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 APACHE CORPORATION FOR CONTRACTION OF THE HARE-SAN ANDRES GAS POOL, EXPANSION OF THE EAST HARE-SAN ANDRES OIL POOL, AND SPECIAL POOL RULES FOR THE EAST HARE-SAN ANDRES POOL, LEA COUNTY, NEW MEXICO

CASE NO. 13,256

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: WILLIAM V. JONES, JR., Hearing Examiner

April 29th, 2004

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, WILLIAM V. JONES, JR., Hearing Examiner, on Thursday, April 29th, 2004, 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

April 29th, 2004
Examiner Hearing
CASE NO. 13,256

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E X H I B I T S

Applicant's	Identified	Admitted
Exhibit 1A	6	10
Exhibit 1	8, 15	25
Exhibit 2	8	10
Exhibit 3	17	25
Exhibit 4	20	25
Exhibit 5	32	35

* * *

A P P E A R A N C E S

FOR THE DIVISION:

DAVID K. BROOKS, JR.
Assistant General Counsel
Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

FOR THE APPLICANT:

JAMES G. BRUCE
Attorney at Law
P.O. Box 1056
Santa Fe, New Mexico 87504

* * *

WHEREUPON, the following proceedings were had at 10:26 a.m.:

EXAMINER JONES: At this time we'll call Case 13,256, Application of Apache Corporation for contraction of the Hare-San Andres Gas Pool, expansion of the East Hare-San Andres Oil Pool, and special pool rules for the East Hare-San Andres Pool, Lea County, New Mexico.

Call for appearances.

MR. BRUCE: Mr. Examiner, Jim Bruce of Santa Fe, representing the Applicant. I have three witnesses.

EXAMINER JONES: No other appearances in this case?

Will the witnesses please stand to be sworn?

(Thereupon, the witnesses were sworn.)

MARIO R. MORENO, JR.,

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

DIRECT EXAMINATION

BY MR. BRUCE:

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

A. My name is Mario R. Moreno, Jr.

Q. Where do you reside?

A. I reside in Tulsa, Oklahoma.

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

A. I work for Apache Corporation as a senior staff

landman.

Q. Have you previously testified before the Division?

A. No, I have not.

Q. Would you please summarize your educational and employment background for the Examiner?

A. Okay, I have a bachelor of business administration in management, which I obtained from the University of Texas at El Paso. I have 28 years in the industry as a landman. Through those years I've worked for EPNG, El Paso Natural Gas; Burlington Resources; and Collins and Ware, which was a small independent; and now Apache Corp.

Q. And how long have you been at Apache?

A. Four years.

Q. Does your area of responsibility at Apache include southeast New Mexico?

A. Yes, it does.

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

A. Yes, I am.

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

EXAMINER JONES: Mr. Moreno is qualified as an expert petroleum landman.

Q. (By Mr. Bruce) Would you please just briefly describe what Apache seeks in this case?

A. Apache is currently seeking to expand the existing East Hare-San Andres Oil Pool and institute a special GOR for that pool.

Q. Okay. Let's get some exhibits in front of you, Mr. Moreno. Exhibits -- Mr. Examiner, perhaps if you look at Exhibits 1A and 1 together, it's what we are going to be discussing with Mr. Moreno.

Now first of all, Mr. Moreno, just briefly, what is Exhibit 1A?

A. Exhibit 1A is a Midland Map Company plat covering Township 21 South, 37 East --

Q. Okay.

A. -- which identifies the acreage that's involved in this case.

Q. Now let's go through this map. Does the yellow highlight the East Hare Oil Pool?

A. Yes, it does.

Q. And that is spaced on 40 acres, is it not?

A. That's correct.

Q. Okay. Now, the green acreage, that is currently in the Hare-San Andres Gas Pool; is that correct?

A. Yes.

Q. And looking at Exhibit 1, the Hare-San Andres Gas

Pool is that red-colored pool which takes off to the south?

A. That's correct.

Q. Okay. Now, you seek to remove the green acreage, the southwest quarter of Section 10, from the gas pool and move that over to the East Hare Oil Pool?

A. That's correct.

Q. Now, secondly you've got the pink-highlighted acreage. Is that currently within any defined pool?

A. No, it is not, and this is the acreage that we are currently trying to add to our East Hare-San Andres Oil Pool.

Q. Okay. So you're seeking to add both the pink acreage and the green acreage to the East Hare-San Andres Oil Pool, which at this point only covers the southeast quarter of Section 10?

A. That is correct.

Q. Okay. Now, next on Exhibit 1A there are three orange spots. What does that indicate?

A. Those orange spots signify the three oil wells that we recently completed in the San Andres formation.

Q. Okay. And overall -- So in other words, you want to take the East Hare-San Andres Oil Pool, which covers the southeast quarter of 10, and add essentially a section of land to it?

A. That is correct.

Q. Okay. And what special gas-oil ratio is Apache requesting?

A. We are requesting a gas-oil ratio of 5000 to 1.

Q. Okay. And will our next witnesses discuss the new wells and the gas-oil ratio in more detail?

A. Yes.

Q. Okay. Now on Exhibit 1 -- just briefly, what is Exhibit 1?

A. Exhibit 1 is a San Andres base map which was put together by our next witness. And this map basically shows the San Andres pools in this township, and it highlights in yellow the acreage that we seek to add to this East Hare-San Andres Oil Pool.

Q. Okay. Now, this map also identifies all San Andres wells and their operators, does it not?

A. That is correct.

Q. Now, in the acreage that we're concerned with, the only two operators that we're concerned with are Apache and ExxonMobil; is that correct?

A. That's correct.

Q. Okay. And ExxonMobil was notified of this Application, were they not?

A. Yes.

Q. And is that reflected in Exhibit 2, the affidavit of notice?

A. That is correct.

Q. Okay. Now, one thing that's kind of odd about this case, Mr. Moreno, ExxonMobil is the operator of the wells in the south half of 10. One is officially an oil well, one is officially a gas well. That gas well would be moved to the oil pool. Would moving that acreage from the gas pool, from the Hare-San Andres Gas Pool, into the East Hare-San Andres Oil Pool, harm Exxon or any of the interest owners in that well?

A. No, and Mr. Examiner, if you will refer to Exhibit 1A you will note that the entire south half of Section 10 is a single state lease with common ownership.

Q. So the interest ownership in that Exxon well in the southwest quarter of Section 10 will remain the same regardless of whether it's a 40-acre unit or a 160-acre unit?

A. That is correct.

Q. Okay. And therefore, no one is adversely affected by this Application?

A. That is correct.

Q. Okay. Now, moving back to Exhibit 1, over to the east there's a well that the geologist put on here, a Chi Energy well in Section 11. Is that well in the East Hare Oil Pool?

A. No, it is not. Actually, this well is in the

South Eunice-San Andres Pool, which is located further south on this base map.

Q. And Mr. Examiner, I pulled this up from the OCD's records, but it is the acreage dedication plat for that well.

I point that out, Mr. Examiner, I think the notice requirements for this Application are to name -- notify the operators in the pool and the operators of wells within a mile of the pool.

Now, we did go ahead and notify Chi, but then after the fact I notice that this well, the Division at least allotted to be placed in a different pool. So I don't think we were actually required to notify them.

Now, were Exhibits 1A and 2 prepared by you or under your supervision or compiled from company business records, Mr. Moreno?

A. Yes.

Q. And in your opinion, is the granting of Apache's Application in the interests of conservation and the prevention of waste?

A. Yes.

MR. BRUCE: Mr. Examiner, I'd move the admission of Exhibits 1A and 2.

EXAMINER JONES: Exhibits 1A and 2 will be admitted to evidence.

EXAMINATION

BY EXAMINER JONES:

Q. Mr. Moreno, did you guys -- there's several ways to go out here, apparently, on this. I'm just curious as to why you chose to expand this field. And I guess I can talk to the geologist a little more about that.

A. Yeah, I think one of the reasons there, Mr. Examiner, is, we have a current 20-well drilling program that we are initiating at this point. And these first three wells that are on our Exhibit 1A were our first test wells to determine whether we'd need to come to the hearing to establish trying to expand into this East Hare oil field.

As it turns out, the completion of these wells has proven that the San Andres completions warrants the ability to take the additional wells that we're currently drilling down to and complete in the San Andres. We can't do that at this point in time because of the complexity of the ownership. If we didn't have that, if we didn't downspace to 40 acres, then we'd have owners throughout the 160-acre proration unit that we'd either have to pool in, which would dilute our interest in these wells, and Apache is not prepared to do that.

Q. So you prefer 40-acre --

A. Yes, sir.

Q. -- spacing, and then you could -- along with the 5000 GOR it would give you the leeway to go ahead --

A. Yes, sir.

Q. -- and complete all the zones?

MR. BRUCE: Mr. Examiner, if I could also -- and the next witnesses will discuss this to a certain extent, but these three Apache San Andres wells that you see were drilled -- Apache is also drilling other wells to test the Grayburg and other formations. These three wells were drilled as part of that program, and they are also going to be completed in the Grayburg.

But they were infill wells for the Grayburg, and they are standard-location gas wells. But if these were gas wells, those would be the only Grayburg wells allowed on those quarter sections, which would restrict the ability to complete additional wells.

EXAMINER JONES: Oh, I see. Okay.

Q. (By Examiner Jones) Okay, and Mr. Moreno, you're satisfied on the notice issues that they're all taken care of?

A. Yes, sir.

EXAMINER JONES: Okay, that's --

MR. BROOKS: Okay.

EXAMINER JONES: Thank you very much.

MR. BROOKS: Mr. Bruce, when you're preparing two

exhibits to go together you ought to use the same color code.

MR. BRUCE: Well, we thought of that yesterday after we'd colored these in.

MR. BROOKS: It's kind of hard to change them once you've put the colors on.

MR. BRUCE: Poor advance planning, Mr. Brooks.

MR. CURTIS: As Lando Calrissian said in Star Wars, It's not my fault.

ROBERT E. CURTIS,

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

DIRECT EXAMINATION

BY MR. BRUCE:

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

A. My name is Robert E. Curtis. I'm a petroleum geologist employed by Apache Corporation in Tulsa, Oklahoma.

Q. Have you previously testified before the Division?

A. Yes, sir, I have, although it has been a few years.

Q. Well, what the heck. Why don't you tell how you meandered through the oil and gas business?

A. Oh, I graduated, let's see, from the University

of Missouri in Kansas City in, I think, 1971, with a bachelor of science of geography, spent three years in the United States Army, went back to school in 1974 at the University of Texas, El Paso, graduated in 1978 with a master's degree in geology.

Since that time I've worked for a number of companies, both major and independent. The first 15 years or so of my career I spent a good deal of time working the Permian Basin and specifically southeast New Mexico. Between, say, 1995 and 2003, I worked almost exclusively Oklahoma. And since -- Well, let me restate that: 2002, when Apache reorganized and moved its Permian Basin function from Houston, Texas, to Tulsa Oklahoma, at that point in time I was assigned southeast New Mexico again and since that time have worked exclusively southeast New Mexico, and primarily the Eunice area, specifically Township 21 South, Range 37 East.

Q. Have you spent an excruciating amount of time on this township?

A. Yes, sir, I have.

Q. And are you familiar with the geology involved in this township?

A. Yes, sir.

MR. BRUCE: Mr. Examiner, I tender Mr. Curtis as an expert petroleum geologist.

EXAMINER JONES: Mr. Curtis is qualified as an expert petroleum geologist.

Q. (By Mr. Bruce) Mr. Curtis, why don't you again go through Exhibit 1, which is one of your exhibits, in a little more detail? Discuss the pools in this area and perhaps the complexity of this entire area when it comes to the San Andres.

A. Well, Exhibit 1 is a production base map of 21 South, 37 East, dropping on down into the northern three sections of 22 South, 37 East. Oil wells are identified with green circles, with the well number beside it. Gas wells show up as the red asterisks. The purple line labeled A-A', stretching from the northwest part of the map to the southeast, is a cross-section we will discuss later. The green orthogonal polygons are oil pools. Their name and spacing are noted within the polygons.

The two red outlines are San Andres gas pools. They're 160-acre spacing. The yellow area is the acreage for which we are here today to extend the East Hare-San Andres Oil Pool to the west and slightly to the south. The light brown -- or as Mr. Bruce calls it, flesh-colored area -- is additional area in which Apache has, is and/or will be drilling wells sufficient to test the upper 250 feet, plus or minus of the San Andres.

Looking at individual wells, all the San Andres

producers are highlighted with gray donuts, if you will, around the well symbol. Above the well locations I have current, and it is defined as the last average -- the average daily rate for oil, gas and water of the last approximately three months of production or most current three months of production. Oil is green, gas is red, water is blue. Above those numbers is the date of last production. You know, that's noted so that we know which wells are currently active and which ones are not.

Wells that do produce from the San Andres will show their current operator to the right of the wellbore with the well number directly below that. And cumulative San Andres gas, oil and water are shown below the well symbol.

Within the Hare-San Andres Gas Pool there are five wells highlighted with triangles. Those are water supply wells for Apache's Northeast Drinkard unit, Blinebry and Drinkard waterflood unit, which covers the same horizontal but obviously different vertical depths within this area.

And southeast of the map there is one rather odd unit. It's the South Eunice-San Andres -- primarily oil pool, but it's spaced on 80 acres rather than 40.

Q. Okay, and let's go into that a little bit. The oil pools, which are designated in green, are all spaced on

40 acres --

A. Yes, sir.

Q. -- are they not?

Then you've got the South Eunice-San Andres, which has -- it's an oil pool spaced on 80 acres?

A. Yes, sir.

Q. All of those Eunice pools, do they have a 5000-to-1 GOR?

A. Yes, they do, I was getting around to that.

Q. Okay. And then finally again the gas pools, the Hare-San Andres and the -- what is it, the North --

A. North Eunice-San Andres --

Q. No, I'm looking at the other gas pool to the northwest. Those all have 160 --

A. Yes, sir.

Q. -- both have 160- --

A. Yes, sir.

Q. -- acre spacing? Okay.

Why don't we move on to your cross-section, and tell the Examiner a little bit about the producing --

A. The cross-section is basically noted on the base map, and also the succeeding structure map, as the purple line.

In discussing things with Mr. Bruce yesterday I noticed that through some device the first well, the

ConocoPhillips well on the far left-hand side of the map, and an ExxonMobil well in the East Hare-San Andres Oil Pool were somehow omitted from the cross-section. That does not affect, you know, the testimony or what we intend to show.

On the cross-section I have, it looks like five different formations or members of formations, if you will, correlated across the map. The one in a blue color is a basal member of the Grayburg, simply for some information as to what is above us. The light purple line is the top of the San Andres. The light brown line is the base of a silty or a clastic unit at the top of the San Andres, quite possibly the Premier sand. The darker brown line is the top of what we call San Andres Zone 2. The black line is what we consider to be the base of the productive San Andres interval.

The wells were selected for the cross-section because they show a pretty good sampling of wells in oil pools and wells in gas pools.

Q. Well, let's look at one question. You mentioned that Apache was looking at mainly the top 250 feet of the San Andres; is that correct?

A. Yes.

Q. Are there deeper parts of the San Andres that are productive or could be productive, or what's the story there?

A. We do not believe that the San Andres is a typical gravity -- or the fluids within the San Andres are not segregated by gravity as one would expect or as is typically the location or the situation. Typically, one expects gas, oil, water to occur. This does not appear to be the case out here.

Going from left to right across the cross-section we see the Sohio Alves Number 2 is located in the North Eunice-San Andres Gas Pool. Its perforations are rather low in our San Andres interval.

Moving to the right, which is to the east, the first well we drilled in our program this year is our State C Tract 12 Number 15 well. We tested two deeper intervals in the San Andres, both of which produced more water and less oil than we thought was commercial. We moved up to the highest of the perforated -- set bridge plugs, as is noted on the cross-section, moved up to about a 10-foot interval right below the top of San Andres Zone 2 and tested appreciable oil with considerably less water.

Moving on to the east, once again, we see in this case three wells, the State V Number 10, Nedu Number 818 and CDU Number 100, which are all placed in the Hare-San Andres Gas Pool. Their perforations extend well below what we consider to be the most prospective part of the San Andres, and those wells have produced considerable water.

Surrounding the wellbore symbol up at the top of each log, once again to the left, I have the current San Andres production. Below the wellbore symbol I show cumulative San Andres production. Probably of greatest note would be the CDU Number 100. Even though it's produced over 200 million cubic feet of gas, it's also produced 8.5 million barrels of water.

Moving on across, once again, one sees that generally gas is being produced low to -- both structurally and stratigraphically -- the oil. Following the top San Andres correlation line we see that the State V Number 10, the Nedu Number 818, are appreciably low to the wells shown in the Eunice-San Andres Oil Pools and the Southwest San Andres Oil Pool. So once again, the San Andres does not appear to be a typically gravity-segregated-type pool.

Q. Okay. What does your Exhibit 4 show?

A. Exhibit 4 is a structure map on top of the San Andres, which once again is the light purple line on the cross-section. The subsurface or subsea top of the San Andres is the darker black number. Top of the San Andres generally ranges from almost minus 600 feet in the north part of the map to a high of approximately minus 450 feet in the south center. It's a 25-foot contour interval.

If one follows the -- for example, the minus 500-foot contour line, which starts at the extreme northwest

corner of the map, following that around, one actually sees that the -- a good portion of the Hare-San Andres Gas Pool is structurally low to most of the Eunice-San Andres Oil Pool and the Southwest Eunice-San Andres Oil Pool.

Additionally of note, I just saw today when we came to the hearing that Case 13,260, which is brought by the State, Paragraph (ff), which is on page 9 of 13, the Northwest Hare-San Andres Oil Pool, located in the southwest quarter of Section 7, is being extended to the south, into Section 18, and that is -- you know, bringing that oil pool, again, structurally high to a good part of the North Eunice-San Andres Gas Pool.

Another note of interest is, once again, Apache's five water-supply wells are highlighted with the blue triangles in the -- over there in the Hare-San Andres Gas Pool. Those five water-supply wells all are located and placed into the Hare-San Andres Gas Pool. So we have the strange situation of having water-supply wells that produce just enough gas that they have to be classified as gas wells and placed into a gas pool.

The wells we drilled earlier this year, however, which are specifically our Hawk B 1 Number 36, located in the southeast -- approximately center, southeast quarter, Section 9; Hawk B 1 Number 40, approximately center, southwest, Section 9; and the State C Tract 12 Number 15,

approximately the center of the northwest quarter of Section 16, have all tested as oil wells.

Q. So in short, it's kind of a complicated reservoir?

A. Yes, sir, it's very complicated. And one would suspect that, you know, perhaps there are individual stringers that may separately produce oil, gas and/or water or just, you know, for some reason we have yet to quite understand and define, the reservoir fluids are not exactly where one would expect them to be.

Q. Okay. But -- and this will be shown by our next witness -- the three wells that you've tested in the San Andres to date are oil producers --

A. Yes, sir, they are.

Q. -- under Division regulations?

A. Yes, sir.

Q. And maybe just one final question, and it's been alluded to: What is Apache doing out here with respect to drilling additional wells, Grayburg, San Andres, et cetera?

A. We currently have a rig under contract that is drilling Grayburg, San Andres wells, approximately one every six days.

Our 2004 program, I believe, as Mr. Moreno stated, is 20 to maybe as many as 24 wells. We have, in fact, drilled all of them sufficiently deep to produce the

San Andres, but until we obtain relief in this issue as we are requesting, they have not and will not be perforated and/or produced in the San Andres. But we do have the hole down there such that at the appropriate time we can go into it. Some of the wells are and/or will be located in the light brown area.

Q. And a lot of these are infill Grayburg wells, are they not?

A. Yes, the -- You know, the first three locations were placed such that they were standard San Andres gas locations, assuming that in maybe worst case, if one would, we would place them in the Hare-San Andres Gas Pool. The others, however, have been both standard and nonstandard Grayburg locations for which we have obtained the appropriate OCD authority.

Q. And that's just part of an ongoing infill drilling program?

A. Yes, ongoing infill drilling program. You know, we suspect that we can continue operations in a drilling and/or deepening and/or just simple recompletion operations out here for several years to come. There's no scarcity of opportunity at this point in time.

Q. There's hundreds of -- Well, these are new wells you're drilling. Are there also opportunities with respect to already-drilled wells?

A. Yes, sir, we are in that case -- you know, of course we would have to look at the production current production from these wells. In many, many cases they are Blinebry-Tubb-Drinkard producers.

If they're sufficiently commercial it would be in the State and Apache's best interest, rather than plugging or plugging back that -- and losing that production, to actually drill a second wellbore. And in fact, that's what we have been doing with our previous Grayburg program and also the San Andres Grayburg program now, is that, you know, very often we locate our wells very close to a Blinebry-Tubb and/or Drinkard producer.

I have not counted the wells here on this map, but I do remember that when I open my computer database I believe there's something in the neighborhood of 5800 entities. When I extract out --

Q. In the township?

A. In this area, the township and a half. When I extract out the multiple recompletions, it drops that number down to maybe 3500.

Q. So there is sufficient -- there is a lot of opportunity to drill additional or recomplete additional oil wells --

A. Yes, sir.

Q. -- and recover the reserves?

A. Yes, sir.

Q. Were Exhibits 1, 3 and 4 prepared by you or under your supervision?

A. Yes, sir, and in this case, unfortunately, I can't blame anyone but myself for having omitted those two wells.

Q. In your opinion, is the granting of Apache's Application in the interests of conservation and the prevention of waste?

A. Yes, sir.

MR. BRUCE: Mr. Examiner, I'd move the admission of Apache Exhibits 1, 3 and 4.

EXAMINER JONES: Exhibits 1, 3 and 4 will be admitted to evidence.

EXAMINATION

BY EXAMINER JONES:

Q. Mr. Curtis, is there any zones that you are not perforating because you're trying to stay away from gas in this oil?

A. To the best of my knowledge, no sir. However, you might also address that question to Mr. Mays who will follow me, but --

Q. Okay.

A. -- no, sir, there's not. You know, if it hits the water, that is the issue.

Q. Okay. So you can see the water on some of these logs that you --

A. If you refer back to the cross-section, you know, one of our other treats working out here is that one gets to use logs ranging in age from approximately 1947 through the current -- The older wells, you know, unfortunately, we don't have the benefit of the current technology. But the third well from the left, the fourth well from the left, the fifth well from the left, all are old electrical surveys of various types.

Actually, the formation or member tops that you see selected there are much easier to make on a resistivity log than a modern neutron density. The zone 1 is an area of higher resistivity. In zone 2 we see lower resistivity. It may be a poor-geometry issue.

And once one goes below the base of the prospective interval, as we call it, resistivity decreases further, especially looking on down -- I'll just use the State V Number 10 for example. At 4300 feet there's a very low-resistivity interval. And in fact, 4300 feet on down the resistivity is much lower. And using a standard Archie equation, the lower the resistivity, the higher the water saturation.

Q. So the deeper you go, the more water. But above that you can get oil -- I mean, oil and gas kind of

randomly?

A. It -- Unfortunately, it rather appears so. You know, the water is something, working this township, we have learned to live with. However, you know, for economics it's best to minimize that water.

Q. Are you a Basin-centered gas advocate?

A. Oh --

MR. BRUCE: Be honest.

THE WITNESS: I don't really know.

Q. (By Examiner Jones) Okay. Did you talk to any of our Hobbs people, like our Hobbs geologist, about this Application before you guys decided on this --

A. Yes, sir, we have, we talked to Mr. Kautz --

Q. Paul Kautz.

A. Paul Kautz. One question I asked was, you know, the top of the San Andres is not the same for all operators. We were trying to ensure that our top of the San Andres was what everyone else was using, what the State recognized. And Mr. Kautz inferred that, you know, as a whole he accepts what the operator defines.

And in reality, the top of the San Andres, as noted on my cross-section, in many cases conforms to what a previous geologist has written on the log that we have used.

Mr. Kautz would like to see all of the Grayburg-

San Andres pools in this township, township-plus, probably vacated and a large associated pool created. However, from Apache's viewpoint we've got probably -- Well, we have a few reasons why we are not recommending that at this point in time.

Firstly, we can encounter severe problems in that, you know, we would not be able to have oil wells and gas wells in the same unit. The spacing and especially location problems or location requirements for oil and gas wells would be different, and we would have to do considerably more nonstandard location applications.

Also, the logistics of that are mind-boggling when one considers the number of mineral owners and operators in this township. Apache has a drilling program which we want to execute. The amount of time that would be required to accomplish that task is just longer than we can afford to spend.

Q. You would have to clone Mr. Moreno several times.

A. Well, and Mr. Mays and Mr. Curtis.

(Laughter)

MR. BRUCE: Please, don't clone Mr. Moreno.

THE WITNESS: Yes, we would prefer not either.

EXAMINER JONES: Okay. Okay, I'm glad you went into that, because that was one of my main concerns here. And I really think that if you did an associated pool you

could use consistent spacing and location requirements also, but I understand the work involved and the time delay it would take to do that.

Mr. Brooks, do you have any questions?

EXAMINATION

BY MR. BROOKS:

Q. Well, when I heard the first part of your testimony I was going to ask you if you have a theory as to why you've got this type of fluid distribution, but I gather from the last thing you said that the answer is, you don't know?

A. That's very correct. I wish I did, but we don't.

Q. Okay.

A. We're just happy to get some hydrocarbon fluids out of it.

MR. BROOKS: Nothing further.

EXAMINER JONES: Thanks a lot, Mr. Curtis.

THE WITNESS: Thank you, your Honor.

KEVIN MAYES,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Will you please state your name for the record?

A. Yeah, my name is Kevin Mayes.

Q. And where do you reside?
A. I reside in Tulsa, Oklahoma.
Q. Who do you work for and in what capacity?
A. I'm a reservoir engineer for Apache Corporation.
Q. Have you previously testified before the Division?
A. Yes, I have.
Q. And were your credentials as an expert reservoir engineer accepted as a matter of record?
A. Yes, they were.
Q. And are you familiar with the engineering matters related to this case?
A. Yes, I am.
Q. Mr. Mayes, before we get to your exhibit let's discuss a couple of things regarding the drilling program. When -- the drilling program when you were testing -- these were your first three San Andres tests -- you were bracketed -- these -- the wells in Sections 9 and, what, 16, the two closest pools, were the gas pools, correct?
A. That's correct.
Q. So when these wells were permitted, you had to go get unorthodox location for the oil well portion of it, the Grayburg?
A. Correct.
Q. But at that point it appeared that these would be

San Andres gas wells, since you were bracketed by the gas well pools, were you not?

A. Right, yes, sir.

Q. So when you completed these wells and started producing them, you produced them for a few weeks and saw that they appeared to be oil wells; is that correct?

A. That's correct, yeah, we permitted them for drilling purposes in the Hare-San Andres, just in order to get them drilled at the center of the 160 acres --

Q. Yeah.

A. -- just in case they tested out as gas wells.

Q. And Mr. Examiner, this is also shown on the Exhibit 1A, the land plat. These wells are in the center of -- well, for instance, the south half of 9 is all one federal lease, is it not, Mr. Mayes?

A. I'd have to refer to --

Q. Okay.

A. -- Mr. Moreno for that.

Q. Well, I think if you look at the map -- and we can have Mr. Moreno confirm it, Mr. Examiner -- the south half of 9 is one federal lease, and the northwest quarter of 16 is one state lease. So that's why those wells were drilled, was it not, Mr. Mayes?

A. Yes, correct.

Q. So that you could test the San Andres in this

area?

A. That's correct.

Q. Without -- with certainty of ownership of the San Andres?

A. Correct.

Q. Okay. Now again, when you drilled these wells you thought, just because of the nearness of the pools, they would be gas wells?

A. Right.

Q. Now, let's move on to your Exhibit 5. Could you identify that and describe the actual results you got after completing these wells in the San Andres?

A. Yeah. Mr. Examiner, again Exhibit 5, it's the actual 24-hour production test out of our three wells we've tested in the San Andres debate. There are 41 tests over the last two months, and these tests all show that the producing GOR from all three wells is below the 100,000-to-1 definition by the State. They are oil wells.

Q. Since they are oil wells, why do you request the higher GOR?

A. Well, the three wells in Exhibit 5 are regulated by the statewide 2000-to-1 GOR limit, and these wells would be curtailed on production. You can see they're in the range of 250- to 300-MCF-a-day-type wells, and with the oil allowable being 80 barrels per day at this depth, times

2000, we'd be looking at 160 MCF a day.

So these wells would have to be periodically shut in if we were just allowed 2000 to 1, and that could cause some damage to the reservoir.

Q. Do you foresee any damage by producing at the higher producing GOR rate?

A. Yeah, no, I don't. The other oil pools in this geographic area are producing with the 5000-to-1 limit, and I don't see any damage to the reservoir caused by that.

Q. If the higher GOR isn't granted, you would be allowable-restricted, would you not?

A. Yes, we would.

Q. Do the -- And again, the wells in this area generally have additional targets, do they not?

A. Yes. In particular, the Grayburg, which is the crux of our drilling program right now.

Q. Yeah, the Grayburg was the main reason these wells were drilled?

A. That's correct.

Q. And upon your recommendation the took them down to the San Andres to see what else might be there?

A. That's correct.

Q. What is the difference between what you're doing between completing in the -- How many feet additional are you drilling to test the San Andres?

A. Oh, about 300 feet.

Q. And that's certainly worth getting these producing rates, to spend the money to drill the additional 300 feet?

A. Very economic project, yes.

Q. Okay. Now, will -- is it probable that these wells, or a number of these wells, may be downhole commingled with the Grayburg?

A. Yes, if this Application is approved, then Apache will apply for downhole commingle, both the San Andres and Grayburg, on several wells, certainly the 20-well drilling program we have going on, if not additional wells.

Q. Okay, and it does enhance the economics in this area?

A. Greatly.

Q. And again, there is substantial opportunity in this area for San Andres completions?

A. That's correct.

Q. Now, based on the available data, do you recommend that the East Hare-San Andres Pool be expanded?

A. Yes, I do.

Q. And again, do you recommend that the GOR be increased to the 5000-to-1 level?

A. Yes, I do.

Q. Was Exhibit 5 prepared by you?

A. Yes, it was.

Q. And in your opinion is the granting of this Application in the interests of conservation and the prevention of waste?

A. Yes, it is.

MR. BRUCE: Mr. Examiner, I'd move the admission of Exhibit 5.

EXAMINER JONES: Exhibit 5 will be admitted to evidence.

EXAMINATION

BY EXAMINER JONES:

Q. Mr. Mayes, that question I asked Mr. Curtis earlier -- this was the lenticular nature of the reservoir -- are the -- I guess lenticular might be the wrong word here, but --

A. It's pretty appropriate.

Q. Is it appropriate?

A. It's probably pretty appropriate, yes.

Q. Okay, the gas-oil is kind of unpredictable. Were you going to get -- Have you avoided any perforations?

A. No, actually quite the opposite. Of the three wells we've tested, we've actually shot individual stringers and tested them separately --

Q. Oh.

A. -- along with running production logs to see

where our fluids were coming, out of which strata, and we've had strata full of water, we've had strata that had fairly low GORs, we've had strata with fairly high GORs.

Q. Okay.

A. But no, anywhere that we can exploit economic hydrocarbons, we are making a completion in there.

Q. Okay. Okay, what kind of bubble-point pressure would be out here, and what's your knowable reservoir pressure?

A. Our virgin reservoir pressure out here should be in the range of 1700 pounds. Bubble-point pressure, I saw it documented the other day. It was fairly low, it was like 950 pounds.

Q. And you think you're below that now?

A. When we ran the production log I just mentioned, it was actually flowing at 950 pounds. And we shut it in for two hours and it had built up to 1200 pounds. So I don't think that we're necessarily below the bubble point yet. I do think we're encountering virgin pressure, though.

Q. In some zones?

A. In some zones.

Q. Okay.

A. Yeah. At the particular time we ran that production log, we had about three sets of perforations

open. The well was producing -- I don't know if I have that committed to memory or not, but a large volume of water --

Q. Yeah.

A. -- 1200 barrels of water a day, and we actually subsequently shut off a set of perfs to get rid of that water, but kept most of our oil and gas.

Q. Is that your typical completion procedure out here, is to kind of test them and see?

A. No, we've just been doing that with this first three-well kind of pilot program, if you will, and we'll change our completion techniques as we learn more.

Q. Okay. Are you frac'ing the wells, just acidizing them?

A. Acidizing at matrix rates. We don't even try to part the rock when we're doing our acid work.

Q. Okay.

A. We just ease it in there.

Q. With 15 percent hydrochloric?

A. That's right.

Q. This -- Wow. So have you -- and you don't think it would hurt to go -- to drill them at 40s?

A. No.

Q. You think 40s is okay, better than 80s?

A. My calculations show that these wells are not

draining 40s, and in talking to Paul Klause --

Q. Kautz.

A. -- Kautz --

Q. Yeah.

A. -- in your Hobbs District Office, he says most of the operators in the area that he talks to believe they're draining 40 acres or less. So I think it's very appropriate to go to 40 acres.

Q. Okay. And why did you pick 5000 instead of any other number?

A. To be quite honest with you, that's the precedent set by the existing oil pools in the area. To be quite honest with you, I could see justification to take it higher. At 80 barrels a day oil limit and the 5000 you're at 400 MCF a day, and quite a few of these wells have actually produced over that. So if the Commission would see fit to give us something higher, we would probably take that.

Q. Okay. But at least you're -- you're maybe at or above your bubble point, so your recovery factor should be pretty good out there, hopefully, eventually?

A. Eventually.

Q. Now, is it a water-floodable candidate in the future?

A. I don't think so. I think it's going to have too

high of a gas saturation to be floodable. Economics fill-up time would be too long, is my opinion.

Q. But maybe CO_2 flood sometime?

A. Might be CO_2 floodable, yeah.

EXAMINER JONES: Okay, I think that's all of my questions.

Mr. Brooks?

MR. BROOKS: No questions.

EXAMINER JONES: Okay, thanks for coming today and thanks for preparing all --

THE WITNESS: Thank you.

EXAMINER JONES: -- the exhibits, testimony.

MR. BRUCE: I have nothing further in this matter, Mr. Examiner.

EXAMINER JONES: Okay, well, thank you very much, Mr. Bruce.

With that we'll take Case 13,256 under advisement.

(Thereupon, these proceedings were concluded at 11:15 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. _____, heard by me on WVJ 5/13/04, 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 May 7th, 2004.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 16th, 2006