NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date FEBRUARY 8, 1996 Time: 8:15 A.M.

NAME	REPRESENTING	LOCATION
W. Kellahin	Kellahin & Kellahin	Santa Fe
James Bruce	Hinkle Law Firm	Midland TX
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JEFF BRIENEN	Conoco	" "
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	Byram	"
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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 NOS. 11,454
APPLICATION OF OXY USA, INC., FOR AN UNORTHODOX GAS WELL LOCATION, EDDY COUNTY, NEW MEXICO	)	11,458
	)	(Consolidated)

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

ORIGINAL

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

February 8th, 1996

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MICHAEL E. STOGNER, Hearing Examiner, on Thursday, February 8th, 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

February 8th, 1996
Examiner Hearing
CASE NOS. 11,454 and 11,458 (Consolidated)

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A P P E A R A N C E S

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* * *

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

EXAMINER STOGNER: This hearing will come to order for Docket Number 4-96. Please note today's date, February 8th, 1996. I'm Michael E. Stogner, appointed Hearing Examiner for today's cases.

At this time I will call Case Number 11,458.

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

EXAMINER STOGNER: Call for appearances.

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of the Santa Fe law firm of Kellahin and Kellahin, appearing on behalf of the Applicant in this case.

In addition, Mr. Examiner, we would like your permission to consolidate for purposes of testimony this case with Case 11,454, which appears as the third case on the docket. The first case is the south half of Section 33; the second case is in the west half of Section 4, just to the south. They involve similar geologic evidence.

While we have separate exhibits in both sets of cases for you to consider, I think it might expedite the hearing to let the technical witnesses present their testimony in a consolidated manner.

EXAMINER STOGNER: Okay, at this time I'll call Case Number 11,454.

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

EXAMINER STOGNER: Other than Mr. Kellahin, are there any appearances in this matter?

Okay, being none, these two cases will be consolidated for purposes of testimony.

Mr. Kellahin, you have how many witnesses?

MR. KELLAHIN: Three witnesses to be sworn, Mr. Examiner.

EXAMINER STOGNER: Would the witnesses please stand at this time to be sworn?

(Thereupon, the witnesses were sworn.)

EXAMINER STOGNER: Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Examiner.

We've distributed two sets of exhibits. The first package is Case 11,458, and we'll start with that presentation.

The first witness is Bob Doty. Mr. Doty spells his name D-o-t-y. He's a petroleum geologist residing in Midland.

I'd like to present his geologic conclusions with regards to this well. And then as we go through it, I will show you where the second well is in relation to the first, and then we'll complete his whole testimony with regards to both cases.

ROBERT 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. For the record, Mr. Doty, would you please state your name and occupation?

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

Q. On prior occasions have you testified before the Division and qualified as an expert in the field of petroleum geology?

A. Yes, sir.

Q. Pursuant to your employment, have you worked with Mr. Mike Kovarik, petroleum engineer with Oxy, as a team to develop opportunities for potential production in this section as well as the section to the south, Section 4?

A. Yes, sir.

Q. As a result of that study, do you now have certain conclusions and recommendations for the Examiner?

A. Yes, sir.

Q. Do the geologic work product we're about to see represent your work effort?

A. Yes, sir.

Q. And these geologic displays, then, are yours?

A. Yes, sir.

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

EXAMINER STOGNER: Mr. Doty is so qualified.

Q. (By Mr. Kellahin) If you'll turn, Mr. Doty, to what we've marked as Exhibit 1 in Case 11,458, let's take a moment and orient the Examiner as to what he's about to see.

A. Yes, sir, Exhibit 1 is a zone of production map which shows which wells are produced from which zones in the area of our proposed location.

There's a color code which shows the producing zones. Also posted beneath the active wells is the current zone that's producing from these wells. You'll note that wells that have nothing posted underneath are no longer active.

Also, our proposed location is posted in the southeast quarter of Section 33. It's the Oxy Federal 33-1, located 510 from the south line and 660 from the east line.

Also, the orthodox window for deep gas is the white area inside the shaded for our south-half spacing unit for this well.

If I may just acquaint you with the active deep gas well surrounding and contiguous to this south-half

spacing unit, there are only two active wells with contiguous spacing units associated with this well.

The west half of Section 34 is a standup Morrow spacing unit, producing from the Parker and Parsley ARCO Fed Number 1 in the northwest quarter. That's a well that's near its depletion. It's currently making about 8 to 10 MCF a day.

Q. That would be a Winchester-Morrow gas well; is that --

A. Yes, sir. Yes, sir. And in the south half of Section 32, in the southeast quarter, the Southland Royalty State A 32 is still active in the Atoka, Angell Ranch Atoka-Morrow. Its current rate, again, is around 25 MCF a day.

The point is, the deep location -- the deep gas reservoirs do not control the location for the unorthodox request. The Bone Spring location does. Our request today is for an unorthodox location for a deep gas Morrow-Atoka-Strawn-Wolfcamp.

Q. Let's refresh the Examiner's recollection with regards to the Bone Springs. This is the Old Millman Ranch-Bone Springs Associated Pool?

A. Yes, sir, the purple wells, primarily in Section 3 and 4, are current Bone Spring producers. Our location is orthodox for the Bone Spring, however we're on the very

edge of the pool and we feel like the risks are very severe for the Bone Spring, and we're unable to support a stand-alone Bone Spring location from an economic justification standpoint.

Also, we'll be able to show that we're unable to justify a stand-alone deep location. So our rational here is to package the Bone Spring and deep location to allow us to recover those reserves.

Q. When we look at the Old Millman Ranch, what are the spacing for gas wells and oil wells that currently employ?

A. Oil wells are on 40-acre spacing, gas wells are on 80.

Q. And a standard well location, then, would be within 150 feet of the center of a 40-acre tract?

A. Yes, sir.

Q. So that the Examiner will see the relationship of this well to the well that's described in Case 11,454, will you use this display to show us where we find the well that's the subject of the second case?

A. Yes, sir. You'll also note in Section 4 there's a well posted, the Oxy Federal 4-1.

This is our -- Also we're requesting an unorthodox location for the deep gas in this -- for this well also. This will be a standup west-half 320.

The contiguous active deep-gas 320s, again, the south half of 32, as I've described, our 25-MCF-a-day well out of the Atoka-Morrow.

To the southwest, the north half of 8 has an active Morrow well. The Mewbourne Federal V Number 1 is Burton Flat-Morrow, and it's a fairly recent well. It's in the northeast quarter. It makes around 600 MCF a day currently.

To the south in Section 9 are two standup 320s. The western one is active in the Morrow, the OXY Government AB Number 4, and the eastern one is active in the Wolfcamp, in North Burton Flat-Wolfcamp. That's the Chi USA 9 Number 1.

So those four contiguous 320s are active in the deep gas. As with the Section 33 well, the Bone Spring controls the location here.

Q. When we look at the well in Section 4, the Oxy 4 Federal 1 well, that is unorthodox only for the deep gas, and it's unorthodox because it's 150 feet farther east in its spacing unit than permitted under the current rules?

A. Yes, sir.

Q. All right. Let's go to the geology now, Mr. Doty. If you'll turn to what we've marked as Exhibit Number 2, let's find that display, unfold it, and have you identify it.

You've testified, Mr. Doty, that the ultimate conclusion that you and Mr. Kovarik have reached is that it's necessary to package the various deep gas intervals with the Bone Springs in order to justify a well in this spacing unit; is that not true?

A. Yes, sir.

Q. Let's look first at your interpretation of the Bone Springs.

A. Yes, sir. Exhibit Number 2 is a map of the Old Millman Ranch-Bone Spring Pool. The colors represent net pay with a 30-foot contour interval. The blue area on the map has net pay from zero to 30 feet, the pinkish-red area is from 30 to 60, and then on up in 30-foot increments.

Also shown is the structure of the first Bone Spring sandstone in black, with a 100-foot contour interval. The significance of the structure here is that it's allowed me to estimate the gas-oil contact in the field, which is noted with the red dashed line for the west half of Section 3, and it shows that both our Federal 4-1 and Federal 33-1 are in the gas cap of this pool.

The green wells are Bone Spring locations. And from experience in the pool, we have concluded that 30-foot net pay is a cutoff for an economic completion in the Bone Spring. Wells completed with less than 30 feet or attempted completions with less than 30 feet have not

reached payout, they're not -- you can't economically justify a well.

Q. To reach the net pay of 30 feet, what porosity or other cutoff value did you use?

A. 12-percent porosity cutoff.

You'll note that our Oxy 33 Federal Number 1 is very close to the 30-foot net pay cutoff. I have some well control. The well in the southwest quarter of Section 34 has 21 feet of pay and has proven to be a very poor producer.

Q. If you're looking for the optimum opportunity in the south half of Section 3 in which to locate a well to test the Bone Springs, where would you put that well?

A. I would put the well at the proposed location, 510 from the south line, 660 from the east.

Q. Will that give you your best opportunity to recover any gas in the Bone Springs that might be recoverable under this spacing unit?

A. Yes, sir.

Q. Can you achieve that at any other standard -- at a standard location at any other point in the south half of 33?

A. Not for a standard location for the deep zones at all, and really not for another standard location for the Bone Spring.

Q. All right. You said on Exhibit 2 you have a line of cross-section, B-B'?

A. Yes.

Q. Let's turn now to the actual cross-section.

A. Yes, sir.

Q. It's marked as Exhibit Number 3, is it not?

A. That's correct. Cross-section B-B', or Exhibit 3, is a structural cross-section, and the first Bone Spring sandstone reservoir for Old Millman Ranch is shown in yellow.

The curves that are shown on the logs, the left track is the gamma-ray, the right track is a calculated porosity log with porosity greater than 12 percent colored in red.

You'll note that at the southern location, the B' location, which is the right well on the cross-section, this is the Chi Winchester Federal Number 1. This has been an excellent well in the Bone Spring. It has over 100 feet of net pay. It's cum'd greater than two billion cubic foot of gas, and its current rate is almost a million a day.

Our -- By the way, that well is on the same, both B-B' and A-A' for both cases.

The next location on the B-B' is our proposed well, and the northernmost location is the Penroc ARCO Federal Number 1, which had only eight feet of net pay.

The zone was not tested, and based on our cutoffs it wouldn't be productive. In fact, the well is plugged.

So you can see that our location is in between the excellent pay and no pay. And based on that conclusion we feel like it's a very risky location, and our reservoir engineer will show our concerns on the economic justification for a stand-alone Bone Spring.

Q. Give us a verbal picture of the trapping mechanism in the Bone Springs reservoir.

A. Yes, sir. The Bone Spring reservoir is a deep-water sandstone, and it's deposited from the west to the east. It pinches out to the west, into a tight carbonate, and porosity distribution in this reservoir is fairly localized. I don't have an explanation of why the porosity is developed, but when it is developed it's developed over a fairly decent area, and it's very mappable in its extent.

It's very clear, however, that there are limits to the field. So the updip pinchout is both a pinchout of the sandstone and of the porosity, both.

Q. Mr. Doty, let's turn to your investigation of deeper gas intervals, and if you'll turn now to Exhibit Number 4, let's start your discussion with your examination of the Morrow -- You've finished that cross-section, have you not?

A. That's B-B'. Do you want to talk about A-A' at

all? For the other case?

Q. For the other case? If you'd like to do so, let's do that now.

A. Okay.

Q. So the record is clear, we're turning to 11,454, and we're going to look at the cross-section that's labeled as Exhibit Number 3.

A. Yes, sir, I just might point out that the well on the right, again, is that same Chi Winchester Federal well. Again in the center is our proposed 4-1 location, and in this case the well on the western side or on the left side is the Strata Aquila Federal Number 1, which did attempt a Bone Spring location. It had about nine feet of net pay in it.

And this is typical when you get very close to the pinchout. It was able to make a completion, but it's only produced 16 million cubic feet of gas, and it's currently TA'd.

So again, we're very close to the pinchout line on that Federal 4-1 location also.

Q. As we move to consider the deep gas opportunities, the Examiner will find in each exhibit package that he's looking at the same exhibits for each case, with the exception that you have identified the well location that's relevant to that case?

A. Yes, sir.

Q. All right, let's start, then, with Exhibit 4 from Case 11,458.

A. Yes, sir. Exhibit 4 is a cumulative production map for the Morrow. Posted beneath each well is the cumulative production for Morrow gas in millions of cubic feet. Also, there's a bubble map which has -- again reflecting the cumulative production, so the larger size of the bubbles are the greater volumes of gas.

What I've done is, I've annotated the major controls for the Morrow production in this subregional area. You'll note the blue arrows in the northern part of the area, which are labeled "Morrow Channel Trends". These are the main producing lower Morrow "B" channel trends, which -- basically, that's the paymaker sand for this northern part of the area.

To the south, that large producing area going from north to south is a fairly well known structural trend which I've called the Carlsbad anticline. That's that yellow annotated area. And that's a major structural control for -- There's also quite a bit more sand in the southern part.

You'll note the Oxy Federal 33-1 and also the 4-1 is in between two of these producing Morrow channel trends, and there is Morrow production in between these

channel trends but they're from more discontinuous sands. They're marginal in nature due to the discontinuities of the sands themselves.

And what I've done is, I've identified an area of investigation for our reservoir engineer for the purpose of reserve estimates that -- I've examined the wells that do not produce from the main trend but produce from some of these scattered trends. The presence or absence of some of these sands, I had a very difficult time mapping them and being able to predict them. They're just too thin, too discontinuous.

And we've labeled that area of investigation, just outlined this area with that dashed green line and called it deep gas scattered reserve potential. This is not any kind of estimated productive limit, it's just the area that we looked at the kind -- we bundled wells that produce from similar kinds of discontinuous sands, we can use for a production analog.

Q. As to any of the Morrow sands, were you able to construct an isopach for which you had confidence within this reserve potential area outlined with the dashed green line?

A. No, sir, I have several failed attempts. They're just too thin and discontinuous.

Q. And could you do an isopach on any of the other

deep gas zones that we're about to examine?

A. No, the Atoka, Morrow and Wolfcamp in this particular area that we're in.

Q. When we're looking at the Morrow and we're looking at the major production of the Morrow within the area on this map, which portion of the Morrow has been determined to be the most productive?

A. The lower Morrow "B" in the northern part where the blue arrows are. The southern part, structural control, all parts of the Morrow are productive.

Q. Do you know the pool names for the Morrow that are involved in this immediate vicinity?

A. Burton Flat and Winchester, Angell Ranch, primarily

Q. As I understand it, if you take the middle Morrow trend in the center, it runs northwest to southeast --

A. Yes, sir.

Q. -- and then you move south to the next Morrow channel trend and it has a similar orientation.

Within the reserve potential area, there's an area of investigation where you find that those sand members are outside of the trend?

A. Yes, sir, the main paymaker is absent in those areas. It's shaled out.

Q. All right, sir, let's turn to Exhibit Number 5

and have you identify and describe that display.

A. Yes, sir, Exhibit Number 5 is a similar cumulative production map, in this case for the Atoka. And you'll also see that same area of investigation is marked. And there's Atoka production throughout here. In this case, the Atoka reservoir is two to four feet thick, very discontinuous and impractical to map at the current well spacing.

Again, we have bundled wells together that we feel like will likely -- Our rationale here, our rationale is that if we can identify an area outside of the main producing trends where really luck is the main -- serendipity is the main control on production due to the reservoir discontinuities, any additional well drilled in that area will likely encounter the same kind of gas volumes summed up in the four different zones.

Q. Let me direct your attention to the Strawn map, which is Exhibit Number 6.

A. Yes, sir, likewise with the Strawn. The Strawn produces from carbonate buildups, which are of mappable extent. You can map the carbonate buildups.

The porosity within those carbonate buildups, however, is very erratic, and we're left with the same hit-or-miss reserve potential.

Q. All right, sir, and then finally the Wolfcamp

map. Let's Turn to Exhibit 7 and have you discuss that.

A. Also with the Wolfcamp, you'll notice the big red area in the center of the map. That's the North Burton Flat-Wolfcamp Pool, and that's a well understood Wolfcamp pool with specific controls on deposition.

But we're out of that, and we're into the area of discontinuous Wolfcamp buildups that are hit or miss on their producibility.

Q. Summarize for us, Mr. Doty, your geologic conclusion.

A. Yes, sir. We're unable to justify a stand-alone Bone Spring location on our lease, due to our proximity to the pinchout.

We're also unable to justify a stand-alone deep gas location on our lease. We're out of the area of the main paymakers for the deep gas zones, but we're in the area where there can be gas recovered but it's just of very scattered marginal nature.

We can, however, justify combination Bone Spring and deep gas location, but only on a location which is geologically best suited for the Bone Spring, which in this case for both these wells is orthodox for the Bone Spring, but also on both these wells is unorthodox for the deep gas.

Q. If the Division approves your Application on

behalf of your company, Mr. Doty, would it provide an opportunity for Oxy to recover potential gas reserves that it might not otherwise recover in the spacing unit?

A. Yes, sir.

Q. Do you see any opportunity that you would impair the correlative rights of other offsetting interest owners or operators adjacent to your location?

A. No, sir.

Q. Why not?

A. There's no active existing deep wells that we would even encroach on at all.

Also, there's reserves there that if -- no one can drill for unless you can package it for the shallow. So if we're unable to drill these wells, nothing happens and no additional gas on either side of the lease line is recovered.

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

We move the introduction of his Exhibits 1 through 7 in each of the two cases.

EXAMINER STOGNER: Exhibits 1 through 7 will be admitted into evidence at this time.

EXAMINATION

BY EXAMINER STOGNER:

Q. In referring to Exhibit Number 2 that shows your

Bone Springs structure --

A. Yes, sir.

Q. -- on the well in green or Bone Springs producers or Bone Springs production; is that correct?

A. Yes, sir, these are wells that have completed in the Bone Spring. In some instances, there's no volumes that have ever been produced, but they did report an initial potential.

Q. And looking at the one well in the northeast quarter of Section 4, it showed about 116 feet of net pay?

A. Yes, sir.

Q. Is that well still producing?

A. Yes, sir. Its current rate is around a million a day.

Q. And how about the wells over on the western side of 4?

A. No, sir, neither of those wells are producing.

Q. Now, the wells that you show are in the perimeter, are in the red perimeter of your structure, are any of those wells still commercial?

A. Yes, sir, all of them are.

Q. All of them? Okay.

A. Yes, sir.

Q. So that's essentially your cutoff in this instance?

A. Yes, sir.

Q. Now, is this pool on 80-acre or 40-acre spacing?

A. It's 40-acre for oil and 80-acre for gas.

Q. And you are expecting to hit gas?

A. Yes, sir.

Q. I'm assuming that the wells in the yellow portion of the structure are gas wells?

A. On the western portion of -- west of the dashed gas-oil contact, they are, yes, sir. That yellow portion east of that gas-oil contact are oil wells.

The yellow is a maximum greater than 120 feet of net pay color.

Q. In referring to Exhibit Number 1, in the south half of Section 33 -- this is the same proration unit that you're proposing in Case Number 11,458 -- there was an old Penroc oil well, the 1 ARCO Federal?

A. Yes, sir.

Q. And that had production from which zone?

A. From the Atoka.

Q. Of did they just test the Atoka?

A. No, sir, it produced from the Atoka, 800 million, thereabouts. It's currently plugged.

Q. Do you know how long that well produced?

A. No, sir, I don't.

Q. Did that well also test the other zones from the

Morrow to the Wolfcamp?

A. I don't recall. It did penetrate the Morrow.

EXAMINER STOGNER: I have no other questions of this witness at this time.

MR. KELLAHIN: Mr. Examiner, our next witness is Mike Kovarik. He spells his last 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, would you please state your name and occupation?

A. My name is Michael Kovarik. I'm a reservoir engineer with Oxy USA.

Q. And you reside in Midland, Texas, do you not, sir?

A. Yes, I do.

Q. On prior occasions, Mr. Kovarik, have you testified before the Oil Conservation Division and qualified as an expert in the field of petroleum engineering?

A. Yes, I have.

Q. In addition, do you have within your company special expertise on evaluating the economics of wells with

regards to their potential profitability?

A. Yes, I do. I was employed as a reserves evaluation analyst in Tulsa for approximately eight and a half years where we kept track of company reserves for SEC reporting and government -- and financial reporting purposes, and have also done sales and acquisition analysis.

Q. Have you applied that specialized expertise to analyzing the opportunity to drill a well by your company in each of these two cases?

A. Yes, I have.

Q. As part of that analysis, have you come to certain conclusions and recommendations for the Examiner?

A. Yes, I have calculated reserves for Bone Springs and deep potential in the wells in question.

Q. Will that be true on each of the two cases?

A. Yes, it is.

Q. And as we go through the exhibits for the first case, you will follow a similar methodology in the second case?

A. Yes.

Q. And when we discuss with the Examiner the ranking of categories of risk with regards to this prospect, you have references that authenticate the method of risk you've used?

A. Yes, I do.

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

EXAMINER STOGNER: Mr. Kovarik is so qualified.

Q. (By Mr. Kellahin) Let's turn, sir, to Exhibit 8 in Case 11,458 and look at the data sheet that begins to start the process by which you come to your ultimate conclusion.

A. This exhibit is primarily for information purposes. It lists the pools and reservoirs in the -- If we could refer to one of Mr. Doty's exhibits, please.

Q. Yes, sir, which one would you like to use?

A. Let's look at Exhibit Number 4.

Q. This is the Morrow cum gas map that we started the deep gas discussion with, Mr. Kovarik, is that the one you have?

A. Yes.

Q. All right, sir.

A. The production and statistics on this -- on my Exhibit 8, correlate to the deep gas scattered reserve potential area that Mr. Doty identified previously.

I've listed all the pools and zones within that area and tabulated cumulative gas -- or cumulative recoveries and rates for those pools.

Q. All right. With regards to the deep gas, then,

Mr. Doty testified that he was not able to, with the current data, provide you net pay isopach maps or ϕh maps by which you could do volumetric calculations for the deep gas within this reserve potential area?

A. That's true.

Q. How, then, did you as an engineer analyze the potential gas in place or recoverable gas within that area?

A. For the deep gas zones I had to rely on analogy. We used a typical well, typical deep completion, based on ultimate recoveries from the wells within the reserve potential area that Mr. Doty outlined.

Q. And we're about to see some of that?

A. Yes, sir.

Q. When we get to the Bone Springs, then, you were able to use a net pay isopach and to do volumetrics as well as analogy analysis for the potential reserve for the Bone Springs?

A. Yes, I was.

Q. All right. Let's go beyond the data sheet now and look at Exhibit 9 and continue with your discussion about how you've analyzed the deep gas potential.

A. Okay, Exhibit 9 lists the wells, again, within the scattered reserve potential area by zone of interest.

The first numerical column that you see is cumulative production from each of those wells/zones.

The second numerical column, titled "Ultimate Recovery", is then the ultimate recovery from those wells or zones.

The difference between cumulative production and ultimate recovery for the active wells is remaining reserves, which are calculated using decline curve analysis. Those curves are attached to the exhibit, Number 9, for your information.

Q. All right. For the active wells, then, you've got the decline curve analysis, from which you forecasted the ultimate gas recovery per well. You then put it on the spreadsheet, you run the totals, and then what do you do?

A. Well, I've got total reserves -- or total ultimate recoveries for all the wells and zones within the scattered reserve potential area. What I did then was take the number of wells, total number of wells within that area, divided it into the total recovery and came up with a typical well that we could expect -- or a typical deep completion ultimate recovery for our area. And that applies to both wells.

Q. Is this the way you as a reservoir engineer would have analyzed the opportunity for other wells that were in areas like this, where you had scattered multiple pay opportunities, none of which alone by themselves would support the drilling of a well?

A. Yes.

Q. So this is not unique to this case?

A. No.

Q. All right, sir. Let's turn now and see what you've done with the Bone Springs. If you would turn to Exhibit 10, identify and describe what you've done.

A. Okay, Exhibit 10 is similar to the previous exhibit, except that these are the four Bone Springs wells that I used for an analogy to come up with a type well for a Bone Springs that I would expect in our locations.

Q. Again, when we look at Exhibit 10, you're following that same analogy methodology that you used for the deep gas in Exhibit 9?

A. Yes, I am.

Q. In addition to the analogy for the Bone Springs, you've also done some volumetric reserve calculations for the Bone Springs?

A. I have.

Q. Let's turn to Exhibit 11 and have you identify and describe what you've done.

A. Okay. Exhibit 11 is a spreadsheet, again, that shows the volumetric calculations that I did for a Bone Springs location for the Federal 33-1. The shaded portion in the bottom shows recovery of 933 million cubic feet, for the 33-1 in the Bone Springs.

The rock and fluid properties -- rock properties were taken from Mr. Doty's geological analysis and fluid properties from what we would expect for a Bone Springs completion at this depth.

Q. Again, standard, traditional volumetric methodology applied here?

A. Yes.

Q. Nothing unique or unusual about the method or the parameters used?

A. No, there isn't.

Q. All right. Having done that, then, how do you as an engineer decide on what is the appropriate reserve potential for this well at this location, as to all these reservoirs?

A. Well, with respect to the deep zones, I only have one method that I used, and that was the analogy, so that's my reserve estimate for the deep zones.

Exhibit 12 summarizes the reserve estimates that I had for the deep zones and also for a Bone Springs completion. You'll notice that I did the averaging of the 13 wells in the reserve potential area, and I've come up with a reserve for deep completion of 673 million cubic feet and 14,500 barrels of condensate.

Q. All right. This is recoverable numbers that you're using in your analysis for this well location --

A. Yes, in the economics.

Q. -- for the deep gas?

A. Yes.

Q. All right, take us down to the bottom of the spreadsheet, Exhibit 12, and show us what you've done to assign recoverable reserves for the Bone Springs.

A. For the Bone Springs, I've got analogy, I've got some wells I could use for analogy. And I've also got -- We've got a pretty good handle on the geology, so I felt that an equal weight of volumetrics and analogy would be reasonable, so I took an average of the two methods.

I took the average of the per-well recovery from analogy of a little over a BCF and the volumetric estimate of 933 million cubic feet, to come up with a typical Bone Springs completion at the Federal 33-1 location of reserves of about -- a little less than a BCF and 11,000 barrels.

Q. Does that give you confidence when you can by analogy get 1 BCF and then by volumetrics get just short of a BCF?

A. Absolutely, that lent quite a bit of credence to what I was doing.

Q. So you simply averaged the two, then, and got the 994,000 MCF?

A. Yes.

Q. All right. What then do you do? These are not

yet risked, and you have not yet applied a cost component to the calculation.

A. I've got a reserve estimate. I have to determine whether or not it's an economically viable project for Oxy to undertake.

Q. Let's see how you did that. If you will turn to Exhibit 13, identify and describe what you've done.

A. Okay. Exhibit 13 is a summary of the economic analyses that I ran for a deep zone completion and also for a Bone Springs completion.

If we start at the left and work our way across --

Q. Yes, sir, if you start with the first row it says "Deep Zones". The first column is "Net Target MMCF". What have you done to get the 566?

A. The net target reserves are simply the analogy reserves, the type well reserves times the net revenue interest that I used for this well. Those are targets; that's what we're going for.

However, there's risk involved, especially with the discontinuous nature of the reservoir that we're looking at. So in order to run economics and make a justification, I have to risk the reserves. In order to do that, I categorized these reserves as proved undeveloped.

Q. Now, the method for finding the category of

reserves is taken from Exhibit 14, which is from the Society of Petroleum Evaluation Engineers?

A. Yes.

Q. The complete text of that paper is shown as Exhibit 14?

A. Yes.

Q. All right.

A. And on page 1, which is actually several pages back from the text, initial text of it, you'll find three tables.

Q. Let's see, you turn --

A. Turn back.

Q. -- to the fifth page, it says "Statement of Purpose". And right behind that shows you a "Survey Summary"?

A. Yes.

Q. Can we use this table here that says "Evaluation Criteria"?

A. Yes.

Q. Let's start with the bottom, then, table and describe how that's subdivided.

A. The bottom table is subdivided into various categories of reserves, proved producing, proved undeveloped, probable and possible behind-pipe and undeveloped reserves.

Q. Let's see how this is organized. If you look at the bottom of this spreadsheet it says "Possible Undeveloped".

A. Yes.

Q. Is that the percentage or the category that has the greatest risk associated with it?

A. Yes, it is.

Q. And as we move to the top of the spreadsheet, proved producing is the category with the least risk assigned?

A. Yes, it is.

Q. Which category did you assign to this well?

A. I assigned proved undeveloped to this well for both the deep zones and the Bone Springs.

Q. And why did you do that?

A. I couldn't assign it proved producing, obviously, because we don't have a well there. I felt that possible undeveloped was -- There's quite a bit more risk involved in the possible undeveloped category than there is actually for this well, because there is production in the neighborhood.

Probable undeveloped I could have used, possibly, but I felt that with the magnitude of the target reserves, it's not that great, and that proved undeveloped -- The 50-50 chance of getting the target reserves that I've got

from analogy from averaging the ultimates from these wells was plenty of risk to apply to a completion, especially in the deep zones.

Q. So you applied the category of risk to it that is the least risk you could assign?

A. Yes.

Q. So it had the greatest probability of success under your analysis?

A. Yes.

Q. And that was what? The 55 percent?

A. 55 percent, yes.

Q. All right. Let's go back, then, to the spreadsheet, Exhibit 13, and see how you finished the analysis.

You've picked your category of risk, you've got your risk percentage factor, and then you simply finish out the math, don't you?

A. The risk factor was multiplied times the production stream from the reserves and the production from the deep zone. I used a completion cost of $655,000 for a deep zone completion, ran the economics, and we get a negative $300,000 present value at 15 percent, rate of return is negative.

In the case of the Bone Springs, I did a similar economic analysis where I took the risk factor times the

reserves and production stream, used a $520,000 completion cost.

Q. All right. So if you look at Bone Springs stand-alone, you can't do it for a three-percent rate of return?

A. No, we can't. That's well below our hurdle rate.

Q. And when you package all the deep zones consecutively together, you still get a negative rate of return?

A. Yes, you do.

Q. So if you put the two together, then what happened?

A. If you add the production -- the value from both zones together in the same wellbore and assume a deep completion cost of $655,000, the result is a positive net present value of 15 percent and a rate of return of 44 percent. So that's a good project for Oxy to undertake.

Q. So under this analysis, then, the only opportunity for you is to package them together at this location in order to drill this prospect?

A. That's the only way we would be able to accept the risk involved.

Q. Let's turn now to the exhibit packages for the second case and have you start with Exhibit Number 8

Okay, let's go through these, again, then, Mr. Kovarik. If you'll start with Exhibit Number 8 for Case

11,454, let's walk through the same analysis. First, starting with Exhibit 8, you've got your reservoir data sheet, again using the same method as you used in the prior discussion.

A. Yes, this is the same method, same pools, same wells that we used in the previous discussions.

Q. All right, sir, and when we're looking at Exhibit 9, we're looking at the same set of data that you used in the prior case?

A. Yes, it is.

Q. All these numbers are the same; we're still looking at that dashed green area that's identified on Exhibit Number 4?

A. Mr. Doty's reserves potential area, yes.

Q. All right. Exhibit 10, is this different?

A. No, this is the same analogy I used for the Bone Springs as for the --

Q. All right, sir. We get down to Exhibit 11 now, in case 11,454, and this one is different because it's volumetrics within that spacing unit?

A. Yes, Mr. Doty calculated volumetric estimates or rock properties for the 4-1 and for the 33-1. They were slightly different. And I used his numbers for both cases -- for --

Q. Using the same methodology, then, you have

derived a volumetric reserves for the Federal 4-1 as shown on Exhibit 11?

A. Of 736 million cubic feet.

Q. All right, sir. Now, turn to Exhibit 12 and summarize for us what you've done.

A. Exhibit 12 is similar to the Exhibit 12 in the previous case, with the exception of the volumetric estimate for a Bone Springs well. That estimate is the same estimate that is shown on the previous exhibit here, giving an average Bone Springs reserve estimate of just less than 900 million cubic feet.

Q. All right. Turning to Exhibit 13, show us what you do next.

A. Again, in a similar manner, I used the Bone Springs reserves of just less than 900 million cubic feet to run an economic analysis.

The deep zones in the Bone Springs again were risked at 55 percent. The Bone Springs economics show a negative net present value of 15 percent, and also a negative rate of return.

However --

Q. That's even worse than the prior case?

A. Yes. Yes, it is, because the reserves estimate is lower --

Q. All right, sir.

A. -- because of volumetrics.

On an expected value risk case, however, when the values are added together, net present value is positive and it results in a 33-percent-rate-of-return project, which is acceptable to Oxy.

Q. And again, in summary with regards to the Federal 4-1 well, you have concluded you cannot independently test the Bone Springs and then look at the deep gas separately; it has to be done in the same wellbore?

A. Exactly, exactly. There's too much -- there's not enough reserves potential -- there's not enough target reserves and too much risk in both the deep zones and the Bone Springs in this location for us to try to get them.

Q. All right, sir. And then finally you've referenced your evaluation criteria taking from that prior paper the summary sheet, Exhibit 14, which is shown in the exhibit package.

A. Yes.

Q. Did you find any reason to change the category of risk as we moved from the first well to the second well?

A. Absolutely not. They're in very similar porosity development, net-feet situations, geologically.

Q. If anything, the Federal F-4 is more risky than the prior well?

A. There are less target reserves calculated than in

the Federal 33-1 case.

Q. All right, sir. Summarize for us your engineering conclusions, Mr. Kovarik.

A. My conclusions are that it would be impossible for Oxy to accept the risk to attempt a Bone Springs location in either the Federal 33-1 location or the Federal 4-1 location, and it's impossible for Oxy to accept the risk of a deep completion in either of those locations.

However, if the value of the deep zones is added to the value of the Bone Springs on a risk basis in the same wellbore, then it's possible for Oxy to accept the risk and drill for those reserves.

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

We move the introduction of his Exhibits 8 through 14 in each of these two cases.

EXAMINER STOGNER: Exhibits 8 through 14 in both cases 11,454 and 11,458 will be admitted at this time.

EXAMINATION

BY EXAMINER STOGNER:

Q. Mr. Kovarik, is it Oxy's intention to dual-complete this well?

A. Not necessarily. If we encountered a good Morrow zone, that's going to give up quite a bit, that looks pretty good, we're not going to try to risk it, I don't

think, by dually completing it.

However, in both cases we'll have to wait and see what the well tells us when we drill it. It's not an up front -- We haven't decided that up front.

Q. In evaluating your completion cost, was that taken into account in completing or running adequate casing which would allow you to dually complete this well?

A. Yes, well, we would be -- In the risked economics?

Q. Yes.

A. It's assuming a Morrow completion. So yes, we would run casing down through the Morrow.

Q. But adequate enough size to, say, run two strings of tubing if necessary, or perhaps run the gas up the annulus?

A. Yes, oh, yes, absolutely, that would be possible.

Q. And when I say "dual completion", I'm talking a deep gas completion with the Bone Springs, not the Wolfcamp with the Morrow.

A. Right, I understand.

EXAMINER STOGNER: I have no other questions of this witness, Mr. Kellahin.

MR. KELLAHIN: All right, sir. Thank you, Mr. Examiner.

At this time we would call Rick Foppiano.

RICHARD E. FOPPIANO,

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. Foppiano, for the record, sir, would you please state your name and occupation?

A. My name is Richard Foppiano -- that's spelled F-o-p-p-i-a-n-o -- and my occupation is a regulatory affairs advisor for Oxy in Midland, Texas.

Q. You also hold a professional degree as a petroleum engineer, do you not, Mr. Foppiano?

A. No, I do not.

Q. You do not. What has been your experience, then, for your company with regards to your management of regulatory affairs?

A. I have approximately ten years -- The last ten years have been managing Oxy's regulatory affairs in a variety of capacities, both for areas in the United States and in Texas and New Mexico specifically in the last five years.

Q. With regards to this case, these two cases, you've been responsible for permitting these locations and determining and notifying the offset operators towards whom this well encroaches?

A. That is correct.

MR. KELLAHIN: We tender Mr. Foppiano as an expert witness.

EXAMINER STOGNER: Mr. Foppiano is so qualified.

Q. (By Mr. Kellahin) Let's turn to the south half of 33, Mr. Foppiano, the Oxy Federal 33-1 well. It appears by its name that it's located on a federal lease?

A. That's correct.

Q. What is the status of your federal permitting with regards to approval of this specific location?

A. The notice of staking has been filed with the BLM, and the BLM has conducted an on-site inspection of the location and has tentatively approved the surface location as a drillable location, pending, of course, approval of the APD.

But it's our belief that this is a drillable location and that BLM will allow it to be drilled at that location, based on our discussions with them and the on-site review.

Q. All right, sir. And when we turn to the second case in Section 4, the Oxy Federal 4-1 well, that's also on federal acreage?

A. That is correct.

Q. And what is the status of you obtaining the clearances for use of the surface for a well at that

unorthodox location?

A. The same as the 33-1, the on-site has been done, the yard clearance has been provided to the BLM, and we're just waiting now on filing and approving the APD.

Q. Let's turn to the subject of offset notification. When you look at the Oxy Federal 33-1 well in the southeast of 33, have you caused notification to be sent to all the appropriate offsetting interest owners and/or operators towards which that well encroaches?

A. Yes.

Q. And also for the well in Section 4, the Oxy Federal 4-1 well, have you done similar notifications and have identified the proper parties to whom that notice should be received?

A. That's correct.

Q. Identify for us, Mr. Foppiano, the final exhibit in the exhibit package, which is Number 15.

A. Exhibit 15 in both Case Number 11,454 and Case Number 11,458 is a waiver of protest from an owner of the shallow rights from the surface to the Bone Springs, located in the northeast quarter of Section 4.

We inadvertently gave notice to the operators and the working interest owners in the shallower formations and then subsequently discovered that we didn't need to give them notice because obviously we were orthodox in the Bone

Springs and we were not encroaching on them.

However, since we gave notice to everyone, we went ahead and pursued making sure that we did give notice to everyone in the Bone Springs there. We noticed we left one individual off, and his name is Mr. Alford, and so we pursued getting a waiver from him, which completed giving notice to all the Bone Springs owners and operators there in the northeast quarter of Section 4.

But here again, it wasn't until just recently we figured out that we actually gave too much notice in this case, but we wanted to go ahead and enter the waiver in this case, since we did pursue it, and we talked with him and make him feel like he had a position in this case, and we want to go ahead and put his waiver into the record.

Q. Were you responsible for providing the list of parties to notify that's appended to each of the Applications that were filed with the Oil Conservation Division?

A. Yes, sir, I worked with my land department in securing the names of all the operators and working interest owners in the areas upon which we were encroaching in the deep gas.

Q. To the best of your knowledge and information, are the list of parties to be notified appended to the Applications correct and accurate?

A. Yes, to the best of my knowledge.

Q. As a result of that notification, are you aware of any objections being filed or communicated to you concerning any of these parties receiving notice?

A. I'm aware of none.

MR. KELLAHIN: Mr. Examiner, Exhibit 16 is my certificate of notification in Case 11,458.

I've neglected to bring the certificate for Case 11,454, and with your permission, I will have it delivered to you this afternoon.

With your permission --

EXAMINER STOGNER: I'll leave the record open in that case, pending the arrival of the certification.

MR. KELLAHIN: Thank you, Mr. Examiner.

I also am not aware of any objection from any of these parties. I have not received anything in writing or by phone.

With that, Mr. Examiner, we would move the introduction of Exhibits 15 and 16 in Case 11,458.

EXAMINER STOGNER: Said exhibits will be admitted into evidence at this time.

EXAMINATION

BY EXAMINER STOGNER:

Q. Mr. Foppiano, the well in Section 4, the proposed 1 Federal Number 4, I believe it is --

A. Yes, sir.

Q. -- is that unorthodox for a Bone Spring?

A. No, sir.

Q. What does the pool rule say about the Bone Spring?

A. The pool rules -- We expect that well will be a gas well, and the location there is 150 feet from the center of the quarter quarter. And according to our records, the pool rules are for gas wells 150 feet from the center of the quarter quarter. And 80-acre -- It's an 80-acre laydown unit around that well.

Q. According to my calculations, they're not. It's not, pursuant -- Or it's not within 150 feet radius. 2130? That's 330 foot from the center.

A. Wouldn't 1980 be the center of the quarter quarter?

Q. 1980 from the north, but 2130 from the west. It was my understanding you expect it to be an oil well, from Mr. Kovarik's testimony.

A. No, sir, we expect it to be a gas well. It is drilled above the oil-water contact -- I mean the gas-oil contact.

MR. KELLAHIN: Then we have a glitch in our advertisement, Mr. Examiner. When it was filed, I was under the misimpression that was going to be an oil well

and therefore standard. If the scientists now think there's an opportunity that this would be a gas well, then it would be unorthodox as to the gas.

(Off the record)

MR. KELLAHIN: Let's resolve this off the record, outside of the hearing, Mr. Examiner. There's a mistake in the notification. We'll have to either readvertise it as to the Bone Springs or to go ahead and subsequently take care of that, so he and I need to work this out.

EXAMINER STOGNER: Okay, we'll leave the record open in this case, and then we can recall it when you have that done.

Also, if you would, on one of the exhibits -- or provide me at least what the proration unit will be in the Bone Spring.

MR. KELLAHIN: Yes, sir.

EXAMINER STOGNER: With that, we'll go off the record in these two cases, and they'll be continued.

MR. KELLAHIN: All right, sir. Thank you.

(Off the record at 9:18 a.m.)

(The following proceedings had at 10:30 a.m.)

EXAMINER STOGNER: I'll recall Case Numbers 11,458 and 11,454 at this time.

MR. KELLAHIN: Mr. Examiner, during the break we have re-examined the well location for the Oxy Federal 4

Number 1 well, which is the subject of Case 11,454. It is correctly advertised on the docket as being 1980 feet from the north line, 2130 from the west line. That would put it at a standard well location with regards to both an oil and a gas well in the Old Millman Ranch-Bone Springs Pool.

In addition, we have confirmed with Mr. Doty that if you'll look on his Exhibit Number 2, he shows a gas-oil contact in a dashed red line on that display. It is his testimony and belief that both of these wells, if successful, would be gas wells, as opposed to oil wells, in the Old Millman Ranch-Bone Springs.

With that statement, then, we would request your permission to conclude these cases and have you take them under advisement.

EXAMINER STOGNER: I must apologize to -- I was being a little dyslexic. I'm always used to seeing the figure 2310, and when I saw 2130...

Now, one of the other things I did ask, the proposed proration units --

MR. KELLAHIN: Yes, sir.

EXAMINER STOGNER: -- for Bone Spring gas are both going to be laydown?

MR. KELLAHIN: I believe that was correct. They're both laydowns, Mr. Examiner.

EXAMINER STOGNER: Okay. So for the Federal 4

Number 1, that will be a south half of the northwest quarter, and for the Federal 33 Number 1 that would be the south half of the southeast quarter.

MR. KELLAHIN: That's correct.

EXAMINER STOGNER: And with that, I appreciate your patience on that. Now, we'll leave the record open in 11,454, pending your submittal of the certification of notice.

MR. KELLAHIN: Yes, sir.

EXAMINER STOGNER: Other than that, Case 11,458 will be taken under advisement, and for all intents and purposes so will 11,454.

MR. KELLAHIN: Thank you, sir.

EXAMINER STOGNER: Thank you.

(Thereupon, these proceedings were concluded at 10:33 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 11455 and 11456 heard by me on 8 February 1996.

, 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 February 12th, 1996.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998