distinguishes this from the DWU Federal Number 1 and the DWU Federal Number 4 well, which are depicted in the bank deposits on the map.

Q. And he concluded that that was in a lower permeability area in this overbank sand, and it was not as successful. How does Exhibit 8 authenticate that conclusion?

A. Exhibit 8 shows the production curve for the DWU Federal Number 1 well as the red curve which begins in late 1973. It shows rapid decline and not very much cumulative production.

And also, the DWU Federal Number 4 well is the

green curve, which begins the middle of 1980, and again there's erratic, very low production in that well.

Q. Is there anything in the way these wells were drilled, completed, tested, produced or otherwise operated to account for the difference, other than a reservoir explanation?

A. That's very possible.

Q. All right.

A. I haven't researched that.

Q. It appears, though, that on this information that's displayed to you, one accounting factor could be simply poor reservoir development?

A. Oh, absolutely, especially with the -- Mr. Doty's examination of the wells and their logs and the interpretation that he gives, it makes clear sense that that would be the case.

Q. All right, let's turn to the economic analysis. If you'll start with Exhibit Number 9, summarize for the Examiner the reservoir data sheet shown on Exhibit 9.

A. Okay, the reservoir data sheet is basically an information-only sheet, which shows the various zones in question, Bone Springs, Wolfcamp, Strawn and Morrow, the approximate depth that we'll be looking for in the Government "S" 9 location, the date of first production for the pools in question, their cumulative recoveries, number

of wells, current rates, and the drive mechanisms involved in the reservoir.

Q. This is your data sheet by which, then, you commenced to undertake your engineering investigations, including your volumetric and any other method of analysis?

A. Yes.

Q. All right. Let's turn to Exhibit Number 10 and have you identify and describe this display.

A. My first job was to calculate reserves for each of the zones. I had several methods -- actually two methods available to me in this case. They were volumetrics and analogy.

This sheet, this table, is a summary of volumetric calculations, rock and fluid properties that went into the calculation of the reserves for each of the zones in question.

Q. In each instance you've used your best engineering judgment about the appropriate parameters to use and list here that go into the volumetric calculation?

A. I've used the my best available knowledge and information, and also the best available knowledge from the geologic side, from Mr. Doty's interpretation, for each of the zones.

One assumption in these volumetric calculations has to do with pressure. I've assumed a virgin normal

hydrostatic gradient for initial pressure for all of these zones.

This is a pretty good source of risk, because we've had quite a bit of production out in the deeper zones, it's a mature area for those zones, so there may be the possibility of some depletion. So this is a source of risk in the analysis for these reserves.

Q. To be consistent with volumetric methodology, you would use the original pressure in the reservoir?

A. Yes.

Q. And then you would account for the fact that this is a depleted Wolfcamp reservoir in assigning the appropriate level of risk when you finish your economic analysis?

A. That's exactly the methodology that we used, yes.

Q. To make sure the Examiner understands your method, let's look at the acre-foot assumption and simply go down the column that has Wolfcamp. For purposes of your volumetrics, when we look at the Wolfcamp you've assumed 320 acres; is that not true?

A. Yes, I did.

Q. And when you look at Mr. Doty's Exhibit Number 7 for the Wolfcamp net pay isopach, you have made an estimate, then, with regards to the uniform thickness to assign within the 320 acres?

A. Yes, I did.

Q. And that assumption is that you've got a uniform thickness in this volumetric container of a net height of 15 feet?

A. Yes.

Q. All right. So that assumption may be optimistic as well?

A. That assumption has uncertainty to it.

Q. And as part of your risk factor to the economics, you take that component into consideration?

A. Yes, absolutely.

Q. All right. And that's true with all these other parameters and these other reservoirs; it's the same type and same method?

A. It's true for the Bone Springs, the Strawn and the Morrow also.

Q. All right. Let's look at what else you have to work with in addition to the reservoir parameters for volumetrics. If you'll turn to Exhibit 11, Mr. Kovarik, describe for us the other parameters you've used.

A. Well, actually Exhibit 11 is the beginning of the analogy.

Q. You have stapled to that a series of production plots, have you not?

A. Yes, I do.

Q. And what do those represent?

A. The production plots that are attached to Exhibit Number 11 are the results of decline curve analysis for the active wells in the area surrounding the Government "S" Number 9.

Q. And that will serve as one of the data points or sources of engineering information that you've utilized when you make the composite exhibit, which is the first page of 11, and look at your forecast of cumulative and ultimate gas recoveries?

A. Yes.

Q. All right. Summarize for us, then, the first page of Exhibit 11.

A. The first page of Exhibit 11 is a summary table for each of the wells in each of the zones surrounding the Government "S" Number 9.

The first column shows the pool and the zone that the well is in.

The second column states the well, we've got cumulative production tabularized, and also ultimate recovery. In the case of the inactive wells, the cumulative production will equal the ultimate recovery for the well. In the case of the active wells, the ultimate recovery will equal the cumulative production plus remaining reserves, determined by decline curve analysis,

the results of which are attached to the exhibit.

Q. All right. Having done that work, what then do you do?

A. I determined ultimate recovery for each of the individual wells and then summed or added together those recoveries for each zone, such that I have a total ultimate recovery for the Strawn, ultimate recovery for the Morrow, ultimate recovery for the Wolfcamp, on a total basis for the wells surrounding the Government "S" Number 9.

Q. All right, sir. Let's turn to Exhibit Number 12 and have you describe for us what, then --

A. Exhibit Number 12, then, is a compilation of Exhibit Number 11. It's an average. What I did to come up with an analog well for each of the zones was to take an average of the production in each of the zones and called that my analog well.

For example, in the Morrow, the first part of the table, the total ultimate recovery for the eight offsetting wells for the Government "S" Number 9 was approximately 12 BCF. 12 BCF divided by 8 is 1.5 BCF. That was my analog estimate for recovery for the "S" 9 location.

Similar calculation for the Strawn and similar for the Wolfcamp.

Q. All right. Now you've got your ultimate recoveries calculated or estimated for the Wolfcamp, Strawn

and Morrow for this well at this location. What then do you do?

A. Well, I have a volumetric estimate and I've got an analog estimate.

Q. All right, let's look at the next exhibit, Number 13, and have you identify that for us.

A. Exhibit Number 13 is a table which -- it shows in the shaded area the reserves that were used in the economic analysis for each of the zones. Let's work from top to bottom here.

Morrow, for example, the volumetric estimate was approximately 3.9 BCF. My analog well was 1.5 BCF. Because there's inherent error bars with either of these methods, with both of these methods, which one do you use? Which one is more right? Which one is more wrong?

In this case, in the case of the Morrow, Strawn and Wolfcamp, based on the geology and the location of the well, I felt that they were equally valid, such that I weighted the reserves estimate, the ultimate recovery estimate, for each of the zones -- for each of the methods, excuse me -- equally, so that I took my volumetric estimate, my analog estimate, summed together, divided by two. So I've got an equal weight for those methods.

Q. Is that a process that is accepted as a standard process for economic analysis by engineers with your

experience doing this type of analysis?

A. Yes, I believe so.

Q. All right. Having done that, now, where does it take you?

A. Well, again in the shaded area, you'll notice -- Those are the reserves that I used to calculate economics for the Morrow, Strawn and Wolfcamp.

Bone Springs, on the other hand, you'll notice that there's no analog reserve estimate. We -- In my judgment, we have a good handle on the geology, on the volumetrics surrounding -- in the Bone Springs, Old Millman Ranch-Bone Springs.

The production characteristics of the wells offsetting Government "S" 9 differ due to their structural position. Therefore -- Also, the wells are relatively young; there's not much production history to decline from. Therefore, I felt that the volumetric estimate was the best estimate to use and a analog estimate would mislead me.

Q. All right, let's go to the conclusion page, then, which is marked as Exhibit 14, and have you summarize for us how you've reached your conclusion and what that conclusion is.

A. Okay. On the top -- This is a rather busy slide; I don't want to get lost in it too much, because it's very important. But please, if we could look at the top of the

slide, above the assumptions, these are the conclusions that we came to.

On the left I've got listed the various zones, Morrow, Strawn, Wolfcamp and Bone Springs. To the right of that --

Q. The target MCF represents what? Recoverable gas for that spacing unit?

A. Yes, that's a net economic recovery that I would expect, based on the volumetric and analogy reserves calculations.

Q. And then the next one -- That's an oil-reserve number in thousands of barrels?

A. Yes, the target reserves. These are the high-case reserves, okay? These are unrisked, best-case reserves in my estimation that we would expect from any of these zones.

Q. Now, engineers like you doing economic analysis are going to at this point determine a risk factor to assign to these various reservoirs?

A. As Mr. Doty testified, the risk involved in this rather mature field with a lot of depositional -- strange things going on, there's a lot of risk involved.

Q. Is there a standard acceptable engineering method by which to categorize into different categories the levels or the degrees of risk per reservoir?

A. Yes, there is.

Q. And do you have a reference paper here that will verify the levels of risk that you've chosen for these reservoirs?

A. I do, Exhibit Number 15, if we could turn to that, please.

Q. And what is that, sir?

A. Exhibit 15 is the Fourteenth Annual Society of Petroleum Evaluation Engineers Survey of Economic Parameters Used in Property Evaluations, dated June, 1995.

Q. So if the Examiner should choose to do so, he can read this paper, he can find out the definition for the Morrow formation where you categorize that probable undeveloped; is that this --

A. Yeah.

Q. What's the summary here?

A. Can I step back -- Can I step back for one second, please?

Q. Give me the identification --

A. Oh, I'm sorry.

Q. -- of these codes.

A. Okay, yeah, the reserves category.

Q. Yeah.

A. Yeah, if we could step back to Exhibit 14 here --

Q. Yeah, look at that.

A. The reserves category for the Morrow --

Q. Yes.

A. -- probable undeveloped.

Q. What's the next one?

A. Possible undeveloped. The next one for the Wolfcamp is also possible undeveloped. And the Bone Springs is proved undeveloped.

Q. These categories plus additional categories are all described in the paper, the technical paper?

A. They are summarized under -- The risk factors associated with these reserves categories are summarized in the paper, yes.

Q. All right. And it's a method of categorizing or assigning various degrees of risk to these reservoirs that is a standard method of doing this?

A. Yes.

Q. And when you then apply the risk factor percentage associated with a probable undeveloped, it's this approximately 20-percent risk?

A. There's 20-percent risk involved with a probable undeveloped.

Q. All right. Follow that line across and finish the math for us then.

A. Okay. If I could step back, please. I categorized the reserves, okay. I want to make sure this

is clear on the reserve classifications. I classified the Morrow as probable undeveloped, and I'd like to give you some of the reasons for that.

There's Morrow production in the zone that we're trying to hit in the area. However, it's still risky. There's risk of us drilling into the bank deposit, into this play deposit, there's depletion risk associated with this play, but there is good Morrow production. Therefore, I categorize it as probable.

In the Strawn and the Wolfcamp, I felt that there was more risk involved in those reservoirs. Those were classified, therefore, as possible undeveloped.

Bone Springs, we've got a pretty good handle on the geology. There's offsetting production, and I could classify that as proved undeveloped.

And then the risk factors for those reserves categories were then multiplied by the target reserves number to get a risked reserves and risk production schedule for each of the zones.

I then -- I wanted to see -- to answer one of your previous questions, is it economical for Oxy to drill a well on its own? By doing an economic analysis on the risked reserves, then, we would be able to tell that.

So if I used the capital cost for a Morrow completion and the risked reserves for the Morrow zone, the

rate of return of that project would be negative, the net present value would be a negative $300,000-plus.

Q. All right. When you do the math, you go down to the assumption, you pick out the capital cost for the Morrow completion, the $655,000, you do the calculation. You're going to come up -- If it's a Morrow stand-alone, it's going to be a negative deal of $328,000?

A. That's correct.

Q. You can't do it, right?

A. You cannot do it.

Q. And so you go over here and you put a negative, and that's the big black letters?

A. The big black letters refer to a negative rate of return. It's an uneconomically justifiable project.

Q. What is the meaning, then, of the next two columns where we have net gas and net oil? What do those mean?

A. The net gas reserves are the risked net reserves. And part of the assumptions here, I've used a working interest of 100 percent and net revenue interest of 82.5 percent. So that's what those reserves relate to.

Q. All right. So you go down each of the formations, you do the same analysis, you find the appropriate category of risk which you've just described, and in each individual zone, then, a stand-alone well is a

negative rate of return, and therefore you can't do it?

A. That's correct.

Q. What happens when you sum them?

A. If I sum the values -- or actually sum the reserves of each of the zones and take the capital cost for a deep well for a Morrow completion, calculate economics based on those assumptions, we've got a 28-percent rate of return project with a net present value of $117,000 --

Q. The conclusion --

A. -- at 15 percent.

Q. The conclusion being -- ?

A. The conclusion being, we cannot drill economically for the wells -- for the zones individually. It's a loser project.

However, if we are allowed to access the potential value, the risk value of each of these zones, then we can economically justify doing the project.

Q. And you're satisfied and you can defend the specific category of reserve risk that you've assigned to each of the four reservoirs that's shown in the fourth column?

A. Yes.

MR. KELLAHIN: All right, that concludes my examination of Mr. Kovarik.

We move the introduction of his Exhibits 8

through 15.

EXAMINER CATANACH: Exhibits 8 through 15 will be admitted as evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Kovarik, your risk factor that you've used in this calculation has been determined from data or parameters in here --

A. Yes, sir.

Q. -- this paper? Okay.

Why does your target MCF differ from your reserve calculations on Exhibit 13?

A. The target MCF on Exhibit 14 is a net number, using the .825 net revenue interest that's shown in the assumptions.

And it's also an economic reserve number, such that I performed economics on each of these, and if they were cut off economically prematurely before producing the total volumetric/analogy reserves, then there would be a source of difference there also.

So the reserves you see on page 13 -- excuse me, Exhibit 13, would be gross, 100 percent.

Q. In your analysis, do you feel like you need all four zones to make this an economic venture?

A. Yes, I do.

Q. On your decline curves, on Exhibit Number 8, the DWU Federal Number 4, how come we only show three different points of production on that green curve? Is that --

A. It's very erratic production. I don't know specifically the answer to that.

Q. Well, should that have been a continuous green curve on that?

A. If it produced for those years in between, it would have been a continuous curve, yes, but apparently it had not.

It's possible -- I limited my plot from between 10 MCF a day to 10,000 MCF a day. If the points were out of that range, then the curve would be lost. It's possible that the well produced below 10 MCF a day during those periods.

Q. Is it also your opinion that -- Is it likely that this well is going to be a dual completion in the Bone Spring and the Morrow?

A. I can't say that for sure. As Mr. Doty testified earlier, the Morrow is a very tricky formation. If it's messed with too much, if the wrong chemicals and/or water are left on the formation too long, you experience clay swelling, which ruins your zone.

I don't know if -- It depends on the well. We have to see what the well will give us and work at it from

that perspective.

Yes, it would be nice, it would be nice if we could do that, but we're not going to risk a good Morrow completion, I don't think, in my mind, in my opinion, for the potential. It would be nice to do that, though.

EXAMINER CATANACH: I have nothing further of Mr. Kovarik.

MR. KELLAHIN: Mr. Examiner, I have verified the notice issue.

For clarity in the record, the Application has attached to it an Exhibit B, which is in three parts. Page 3 of Exhibit B to the Application are the working interest owners in Section 35 that would be affected by the unorthodox location. All those parties, starting with Asher Resources down through Weil, were notified. This list failed to include Penroc. We will reconfirm if we've missed anyone else, and we'll provide the notice. But Mr. Carroll is correct, Penroc was inadvertently not noticed, and we need to take care of that.

We will contact -- It's Merchant, I think, with Penroc. We'll contact him and see if we can get a waiver from him short of the normal 20-day notice. If not, then we're obligated to wait the notice period.

EXAMINER CATANACH: Would you suggest we continue it for two weeks and you try and get that?

MR. KELLAHIN: Yes, sir, let's try that, and if that's inadequate I'll report to you and we'll determine how to satisfy the notice requirement. So if you'll leave this record open for us for two weeks, we'll report to you on the notice.

EXAMINER CATANACH: Okay, this case will be continued till the February 8th hearing, and we'll deal with it then.

(Thereupon, these proceedings were concluded at 9:35 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 11453, heard by me on January 25 1996.

David K. Catanach, Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

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

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; and that the foregoing is a true and accurate record of the proceedings.

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

WITNESS MY HAND AND SEAL January 27th, 1996.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998