STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:	)	CASE NO. 12,776
APPLICATION OF OXY USA WTP LIMITED PARTNERSHIP FOR A DISCOVERY OIL ALLOWABLE, POOL CREATION AND ADOPTION OF SPECIAL RULES AND REGULATIONS FOR THE PROPOSED WEST UPPER PENNSYLVANIAN POOL, EDDY COUNTY, NEW MEXICO	)	

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

December 6th, 2001

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MICHAEL E. STOGNER, Hearing Examiner, on Thursday, December 6th, 2001, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South Saint Francis Drive, Room 102, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

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I N D E X

December 6th, 2001
Examiner Hearing
CASE NO. 12,776

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A P P E A R A N C E S

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By: W. THOMAS KELLAHIN

* * *

WHEREUPON, the following proceedings were had at 10:40 a.m.:

EXAMINER STOGNER: This hearing will come to order. At this time I'll call Case Number 12,776, which is the Application of OXY USA WTP Limited Partnership for a discovery oil allowable, pool creation and adoption of special rules and regulations for the proposed West Upper Pennsylvanian Pool in Eddy County, New Mexico.

At this time I'll call for appearances.

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

EXAMINER STOGNER: Are there any other appearances?

Will the witnesses please stand to be sworn, please?

(Thereupon, the witnesses were sworn.)

EXAMINER STOGNER: Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Examiner.

We're going to present a geologic picture for you this morning to show what we believe to be a separate accumulation of oil.

In addition, we have engineering information on a preliminary basis early in the performance of the well

which causes us to believe that 160 acres would be the initial starting point for establishing spacing for the oil production.

We would like to have a period of 18 months on a temporary basis in which to further produce this well, plus to complete and produce another well in the vicinity and to report back to you at the end of that period as to whether the additional production justifies the spacing.

In addition, I want to alert you to two things that I have done. One, I have asked for a discovery oil allowable in filing the Application. My recollection, however, is that the District often handles that process of assigning a discovery allowable to the wellbore. We've done the calculation, we can show you what it is, and we'll defer to you to tell us if you want us to do the district process or if -- I think it's Rule 509 is the rule.

In addition, I have misnamed the suggested name. Again, we'll defer to the Division to name the pool. I have left off the "Atoka" under the wrong assumption that we were referring to the West Atoka Pool. In fact, Atoka is an identified area, and so if you choose to name the pool, I think it should be the West Atoka-Upper Penn Pool. It's a little confusing because Atoka in this case does not refer to the formation.

My first witness, Mr. Stogner, is Mr. Tom Smith.

THOMAS R. SMITH,

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, sir, would you please state your name and occupation?

A. Thomas R. Smith, consulting geologist for OXY USA.

Q. And where do you reside, sir?

A. Midland, Texas.

Q. Have you been employed by OXY as a consultant to prepare a geologic evaluation of the area around what they believe to be is a new oil discovery called the Eagleburt well?

A. Yes, sir, I sure am.

Q. Engelbert well?

A. Engelbert, yes, sir.

Q. Are the displays that we're about to see represent your work product?

A. Yes, they do.

MR. KELLAHIN: We tender Mr. Smith as an expert geologist.

EXAMINER STOGNER: Mr. Smith is so qualified.

And back to your opening remarks, Mr. Kellahin --

MR. KELLAHIN: Yes, sir.

EXAMINER STOGNER: -- usually such discovery allowables are placed by the Division's geologist in the nomenclature order.

MR. KELLAHIN: Yes, sir.

EXAMINER STOGNER: And since this is essentially going to substitute for that, I think it will be appropriate to include it in this point, as opposed to some other kind of mode.

MR. KELLAHIN: All right, sir, we'll proceed in that fashion. Thank you.

Q. (By Mr. Kellahin) Mr. Smith, let me ask you to turn your attention to what we've marked as Oxy Exhibit Number 1. Would you identify what we're looking at?

A. Yes, this is the Upper Pennsylvanian (Cisco) structure map.

Q. Before we talk about the structural conclusions you've reached about the Cisco structure, help us locate where the Engelbert Number 1 well is.

A. Okay, the Engelbert Number 1 is highlighted in yellow. It's located in the southeast quarter of Section 15, Township 18 South, 25 East, of Eddy County. We're approximately six miles south of Artesia.

Q. I referred in my opening comments to the Atoka being identified in this area with something other than a

formation.

A. Right.

Q. Where is the "Atoka"?

A. The little town of Atoka is -- Oh, it looks like it's about four miles to the east, and that's actually the little town for which the formation is named. So in this area we have a lot of reference to "Atoka", but it's in reference to the town, naming some of the fields and the pools in the area for the town.

Q. When we look at structure, is structure going to be significant to you as a geologist in whether or not you have a separate hydrocarbon accumulation that's distinct from any other accumulation in the Cisco?

A. Structure plays no role whatsoever in the accumulation of any of these Permo-Penn fields in the area. Everything in here is stratigraphically trapped.

Q. Okay.

A. So all you really see from the structure map is just southeast regional dip, and I just wanted to point out that there's no real influence of structure whatsoever.

Q. Let's turn to Exhibit Number 2 so we can see in a regional sense how this proposed pool is located in relation to other Pennsylvanian pools. Again, did you prepare Exhibit Number 2?

A. Yes, I did. And in this approximate six-township

area what I've done in here is highlight all of the Permo-Penn pools in the area, and Permo-Penn being defined as Wolfcamp, Cisco or Canyon. So anything in those three intervals designated Permo-Penn is shown on this particular plat.

And for the most part, other than one field, all we're looking at here are gas fields. There's only one other pool in the area that's an oil pool, and that's the Penasco Draw Wolfcamp down in Section 34.

Q. Now, that's shaded in the green?

A. That's shaded in green. Everything in red is gas. So we're in sort of a unique situation where we've got all of this gas production in the upper Penn in particular. All the upper Penn is exclusively gas, however we have one Wolfcamp here which is part of the Permo-Penn, which is an oil pool.

But we have a zone up here in the Cisco, what I call the Cisco "C" zone, and this is an oil zone. So we're in a unique situation here.

Q. Help me find where I am. Where is North Dagger Draw?

A. North Dagger Draw is just off the map to the south in 19 South, 25 East.

Q. Okay, so we're north of North Dagger Draw?

A. That's correct.

Q. When we look at the gas pool to the east of the southeast of 5, principally in Section 14, you've got a label associated with that gas pool. What's that called?

A. That's Atoka West-Penn Gas Pool.

Q. Your research indicates that the gas pools in this interval are all on statewide 320 gas spacing?

A. All of the gas is on statewide 320-acre spacing, that's correct.

Q. With the exception, then, of -- That's the gas, and the only oil production is further south to you in this Penasco Draw-Wolfcamp Oil Pool?

A. That's correct --

Q. Okay.

A. -- and in that pool there were special rules of 160 acres granted initially.

Q. You've got a line of cross-section displayed on Exhibit Number 2, Mr. Smith?

A. Yes, sir.

Q. Why have you chosen these particular wells to put on your cross-section?

A. I just wanted to take a representative well from each of these pools to show you just where or Cisco "C" zone lies in relationship to the other producing zones in the area and to demonstrate the vertical separation that we have, and the isolation of this zone from all of the other

fields in the area.

Q. Because structure is not a factor, you would have done that on a stratigraphic cross-section?

A. That is correct.

Q. Let's look at that exhibit. It's Number 3?

A. Yes, sir.

Q. Give us a moment to unfold the display, and then we'll talk about it.

A. Okay.

Q. Let's find the Engelbert well. It's the second from the left?

A. Yes, sir, second from the left on the cross-section.

Q. Let's first of all work in a vertical sense --

A. Okay.

Q. -- then we'll go in a horizonal sense.

A. Okay.

Q. If we go in a vertical sense, show me the top and the bottom of what you're calling this Cisco pay interval. That is shaded in green on your log on this cross-section?

A. Yes, sir, it sure is.

Q. All right. Show me the top and the bottom of that.

A. So we're talking about a top of 7100 feet, down to 7202, something like that.

Q. That represents the green-shaded area?

A. Yes, it does. That's our Cisco "C" interval, total interval.

Q. Why have you shaded in green? What does that represent?

A. That represents just an oil accumulation.

Q. It is perforated in the lower portion of that green-shaded area?

A. Yes, sir.

Q. And why was that done in that fashion?

A. This is the only apparent porosity that we had through the zone, and this is where we had our best drilling break. So having -- This well was drilled to the Morrow, having nothing in the lower zones, this was our original zone of completion. So we went to what we thought was the best porosity that we could find in this zone, and that in and of itself is fairly low. We're talking an average of 4 1/2 percent.

Q. You're using what cutoff, porosity cutoff, to get an average of 4 1/2 percent? Is there a net component to this?

A. We'll be looking at an isopach in a moment where I've tried to make a net, the porosity map for the field, and I've used a 3-percent cutoff because we're dealing with such low-order porosities in here.

Q. The issue for you is, from a regulatory standpoint, do you recommend that the Division assign a vertical limit to this pool in relation to this oil accumulation? And if so, what should that limit be?

A. Yes, we're talking about using the limits of the upper Pennsylvanian, which would be 6665 to 7900 feet, including all of the upper Pennsylvanian.

Q. All right, so that would correspond to the black horizontal line on the cross-section above the green where you've captioned it Cisco/Canyon?

A. That's correct, that's the top of the Cisco/Canyon.

Q. That's your recommended top?

A. Yes, sir.

Q. And where is the recommended base of the pool?

A. Down to the top of the Strawn or the base of the Cisco/Canyon, which is the 7900 feet.

Q. Are those readily identifiable geologic markers --

A. Yes.

Q. -- where you and other geologists would have a reasonable opportunity for agreement?

A. Yes, they are.

Q. How hard is it to pick this particular pay interval?

A. In this immediate area of the Engelbert, it's relatively easy. But outside of this area -- we have it defined as about 700 acres -- outside of that area, it's very difficult. For the most part it's a shale.

Q. Do you see any need at this time to try to specifically target the vertical limits for the Engelbert well to something less than what you describe to be the Cisco/Canyon-Upper Pennsylvanian interval here?

A. No, sir.

Q. Okay. Let's go in a horizontal sense. Do you believe that this oil accumulation is a separate and distinct common source of supply from any other formation that's currently being produced in the area?

A. Yes, sir.

Q. How do you reach that opinion?

A. This zone is not present in any of these fields that are shown on the field maps that I've produced. That zone does not produce anywhere, and this is the only oil accumulation in the upper Pennsylvanian. Everything else is gas. So that too is another point that this is a separate common source of supply.

Q. What's the lithology of this interval that's being produced in the Engelbert well?

A. This is all limestone.

Q. So it's a carbonate reservoir?

A. Yes, sir.

Q. Okay. You said you prepared an isopach to try to give us a sense of the size and the shape of the pool?

A. Yes, sir.

Q. Let's turn to that exhibit. It's Exhibit Number 4. Would you identify Exhibit Number 4 for us, Mr. Smith?

A. Yes, this is our net porosity map of the "C" zone, which is the pay zone in the Engelbert well. And in there you can see that we've assigned 14 feet of net pay or net porosity to the Engelbert well.

Q. Am I looking on this display at anything other than wells that have penetrated to or through this pay interval?

A. Every well on here has penetrated that interval.

Q. How would you describe or characterize the number of wells that you have in order to give you a reasonable probability of determining the size, shape and orientation of the pool?

A. We have four actual penetrations of this particular zone, and that right there gives us what I feel is a very good handle on the size and configuration of this reservoir.

Q. All right, starting in the southwest quarter of 10, to the north, take us counterclockwise around your zero line and tell us how you got that zero line.

A. That zero line represents actually a shale line. You go from carbonate out to shale. So when you see a zero on these wells, you're actually dealing with no carbonate material at all, a hundred percent shale. So in the case of the zero, you're looking at no carbonate material at all.

Q. And you would have well control, then, in the southwest quarter of 10, you have another one in the southeast of 9, and continuing on around the zero line?

A. That is correct.

Q. Okay. Within the zero line, then, you have another line of cross-section marked B-B'?

A. That is correct.

Q. B' is the Engelbert well?

A. Yes, sir.

Q. All right, we've talked about that one. Move to the center well, which is called the OXY Swinger Number 1.

A. Yes, sir.

Q. What's the status of that well?

A. That well is waiting on completion.

Q. Do you have a log on that well?

A. Yes, sir.

Q. And what does it tell you, Mr. Smith?

A. We see that the zone is present in the Cisco "C" zone, which is the pay zone in the Engelbert well, and we

see a similar order of magnitude as far as the porosity is concerned, very low order porosity. But we see an overall clean, thick zone developed in the Swinger well.

Q. All right, let's do that, let's show Mr. Stogner the portion of the log that's -- for the Swinger well. If you'll turn to Exhibit Number 5, let's take a moment and unfold that three-well cross-section. Describe for us on Exhibit 5, Mr. Smith, what you see on the log for the Swinger well in this interval.

A. You can see the Swinger level -- at the Swinger interval, color-coded in green we have a nice, clean development of limestone. And again, you can see that the porosity is, you know, maximum 4 percent here. So again we're looking at very low porosity.

What we did see on the dual lateral log, however, is a very nice invasion profile, indicating very nice permeability in this zone. And this permeability is seen throughout the zone. So there's approximately 60 feet of what we consider good perm in the Swinger well.

However, in the Engelbert well, we also see this very good invasion profile indicating permeability, but it's only developed opposite where we perforated the well.

So we feel like in the case of the Swinger we have found the zone, and it's going to be productive from what may end up being actually a better-looking interval,

better zone.

Q. My question for you is whether you're satisfied as a geologist that there is sufficient continuity of the pay interval opportunity in the Swinger well that you see in the Engelbert well.

A. I'm very satisfied.

Q. Okay.

A. There's definite correlation.

Q. Take us now to the Yates Tumbleweed well and see if you can extend the reservoir up to the northwest.

A. The zone is present in the Yates Number 1 Tumbleweed "QM", and this well, actually originally a Morrow producer, was drilled in the 1980s, and the Morrow was depleted. And before abandoning this wellbore, Yates chose to come back and test this zone.

Now, they perforated an interval from 7058 to 7064 and gave it a similar acid job to what we gave the Engelbert, that being 15,000 gallons of 15-percent. And the only information that we have is that they swabbed on this well for two days, and all the did was recover load. And that's what the C-103s report. So we don't have any feel for fluid recovery, any gauges, any flow rates or anything on this well. It appears that they didn't have much success with the zone.

However, when you look at the porosity in this

zone, you can see that it's better developed than we see in either the Swinger or the Engelbert. So we feel like for some reason -- and we have a pretty good suspicion what may have happened here is, mechanically they had a problem with this zone.

Q. Let me ask you what OXY's exploration strategy was. Was the Engelbert well originally intended to be a Cisco oil objective?

A. No, sir, it was --

Q. What was its original target?

A. Morrow.

Q. So that was the primary objective?

A. Yes, sir.

Q. And what happened in the Morrow?

A. Found no sand, so -- And in fact, we found nothing in any of the lower Pennsylvanian zones, so this was the only hope that we had for this wellbore.

Q. All right. Now, the Swinger well has been drilled too now?

A. Yes, sir.

Q. Was it drilled below the Cisco?

A. Yes, it too went to the Morrow --

Q. With what results?

A. -- and found nothing in the Atoka or Morrow. So again, we're back to -- our initial completion in the

Swinger will be for the Cisco zone.

Q. Have you satisfied yourself as a geologist, Mr. Smith, that you have a defined separate source of supply here in this Cisco oil interval?

A. Yes, I'm very comfortable with that.

Q. And that you're vertically separated from other pools?

A. Yes, sir.

Q. And that you're horizontally separated from other pools?

A. Yes, sir.

Q. The average porosity that you're anticipating for the pool, I think, was about 4 1/2 percent?

A. Yes, sir.

Q. Do you see any reservoir or geologic characteristics that would enhance the opportunity for these wells to drain more than what you might expect on a 40-acre basis? I'm asking you that as a geologist and not an engineer.

A. Yes.

Q. Is there any fracturing, anything within the oil formation, as a geologist, that would lend support for wider spacing than the standard default 40 acres?

A. On the strength of the flowing test that we've had on this well, that being over 400 barrels a day on the

last test, there's obviously got to be some sort of secondary enhancement involved in this zone. We were quite surprised by what we saw, the results of this Engelbert well.

Q. Geologically, do you fracture these wells or this formation in these wells?

A. Usually when it's this tight you've got to do some form of stimulation, either big acid jobs or maybe even a frac.

Q. What was done on the Engelbert well?

A. We have it a -- 19,000 gallons of gelled acid, and it broke down nicely and we started recovering oil immediately.

Q. Do you see any geologic reason not to initially develop this potential resource on 160-acre oil spacing?

A. I think it needs to be developed on 160 acres. Anything less just looks like it's --

Q. Would you create the opportunity, then, to have drilled too many wells?

A. Yes. I think Oxy's stance would be to err on the side of fewer wells than too many wells and end up with a potential economic loss here.

MR. KELLAHIN: That concludes my examination of Mr. Smith, Mr. Stogner.

We move the introduction of his Exhibits 1

through 5.

EXAMINER STOGNER: Exhibits 1 through 5 will be admitted into evidence at this time.

EXAMINATION

BY EXAMINER STOGNER:

Q. Mr. Smith, in referring to Exhibit Number 4, and for that matter Exhibit Number 2, sort of together, what is the depositional environment of the Cisco/Canyon in this area?

A. Everything in the Cisco/Canyon is basically trending in a northeast-southwest fashion, and you have oscillating shelves that are going back and forth across the area in a north-south fashion, more or less. But you have all these different shelves that are traversing the area in a northeast-southwest fashion. So in those different shelves you get these different buildups or these debris flows, and these debris flows -- and the Engelbert may be one of those, but appears to run normal to these basic northeast-southwest trends. This one actually looks like it's running northwest-southeast. And it may explain why this is an oil zone and everything else out here tends to be gas.

Q. Okay. Now, when I look at the small structure here on Exhibit Number 4, this is a carbonate, again, your carbonate structure out there, as you -- of course, you

said there's no structure out here; is that correct?

A. That's correct.

Q. So how would you identify this little pod?

A. This again, I think, is a little debris flow. It's kind of running normal to the strike of the shelves in here. It's showing that there's some downcutting into the lower formations, which again is supporting the fact that this is probably a detrital type of situation and not a buildup of some organic carbonate material.

And you can see the overall zone is relatively thick. When you have to boil it down to these net porosity numbers, you know, then you get down to some thin values. But the overall zone is -- You know, we've got 60 feet of it in the Swinger well which, again, you know is very clean, and that is a key to reservoir development in carbonates, to have a good clean section of carbonate.

And by the way, we will -- in the Swinger we'll probably end up perforating the entire zone.

Q. When you say the entire zone in that Swinger well, you're talking about what's depicted in green --

A. Yes, sir.

Q. -- in Exhibit Number 5?

A. Yes, sir.

Q. And how will this be stimulated? Was the Engelbert stimulated? Will this be stimulated in the same

manner?

A. Yes, sir, more than likely.

Q. And how was that stimulated?

A. The Engelbert was given 19,000 gallons of gelled acid with some CO_2.

Q. In your review of this area when you were preparing your geological information, did you take a look at the well immediately to the east in Section 14?

A. Yes, sir.

Q. And what zone is that producing? How high up on structure -- or low, I should say?

A. It's actually up in the upper part of the Cisco. It's in what I would call the Cisco "A" zone, which is actually what the Eagle Creek field is producing from on the cross-section.

Q. But it's not an extension of that Eagle Creek?

A. No, sir, it's a separate pod.

Q. But it would equate to the same type as you're showing here --

A. Yes, sir.

Q. -- on the cross-section?

A. Yes, it's the same stratigraphic interval.

Q. Now, your evaluation of the two Swinger and Engelbert logs, do you see any potential of gaseous intervals, either above or below, within the Cisco/Canyon

formation?

A. No, sir, we really can't distinguish anything of that nature. We are moving updip, and I did put the subsea on the cross-section, and you can see we're just regionally moving updip from the Engelbert to the Swinger, up to the Yates well. So it could be a possibility, but I really don't think so. I think it will all be oil.

Now, the Yates well had a parted-casing problem and had to address that issue before they could plug this well. So whether that was a factor in the completion in this zone, I can't say for sure, but they did have parted casing to address before this well could be plugged. So that may have been a factor in not establishing commercial production from that zone.

Q. And when did that Tumbleweed, the Yates Tumbleweed well -- what age, how long ago was it drilled, how long ago was it plugged and abandoned?

A. It was drilled in 1982, it was plugged back to this Cisco "C" zone in 1992. And it was abandoned in 1996.

Q. Did it produce any oil from that perf?

A. No, sir. Again, we -- you know, from the records filed with the Division, the only thing they reported is they swabbed it and recovered load. But obviously they had some indication to test the zone before they abandoned the well, so there was something there that they felt was

worthwhile.

Q. Is there any distinguishing -- or anything to distinguish between the Cisco and the Canyon formations in the upper Pennsylvanian out here, or do the geologists look at that as being one and the same in this particular area?

A. For the most part -- Most geologists look at it as one and the same, however there are some that do try to break it out. But it is for the most part treated as a singular unit.

Q. When you get over to the mountains to the west, is it definitely two distinct intervals in the outcrop, or away from it in that particular area?

A. An outcrop, yes, it is very distinguishable, yes. In the Sacramento mountains, there are some beautiful, distinguishable features of the Cisco and Canyon.

Q. What was the different depositional environments between the Cisco and the Canyon?

A. Well, really, there's not -- This was basically a shelf that was moving back and forth across the area in a north-to-south fashion, and the shelf itself was running -- the strike was basically northeast-southwest, and it would move back and forth across the area.

And of course, the prime example of the best development of reservoir is Dagger Draw and Indian Basin. But there you have some dolomitization which created some

tremendous reservoir. We don't see that here.

Q. Do you see it any further north?

A. Dolomitization?

Q. Yeah.

A. No. In fact, all of these field are limestone, and for the most part all of this gas is very tight gas, very tight. And so permeabilities as you get back here are really diminished. So this is why this Engelbert is so glaring. You know, we've got a permeability here that's -- to oil, even, that's very anomalous, because all these gas zones are very, very tight.

Q. Was the Swinger -- Did OXY commence drilling the Swinger well prior to the Engelbert perforating this zone and discovering the oil, or how far down was the Swinger well before --

A. The Swinger well was actually spud on the 22nd of October, and the Engelbert was TD'd in August. August 3rd is when it was TD'd.

Q. Now, that was TD'd down to the Morrow?

A. Yes, sir. And it was completed, I think, around the 22nd, the 22nd or -- of August.

Q. Okay. Now, how about these perforations within the Cisco, the discovery perforations? When did that occur?

A. That was that August 22nd date, Mr. Examiner --

23rd.

EXAMINER STOGNER: Okay, I'm sure your next witness will probably go into more detail on the production --

MR. KELLAHIN: Yes, sir.

EXAMINER STOGNER: -- characteristics of that.

MR. KELLAHIN: Yes, sir.

EXAMINER STOGNER: Thank you for that preview, Mr. Smith, as far as what your next witness is going to say.

MR. KELLAHIN: You can leave those there, Tom.

THE WITNESS: Okay.

Q. (By Examiner Stogner) I have one other -- I'm curious about the well in Section 9, the one in the far southeast southeast corner --

A. Yes, sir.

Q. -- because you include -- you show ten foot --

A. Yes, sir.

Q. -- in that particular interval, but it's not perforated. Who operates it, what's the --

A. That is an OXY well, that's the OXY Number 1 Green Bean, yes, sir, and the zone really looks better in that well than any well along the trend. That, you can see some porosity development, and there's ten feet of it.

Q. Okay. Now, is this well currently producing in

the Morrow or --

A. Yes, sir, it is.

Q. How old is that well?

A. It's a fairly new well. That's -- Maybe a year old. But we consider that a behind-pipe zone for that well, certainly.

Q. And you're showing three feet in the -- I assume that's a Yates well or a Nearburg well in Section 16?

A. It's a Yates well, yes, sir. There's just a smidgeon of the zone that developed there.

Q. Do you know what that well is currently producing?

A. That too is a Morrow well, yes, sir. It's the Yates Tumbledink Well Number 1.

Q. Tumble-what?

A. Tumbledink.

Q. Okay, you might want to give a spelling to the court reporter afterwards.

A. Okay.

EXAMINER STOGNER: Well, I have no other questions of Mr. Smith, you may excused --

THE WITNESS: Thank you.

EXAMINER STOGNER: -- unless you have anything else, Mr. Kellahin?

MR. KELLAHIN: No, sir.

EXAMINER STOGNER: Okay.

GARY WOMACK,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

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

A. Gary Womack, petroleum engineer for OXY Permian in Midland, Texas.

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

A. Yes, I have.

Q. As part of your duties for OXY, have you studied the testing and the performance of the Engelbert Number 1 well?

A. Yes.

Q. What are your general responsibilities for OXY?

A. Operations engineer, southeastern New Mexico.

Q. Would your activity include, then, determining the productivity of the Engelbert well?

A. Yes, it would.

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

EXAMINER STOGNER: Mr. Womack is so qualified.

Q. (By Mr. Kellahin) Let's talk a little bit about the well. Mr. Smith told us it had been drilled originally as a Morrow test, but that was unsuccessful. OXY came back up and has made an oil well in the Cisco formation? You're familiar with all that process?

A. Yes, I am.

Q. Give us a short summary of the history of the well.

A. It was indeed drilled to a depth of approximately 8900 feet in the Morrow formation. There was no sands to complete in, Morrow sands, so the Cisco/Canyon zone was identified by log analysis and it was indeed perforated at the depths of 7174 to 7194, at two shots per foot, and then stimulated with a 20-percent acid, gelled acid, with CO_2 foam.

Q. Have you run any type of test on the well, and if so, what types of tests have been run?

A. The well was flow-tested after the stimulation job. It was then shut in for a pressure buildup.

Q. What type of initial flow test results did you achieve?

A. Initial flow testing was done for a period of approximately 11 days, and the purpose of the test was trying to establish if the reservoir was indeed limited, and we did test the well until we felt like we had a

stabilized flow rate.

Q. What stabilized flow rate did you achieve?

A. It was approximately 230 barrels a day, on a 22/64 choke.

Q. What then was the next test you ran?

A. We ran a subsequent test later on to establish a potential for the well.

Q. And how would you do that?

A. It was a 24-hour test that was done, the choke size on this test was a 26/64 choke, and we did reach a stabilized flow rate of 408 barrels per day.

Q. Have you determined what would be your depth bracket oil allowable at this depth if the well is spaced on 160 acres?

A. Yes, I have.

Q. What is that number?

A. 382 barrels per day.

Q. Have you done the calculation, Mr. Womack, to show us what would be the additional discovery oil allowable that the well might be entitled to?

A. Right, our calculations would be taking the top perf of 7174 and multiplying that by 5 to get a bonus volume of 35,890, of which you would divide that bonus number by 730 to equal 49.2 barrels of oil per day additional.

Q. You used the rules set forth in the Division Rule Book under Rule 509? I believe you did.

A. Yes.

Q. All right, sir. What else have you done to the well to test it?

A. It's just been flow test and the pressure buildup.

Q. All right, let's talk about the pressure buildup. Is there an exhibit that demonstrates the data and the conclusions from the pressure buildup?

A. Yes, Exhibit 6 is the pressure buildup, with the first page being the results sheet.

Q. All right, sir, take us through the process. Give us a summary of the procedure and then your conclusions about the test.

A. Okay, after the well was flow-tested for approximately 11 days the well was shut in. At that time the pressure bombs were run in the hole, the well was shut in for 120 hours. That was the length of the pressure buildup. At that time the pressure gauges were retrieved, the data was downloaded, computer-type modeling software is used. This particular software is Saphir, it's produced by Kapp Engineering, it's a type-curve-modeling program.

Q. What are the conclusions from the test?

A. Conclusions, that it basically gave us a perm

number to work with.

Q. And what is the permeability, based upon the test?

A. The calculated permeability was 8.99 millidarcies.

Q. Now, Mr. Smith by his log calculation has an average porosity of 4 1/2 percent.

A. That's correct.

Q. If you take that number and integrate your 8.99 millidarcies of permeability, what can you as an engineer conclude about the reservoir and what should be the initial density of wells drilled in that reservoir?

A. Well, as Mr. Smith has stated, it's definitely anomalous as far as the Cisco/Canyon goes. We do have several other producers in the Cisco/Canyon, not in this particular zone but in the Permo-Penn Gas, and several pressure buildups, of course, have been done on those, and the typical permeability is less than 1 millidarcy.

So you could infer that there is fracturing involved here to get a correlation between the low porosity, the relatively high permeability.

Q. In order to develop a recommendation for the Division on the initial appropriate spacing, have you attempted to obtain data on what is expected for the cost components that you would utilize for determining how many

wells you could drill in this resource?

A. Yes.

Q. Let's turn to Exhibit Number 7. What are we looking at here?

A. Exhibit Number 7 is a detailed well estimate for drilling and equipping a Cisco/Canyon producer.

Q. this is the one for the Engelbert well?

A. Yes, it would be for a second well.

Q. Oh, this would be for a number two?

A. That's correct.

Q. How does this compare to the actual cost for the Engelbert Number 1?

A. Well, as I stated before, the Engelbert Number 1 was drilled to a depth of 8900 feet, so this is quite a bit of difference in depth.

Q. I see what you've done, you've adjusted this --

A. Right.

Q. -- as if it were to be a Cisco-only test?

A. That's exactly right, a depth of 7300 feet.

Q. All right. Have you taken the costs associated with wells and tried to forecast what you would believe to be the volume of oil within any given size spacing unit within this accumulation?

A. Yes, I have.

Q. Let's go through that process. If you'll look at

Exhibit 8, before we look at the calculation, let's look at the data or the assumptions you've made that go into the calculation.

A. Okay.

Q. First number is a porosity number?

A. First number is the average porosity number of 4 1/2 percent, the average water saturation of 25.5, an estimated formation volume factor of 1.45. The reservoir acre feet was calculated from the isopach map that was presented in Exhibit 4.

Q. All right, then you have some economic parameters?

A. That's correct.

Q. All right. Have you taken the numbers, the cost components and the reservoir data, and made an assumption about utilizing a 160-acre spacing unit, being the southeast quarter of Section 15?

A. Yes, I have.

Q. What have you estimated to be the original oil in place within that quarter section?

A. Estimated original oil in place is estimated to be 173,000 stock tank barrels.

Q. Of that original oil in place, what in your opinion is an estimate of the recoverable percentage?

A. 25 percent was the percentage used.

Q. If you use 25 percent, is that within the range of probabilities for recoveries of reservoirs of this type?

A. Yes.

Q. And if you use 25 percent, what will be your volume of recoverable oil?

A. Approximately 43,000 stock tank barrels.

Q. If you take that, coupled with the gas recovery, apply the economic parameters, what does it tell you?

A. We've recorded a rate of return of approximately 20 percent with the net present value at 10 percent being 60,000.

Q. Have you run your calculation to see whether or not it would be economically possible to drill on a density of less than 160 acres per well?

A. Yes, I have.

Q. Have you tried it on 80 acres?

A. Yes, I have.

Q. Show us what you did and what you concluded.

A. Okay, below the 160-acre spacing case there's an 80-acre spacing case, and simply what was done was to take the reserves and divide them in half.

Q. And when you do that, what is the result? You are going to recover just short of 22,000 barrels of oil?

A. That's correct.

Q. Well, you can't pay for a well like this with

that kind of resource, can you?

A. That's right, it shows basically that the well is marginally economic in a 160-acre spacing.

Q. Net present value at 10 percent shows a negative number. That's a negative $233,000 plus change?

A. That's correct.

Q. Okay. So neither you, OXY or any other reasonable operator could try to develop this, at least initially, on less than 160 acres?

A. I wouldn't think so.

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

We move the introduction of his Exhibits 6, 7 and 8.

EXAMINER STOGNER: Exhibits 6, 7 and 8 will be admitted into evidence at this time.

EXAMINATION

BY EXAMINER STOGNER:

Q. Mr. Womack, let's go back to the discovery allowable here and make sure I've got the numbers correct, where you got the numbers.

A. Okay.

Q. Okay, 382 barrels of oil per day, that's the average -- I'm sorry, the regular depth bracket allowable for a well spaced on 160, completed between 6000 and 7000

feet; is that correct?

A. That's correct.

Q. Okay. Now, to come up with that 49.2 barrels of oil per day bonus discovery allowable, what was the elevation of this well?

A. I don't have the elevation here unless it's on one of these log headers. I have the top perfs, is what I have here.

Q. Okay, and what is the top perf that you use?

A. 7174.

Q. 7174. But you don't know the elevation at the surface?

A. No, I don't, I don't have that information with me.

MR. SMITH: It's on the cross-section, A-A'.

MR. KELLAHIN: Is it? Let me find that.

THE WITNESS: A-A'? Okay, it would be 3521 feet.

Q. (By Examiner Stogner) 3521?

A. Yes.

Q. And that was taken from what?

A. From the cross-section, from Exhibit Number 3, the KB elevation on the OXY USA Number 1 Engelbert.

Q. Okay. Now, that's the Kelly bushing elevation, right?

A. Okay, that would be 16 foot difference, then.

Q. Okay, less 16.

A. Yes, sir.

Q. Now, to come up with that I use a formula of five barrels of oil for each foot of depth; is that correct?

A. Yes.

Q. And then it will come out to this 49.2 additional barrels of oil per day?

A. Yes, sir.

Q. Okay, in Exhibit Number 8, you used the reservoir acre-feet. Did you determine the 5784.75 acre-feet off of Exhibit Number 4, was that what you --

A. Yes, the isopach, Exhibit Number 4.

Q. Okay, so that's that area included in the zero line or did you --

A. Yes.

Q. -- use one of the others?

A. No, it was in the zero line.

Q. The zero line.

Okay, when you talk about the economic parameters --

A. Yes, sir.

Q. -- you used that seven thousand six hundred and -- well, essentially $770,000.

A. That's correct.

Q. Is that the cost of a well down to the Morrow, or

would it be a little bit less down to the Cisco/Canyon?

A. No, that's the cost to the Cisco/Canyon. That's the exact cost in Exhibit Number 7. It's just a Cisco/Canyon producer. I do have the cost on the other two wells, if that's --

Q. What would that be?

A. Okay, the cost on the Engelbert is $904,000 -- Excuse me, $945,000. That's the drilled and equipped cost. That, of course, was to the Morrow.

Now the Swinger well, which is waiting on completion right now, which was also drilled to a depth of 8900 feet, it's waiting on completion, and the cost to date on it is $709,000.

Q. So once that's all over, you expect it to be up there around the $945,000 mark?

A. Yes, sir.

Q. Okay. What kind of casinghead gas are you seeing? Are you seeing any yet?

A. Yes, we're seeing approximately a GOR of 1300.

Q. Being this type of reservoir, will that stay constant, will it go up, will it go less?

A. Well, being a solution gas reservoir, it could typically go up, you know.

Q. How about any water production?

A. There's been no water production.

Q. Is there any water drive mechanism at all in this area for this little zone?

A. Not that I'm aware of.

Q. Now, as I understand it, you're proposing only one well per 160, and only one well?

A. That's correct.

Q. With a 660-foot setback requirement?

A. Yes, sir.

Q. Let's see now, Mr. Kellahin --

MR. KELLAHIN: Yes, sir?

EXAMINER STOGNER: Your name was being used in a question here Mr. Kellahin --

MR. KELLAHIN: Yes, sir.

EXAMINER STOGNER: -- to the witness here.

Q. (By Examiner Stogner) Mr. Kellahin stated in his opening remarks that this would be an 18-month temporary to allow OXY to get some additional data on this well and any future wells. At the end of the 18-month period, what are we expecting to see?

A. Well, I think we would, of course, have a sufficient amount of production history. What I expect to see is a rapid decline, is what I expect to see, based on the size of the reservoir.

Q. With that rapid decline, would there be any need for additional development within the pool, infill drilling

or anything?

A. I wouldn't expect that, based on the numbers that we have right now.

EXAMINER STOGNER: Okay. I have no other questions of Mr. Womack. You may be excused.

Mr. Kellahin?

MR. KELLAHIN: Mr. Examiner, I have Exhibit 9 for you.

EXAMINER STOGNER: Okay.

MR. KELLAHIN: It's my certificate of notification. I hope it's there. If not, I can get --

EXAMINER STOGNER: Oh, it may be buried.

MR. KELLAHIN: Let me give you another copy.

EXAMINER STOGNER: I don't see it. Oh, you had it buried.

It looks like you're using our copying machine; is that correct?

MR. KELLAHIN: Yes, sir. It doesn't work very good, does it?

EXAMINER STOGNER: No, it sure doesn't.

MR. KELLAHIN: If you'll turn over to the fifth page, Mr. Stogner, you'll find Exhibit A. This was Exhibit A to the Application. It's the notification list that OXY's land department provided me. Their information is that the entire south half of Section 15 is common. The

point would be that if this is on 40s, 80s or 160s, no correlative rights are affected because it's the same ownership, and that would apply as to the southwest quarter as well. So there would not be an issue about adversely affecting someone by moving this to 160 acres.

We did, however, notify all of the interest owners in the southeast quarter, and that's what this represents. I have no objection from any of these parties notified.

EXAMINER STOGNER: So noted.

MR. KELLAHIN: We would move the introduction of Exhibit Number 9.

EXAMINER STOGNER: Exhibit Number --

MR. KELLAHIN: -- 9.

EXAMINER STOGNER: -- 9 --

MR. KELLAHIN: Yes, sir.

EXAMINER STOGNER: -- will be admitted into evidence at this time. It's not marked, but I did so.

You also may want to request some sort of a discounted price off the quarter a sheet that the Division usually charges for such a quantity of --

MR. KELLAHIN: Yes, sir, I've applied for a refund.

EXAMINER STOGNER: Okay, good deal.

MR. KELLAHIN: That concludes our presentation,

Mr. Stogner.

EXAMINER STOGNER: If there's nothing further in this matter -- Oh, I'm sorry, Mr. Bruce is standing. Do you have anything?

MR. BRUCE: No, I'm just wandering to get my witnesses, Mr. Examiner.

EXAMINER STOGNER: Oh, okay.

If there's nothing further, Case 12,776 in this matter will be taken under advisement.

(Thereupon, these proceedings were concluded at 11:40 a.m.)

* * *

12776 December 2001

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 December 19th, 2001.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 2002