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. 12,444
APPLICATION OF MARBOB ENERGY CORPORATION FOR AMENDMENT OF THE SPECIAL RULES AND REGULATIONS FOR THE LUSK-MORROW GAS POOL, EDDY AND LEA COUNTIES, NEW MEXICO	)	ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

OIL CONSERVATION DIV.
00 JUL 13 AM 4:59

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

June 29th, 2000

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MICHAEL E. STOGNER, Hearing Examiner, on Thursday, June 29th, 2000, 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.

* * *

I N D E X

June 29th, 2000
Examiner Hearing
CASE NO. 12,444

* * *

E X H I B I T S

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* * *

A P P E A R A N C E S

FOR THE APPLICANT:

CAMPBELL, CARR, BERGE and SHERIDAN, P.A.
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P.O. Box 2208
Santa Fe, New Mexico 87504-2208
By: WILLIAM F. CARR

* * *

WHEREUPON, the following proceedings were had at 11:02 a.m.:

EXAMINER STOGNER: Okay, this hearing will come to order. At this time I will call Case Number 12,444, which is the Application of Marbob Energy Corporation for amendment of the special rules and regulations for the Lusk-Morrow Gas Pool, Eddy County, New Mexico.

At this time I'll call for appearances.

MR. CARR: May it please the Examiner, my name is William F. Carr with the Santa Fe law firm Campbell, Carr, Berge and Sheridan. We represent Marbob Energy Corporation in this matter, and I have three witnesses.

EXAMINER STOGNER: Any other appearances?

Will the witnesses please remain standing to be sworn?

(Thereupon, the witnesses were sworn.)

EXAMINER STOGNER: Mr. Carr?

MR. CARR: Mr. Stogner.

RAYE P. MILLER,

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

DIRECT EXAMINATION

BY MR. CARR:

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

A. My name is Raye, R-a-y-e, Miller.

Q. Mr. Miller, where do you reside?

A. Artesia, New Mexico.

Q. By whom are you employed?

A. Marbob Energy Corporation.

Q. And what is your position with Marbob Energy Corporation?

A. My official title is Secretary/Treasurer.

Q. Mr. Miller, have you previously testified before this Division?

A. Yes, I have.

Q. At the time of that testimony, were you qualified as a practical oilman?

A. Yes, I was.

Q. Are you familiar with the Application filed in this case on behalf of Marbob Energy Corporation?

A. Yes, I am.

Q. And are you familiar with the status of the lands in the area which is the subject of the Application?

A. Yes, sir.

MR. CARR: Mr. Stogner, are Mr. Miller's qualifications acceptable?

EXAMINER STOGNER: They are.

Q. (By Mr. Carr) Would you briefly state what it is that Marbob seeks with this Application?

A. Marbob seeks an amendment for the special pool rules and regulations for the Lusk-Morrow Gas Pool, which is both Eddy and Lea County, New Mexico. It's to provide for as many as four infill wells on each 640-acre proration unit -- in other words, one well in each quarter section -- and also that the well-location requirements which provide for wells being located no closer than 660 feet to a quarter section line nor closer than 10 feet to any quarter-quarter section line or subdivision interior boundary.

Q. Mr. Miller, let's go to what has been marked as Marbob Exhibit Number 1. I would ask you to identify it and review the information on this exhibit for Mr. Stogner.

A. Exhibit 1 is just a map which I developed, which crosses the county lines. The black line there in the middle is the county line. I've got an associated ledger with it there on page 2. It shows what I would consider the pool boundaries. And it also shows the current and past producing Morrow wells in the pool, are shown as the red dots. And also it shows the other Morrow wells surrounding, which are in different Morrow pools.

Q. Mr. Miller, the pool boundary goes to the bottom of this exhibit. Are there any Morrow wells south of this pool?

A. No, I apologize, I should have extended my map a

little further down. The adjoining sections to the south there in 20-32 do not contain any Morrow wells. There are about three wells in Section 9, but they're only from the Yates formation.

Q. Let's go to what has been marked Marbob Exhibit 2. Explain what this is.

A. Exhibit Number 2 is a much smaller area which shows, actually, our federal unit, the Lusk Deep Unit, which encompasses parts of Sections 17, 18, 19 and 20 in 19-32, and also one tract in Section 7, as well as a tract in Section 24 of 19-31.

Q. And this is a federal unit operated by Marbob more or less in the center of the Lusk Deep Morrow Gas Pool?

A. That's correct.

Q. Okay. Let's go to Exhibit Number 3. Will you identify and review that?

A. Exhibit Number 3 is a tabulation of the wells were designated as being in the Lusk-Morrow Pool. I've tried to establish a little bit of order in the tabulation of actually listing first the current wells that are still shown in a producing status, and then after the producing wells listed other wells which had previously produced in the Lusk-Morrow field but have now been plugged out of the Morrow formation.

Q. And in providing notice of this Application, you notified not only the operators of wells which are currently producing but also the operators of plugged and abandoned wells --

A. Yes.

Q. -- is that correct?

A. That is correct.

Q. When was this pool created?

A. The pool was created by Order R-2373, which is dated November 21st, 1962.

Q. And what rules today govern this pool?

A. There are special pool rules and regulations which were adopted under R-2373, and also as amended by Order R-2373-A and Order R-2373-B, which provides for 640-acre spacing and proration units and currently provides that the wells will be located 330 from the outer boundary of basically what would be the interior 40-acre tracts, the southwest of the northeast, the northwest of the southeast, the northeast of the southwest and the southeast of the northwest.

Q. There was also an order that limited the effect of these rules. What order was that?

A. Right, that's Order R-6197, which is dated November 28th, 1979, and it limited the pool rules to the pool boundaries with no extraterritorial effect.

Q. Now, in 1998 Marbob brought an Application before Examiner Stogner that has ultimately resulted in today's hearing. Could you review what transpired at that hearing and the events which have resulted in this matter being here today?

A. Right, Marbob requests an application for the drilling of a third well in an existing proration unit, that being the Lusk 14. As a consequence of the application we had a hearing, and OCD Order Number R-2373-C approved the drilling of the Lusk Morrow Number 14 as a third well in Section 19 of 19-32, to be simultaneously dedicated with the existing two wells of the same section.

It also in that order provided that within one year of completion of the Lusk Deep Unit Number 14, that Marbob would file an application with the Division to amend the special pool rules and regulations for the Lusk-Morrow Gas Pool and that that application would include the provision for infill drilling of up to four wells in the 640 -- in other words, one well for each quarter section or effective 160-acre spacing -- and also would relax the setback requirement to permit wells no closer than 660 feet to the quarter section line and no closer than 10 feet to any quarter-quarter or subdivision interior boundary line.

Q. Mr. Miller, we're not seeking an order that reduces the spacing unit from 640 to something else; is

that right?

A. No, that would be very complex, and as a result, this is probably the simplest way to get the pool to more conform with the statewide spacing rules currently in effect.

Q. And the new statewide spacing rules for Morrow wells would provide for one well on each 160-acre tract; is that correct?

A. That's correct.

Q. And the setbacks that we're requiring are really consistent for this pool with the statewide; isn't that correct?

A. That's correct.

Q. Let's go back to Exhibit Number 2 for a minute, the plat of the Lusk Deep Unit. Now, what does this show us?

A. The Lusk Deep Unit, which is outlined here in red, also winds up containing there in Section 19 the actual 640-acre spacing unit that is currently employed for the Lusk Deep Number 1, Number 5 and Number 14, and those wells were highlighted on that map with the blue circles to identify those three wells and their location.

Q. Now, the Lusk Deep 14 is the well that was the subject of the 1998 hearing, correct?

A. Yes, that's correct.

Q. What is the status of that well?

A. The well was drilled around the end of the year, beginning of this year, and was completed on about February 16th of this year, and it was a successful producer in the Morrow formation. And as a result, currently all three wells, the 1, 5, and 14, are being simultaneously dedicated and producing out of the Morrow.

Q. And will subsequent witnesses be called that can review the information from this well in substantial detail?

A. Yes, they will. The production from the well exceeds a couple million feet of gas a day out of the Number 14, and they'll go into more detail about the reservoir.

Q. Is Exhibit Number 4 an affidavit confirming that notice of today's hearing has been provided in accordance with OCD rules?

A. Yes, it is.

Q. Are there unleased lands in this pool?

A. I'm not aware of any unleased lands, but I did review the status of the lands inside the orange boundary that I identified on the map.

There appeared not to be any fee lands in that boundary, fortunately, and all of the lands, therefore, or the minerals, are state and federal, as an abundance of

caution, because there's always a chance that some tract would have expired and would have an unleased state or federal ownership.

We have also notified the State Land Office and the Bureau of Land Management as an abundance of caution.

Q. What response have you received to your Application from other operators in the pool?

A. We made our efforts known before the actual hearing notice by letter to the operators, or owners and operators in this pool, and we did receive a letter of support for our Application from Yates Petroleum Corporation, which I believe is shown as Exhibit Number 5.

And that is the only correspondence or contact I've had in regards to this Application or my initial letter.

Q. Mr. Miller, were Marbob Exhibits 1 through 5 either prepared by you or compiled under your direction?

A. Yes, they were.

MR. CARR: Mr. Stogner, at this time we would move the admission into evidence of Marbob Energy Corporation Exhibits 1 through 5.

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

MR. CARR: And that concludes my direct examination of Mr. Miller.

EXAMINATION

BY EXAMINER STOGNER:

Q. Okay, first of all, clarify Exhibit Number 5. I believe you said you had a letter of support?

A. Right, it's from Yates Drilling Company, and it was signed by Mr. Patterson.

Q. And are they an operator or working interest or both?

A. They actually operate a well -- or Yates Drilling operates a well in Section 30 of 19-32. It's called the Elliott Hall A Number 1. The Elliott Hall A Number 1 is located 660 from the north, 660 from the east. It was originally drilled as a Morrow producer on a 640-acre proration unit in the Lusk-Morrow Pool, but the Morrow was P-and-A'd in 1969, but we believe that they -- Well, they are still the operator of that well. The well produces out of the Strawn formation. We believe that our ownership still exists in the Morrow, and as an abundance of caution we notified them of the hearing.

We didn't have any conversation with them. Their letter came unsolicited by mail.

Q. Have you had any contact verbally with any of the other operators out there in this pool after the application in which Marbob filed and in which Order Number R-2373-C was issued?

A. No, I have actually not had any contact. I did send a letter out before the actual application and the notice was sent to them, which in about, oh, a page and a half, kind of described the fact that we had drilled our well, that the well was the third well in the 640-acre proration unit, that it was a successful producer, producing about 2 million feet of gas a day, that we anticipated a significant recovery from that current zone and that there were other behind-the-pipe zones, and that as a condition of our approval, that we would be seeking a hearing requesting the setback.

And the end of my letter said, If you have any questions regarding the information or if you have any questions regarding the pool changes, please contact me. And I have received no inquiries on that.

I believe there are probably only about three wells that are currently producing, that are actually on the 640-acre proration unit. There are several exceptions with nonstandard proration units also in this pool, but I believe there are three on 640s, but I have not heard any objection from any of them.

Q. Have you talked to Mr. Patterson about any of these things? You said that this was -- Exhibit Number 5 was an unsolicited response?

A. Right, they received our notice and our letter,

and I received this back in the mail, and I haven't visited with him subsequent to that.

Q. Well, how would you read this lack of response to Marbob's request, or --

A. Well --

Q. -- I feel that Marbob and the OCD is trying to do out here?

A. Well, I think that what, you know, most operators -- well, such as Petco and others in the area -- they don't see these pool rule changes as being in any way adverse to their existing wells or proration units, and that if anything there would be some benefit if they wanted to do additional infill drilling by giving them opportunities of additional locations that previously would have required a nonstandard location or would have required additional hearing for additional infill wells.

And in the fact that the proposal largely brings towards conformance with what is existing in the Morrow well -- or Morrow Pools in the southeast part of the state, I see it as a nonresponse, just simply because of the fact that it's not adverse to either the State or to the operators involved. It's almost a win-win type of situation.

Q. Well, that's what I was hoping we'd get. But the lack of response to this win-win situation makes me wonder.

A. Well, I didn't actually ask for the operators to support the Application. I felt like if they were notified and had any objection or any questions, that we would certainly be able to answer those questions, but I didn't actually ask for them to support the Application.

Probably the other significant factor is that most of these wells are not recent wells. They're older wells that are on the -- towards the tail end of decline in the Lusk-Morrow field.

Q. Okay, well, let's talk about Marbob's future interest in this pool. Does Marbob plan to drill additional wells out there in this pool?

A. Yes, sir, we have been looking at some locations. I know we have an application in front of the BLM in Section 20 for a well. Of course, there are two previous wells in Section 20 that were producers out of the Morrow, but there are no producers currently.

We are also partners in a project in Section 7 up there, that will probably involve a re-entry into a well that will actually be taken -- or cased to the depth of the Morrow.

We're also at this point working on a project in Section 30. We acquired the interest of Texaco in Section 30. We're currently having title done to identify who the other owners are, and before the end of the year we

anticipate actually filing an application and requesting the other owners in Section 30 to join with us in the drilling of a Morrow well in Section 30.

We're very excited about the area.

Q. Marbob represents how many current operators? What percentage?

A. Of the current producing wells there are a total of nine wells, and we operate three of the current producing wells.

Q. And all three of those are in one --

A. All three of those are in Section 19 in the unit. The Section 20 well will also fall inside the unit boundaries. The Section 30 well will be outside of the unit boundaries.

One of the areas, or one of the things about this area that makes it appealing to us is the fact that you have multiple potential horizons. Section 20 has currently Delaware production. We do not own the rights to the Delaware, but there is Delaware production in Section 20 and 29, there's also Delaware production in Section 30, there is Bone Springs production in this area, there is Strawn production, and in prior years there has also been a potential for Wolfcamp production, and then several wells have also produced out of the Atoka in this particular area.

So you wind up having multiple opportunities to be successful, even if your primary target is not necessarily as successful as you had hoped.

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

Mr. Carr?

MR. CARR: Thank you, Mr. Stogner. At this time we call Martin Joyce.

MARTIN K. JOYCE,

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

DIRECT EXAMINATION

BY MR. CARR:

Q. Would you state your name for the record?

A. Martin Joyce.

Q. Mr. Joyce, where do you reside?

A. I live in Roswell, New Mexico.

Q. By whom are you employed?

A. Marbob Energy Corporation.

Q. And what is your position with Marbob Energy?

A. I am sole geologist and their computer systems analyst.

Q. Have you previously testified before this Division and had your credentials as an expert in petroleum geology accepted and made a matter of record?

A. Yes, I have.

Q. Are you familiar with the Application filed on behalf of Marbob Energy Corporation in this case?

A. Yes, I am.

Q. Are you familiar with the Lusk Deep Unit?

A. Yes, I am. I'm the project manager and also responsible for the development of the subject acreage.

Q. Have you made a geological study of the Morrow formation in the area which is the subject of this Application?

A. Yes, I have.

Q. Are you prepared to share the results of your study with the Examiner?

A. Yes.

MR. CARR: Are the witness's qualifications acceptable?

EXAMINER STOGNER: They are.

Q. (By Mr. Carr) Mr. Joyce, what are the primary producing formations in this area?

A. In this area, the Yates, Delaware, Bone Springs, Wolfcamp, Strawn, Atoka and Morrow are all producing formations, with the Morrow being the target, the primary target.

Q. You're targeting the Morrow. And typically with wells in the Lusk Deep Unit, do you produce multiple zones

in the wells?

A. Numerous wells have been dually completed in this particular area, primarily from the Morrow and the Strawn. We generally hope to make at least a Morrow well and have numerous uphole zones to fall back on if the Morrow bombs.

Q. Do you generally need to produce other zones to make these wells -- to justify these wells from an economic point of view?

A. Yes, production from the other zones is necessary to economically justify our drilling of these deep wells.

Q. Could you provide us initially with a general geological description of the Morrow formation in the area?

A. The Morrow here is fairly typical of central and eastern Eddy and western Lea County Morrow siliciclastic sections. It averages in thickness from 350 to 550 feet. The overall sandstone content ranges anywhere from 15 to 30 percent of the gross interval thickness.

We generally divide the Morrow into three zones. The "A" and the "B", upper and middle sands, generally tend to be more sheetlike and continuous, while the "C" or lower Morrow sands are generally more lenticular and channel-like.

Q. Let's go to Exhibit Number 6, your base map. Would you review the information on that exhibit for Mr. Stogner?

A. This is a wellspot location map. The wellspots on here have been depth filtered to 12,000 feet and greater in this area. This will include all your Morrow tests and Devonian tests. The light gray boundary actually defines the Lusk Deep Unit that Marbob Energy currently operates.

As you'll notice, each of the wellspots is color-coded. That pertains to the intervals in the Morrow that are completed. Red is a "C" or lower sand completion, the green indicates a middle or "B" sand completion, and blue signifies an upper or "A" sand completion.

As you'll notice looking across the map, there's red, blue and green scattered every place. There's not really a particular zone that's predominant in the area.

Currently within this area, there are four actively produced Morrow wells, the Lusks Number 1, 5 and 14 there in Section 19, and over in Section 13 of 19-31 is Lynx Petroleum's HJ Number 13.

Cumulative production from the active wells in Section 19 of 19-32, the Lusk Number 5 that's in the southeast quarter there, the cumulative production from the Morrow is 9.6 BCF. And most of that gas was produced before 1983 from the lowermost "C" sand. That well is currently producing approximately 80 MCF of gas today with commingled perfs in the Atoka.

The Lusk Number 1 well, up in the northeast

quarter, has accumulated 2.9 BCF of gas since 1975. It currently is producing 200 MCF per day from perforations from the A through C zones.

Our new well, the Lusk 14 that went on line 2-16 of this year, initially it started at 2.5 million cubic feet of gas per day with approximately 1800 pounds of bottomhole pressure over the four months of production. It's now making a little over 2 million a day. That well is completed only in a lower "C" sand. We've had -- Celtic Services has an estimated ultimate recovery of .8 BCF for that particular well, and we have numerous uphole Morrow zones left to go after, after that has depleted out.

Also on this map are traces of some cross-sections that we'll be coming to. They are A-A', B-B' and C-C'.

Q. Mr. Joyce, you were responsible to Marbob for the drilling of the Number 14, were you not?

A. Yes, I was.

Q. Let's go to Exhibit Number 7, and I'd ask you to refer to that and review the information on it, explaining the information you've obtained in the drilling and testing of the Number 14 well.

A. This is a well that took us 35 days to drill. It TD'd as 12,525 feet. Our cumulative costs are approximately $900,000 complete. As I mentioned, this well

is currently making 2 million cubic feet of gas per day from a 6-foot Morrow "C" sand.

In the course of drilling the well, this -- pertaining to the Morrow here, our DST number 2, that you can see penciled in on the electric log, we tested the upper part of the "A" sands. The maximum rate we saw there was 938 MCF per day at a rate that was still slowly building. We never got a constant or a steady rate of build, we didn't leave the tool open long enough. The bottomhole pressure only from that zone was 3650 pounds.

We ran a standard suite of porosity and lateral logs and then followed those logs up with a - what Halliburton calls an SFT tool, it's a selective formation tool. It's essentially a miniature DST tool.

Reviewing the porosity logs, within the "A" we've got 60 feet of crossover, gas-effect crossover. In the "B" zone there was 40 net feet of gas crossover, and in the "C" zone we have 16 feet of gas crossover. The lateral log indicates none of these sands are wet.

I'll cover the selective formation test data. On your log to the left, I've got the numbers large enough to read, and I'll start at the bottom and work my way up.

At 12,413 feet we saw a buildup of 4297 pounds. At 12,395 feet we saw a buildup of 1850 pounds.

Skipping up to 12,268, we had a tight test. We

saw 640 pounds there. Tests indicated as tight, have such low permeability that you'd have to leave the tool there for hours to get a steady buildup.

At 12,258, another tight test at 265.

12,230, 5764 pounds; 12,214, 4596 pounds; 12,203, a tight test; 12,159 in the "A" zone, 2924 pounds; 12,119, 4383 pounds; and 12,105, 3077 pounds.

Our engineer, our reservoir engineer, will discuss the reservoir pressures at depth, or more at depth. But what I'm going to say is, from the DSTs that we've seen in the area from the wells that were drilled back in the 1960s, virgin reservoir pressures here range from 5200 to 5600 pounds. Other than the zone there, that 6-foot zone in the "B" sand, it looks like most of these sands have suffered some pressure depletion. That's not to say that the reservoir is depleted, but just in connection with other wells in the area.

We feel that its estimated ultimate recovery of gas from this particular well, from all the zones, may be in the vicinity of 3 BCF.

Q. When you look at the information on the Number 14 well, how does it compare to the Number 5? Were you high, low?

A. Okay, the sand that we're producing out of in the Number 14 well is correlative with the sand of the Number 5

well that produced the predominance of the 9.6 BCF of gas. The Number 5 well had a 14-foot-thick sand. It looks like we hit the edge of that same sandbody, and we're producing out of an upper finger of that sand.

We projected that we would be low to the Number 5 well by approximately 15 feet. Fortunately, we ended up approximately 15 feet high to the Number 5 well, which gives us more reservoir to produce gas out of.

Q. From this information, can you reach any conclusions as to whether or not the Number 5 has effectively drained the 640 acres?

A. I would say -- if the sands produced in the Number 5 well are not depleted at this location, and I could also say that the current wells that have been drilled, previously drilled, in that section are not effectively producing the Morrow sands.

Q. Mr. Joyce, let's go to the cross-section C-C', and I'd ask you to review the information on this exhibit for Mr. Stogner.

A. Okay, if you'll refer back to your base map, these are basically the key wells in the Lusk Deep Unit. It starts with the Number 14 in the northwest quarter, drops to the Number 5 in the south half, and then up to the Number 1 in the northeast, and then up across the section line to the Number 2 well in the south half of 18.

This is a stratigraphic cross-section, flattened at the base of what we call the massive or middle Morrow shale. On the cross-section you see our neat line, and this is showing the correlative "A", "B" and "C" sand intervals. I'll briefly run through just some of the information on those cross-sections.

Of course, on the left is our Lusk 14, and I've previously discussed the DST in the upper part of the "A" zone. And I've also -- The well is currently producing 2 million cubic feet of gas per day at 500 pounds of tubing pressure.

Skipping to the Number 5, this well was drilled by El Paso back in the 1960s. As you can see, they DST'd both the A and the B interval at one shot. They saw initial shut-in pressures of 5400 pounds and final shut-in pressures of 4350 pounds. They ended up completing this well, the initial completion, down here at 12,400 to 12,412 feet. The bulk of the 9.6 BCF appears to have come from that sand.

El Paso went back into the well in 1983 and perforated scattered intervals through the "B" and the "C". From the production records that we have, possibly .3 to .5 of a BCF of gas came from those upper perforations.

This well was recompleted in the Atoka 5-18 of 1989, CAOF was about 6 million from it, and Atoka

cumulative production is attributed to be approximately 2 BCF. As I mentioned, this well we operate. It's currently making 80 MCF a day from commingled Atoka-Morrow perfs.

The next well over is the Lusk Deep Number 1. This well was initially a Strawn well that was dualed both at the Strawn and Bone Springs in September of 1960. Phillips deepened the well in 1975, drilled down through the Morrow and made a Morrow completion out of it. The cumulatives on the Morrow at this time are 2.96 BCF, 18,000 barrels of oil from A, B and C perfs. Again, Marbob operates this well. It's making 200 MCF per day.

The last well on Section C is the Lusk Deep Number 2. It was also drilled by El Paso in 1961. They ran a DST in the "C" interval -- excuse me, two DSTs. They ran a "B" and a "C" DST. The DST in the "B" was basically tight. Final shut-ins of 1535 pounds.

Their second DST in the "C" interval, they flowed 12 million cubic feet of gas per day from the "C" and had a 20 minute final shut-in of 5575 pounds.

This well was dual completed in the Strawn and the Morrow. The Strawn has gone on to make 3 BCF and 627,000 barrels of oil; the Morrow, 3.2 BCF, 92,000 barrels of oil. This well was P-and-A'd in February of 1970.

Q. What does the information from this cross-section tell you about the reservoir in this central area in and

surrounding Section 19?

A. Well, the sands are correlative, "A", "B" and "C" sands are correlative throughout the area. You can look, the thickness of the sands varies quite a bit. The degrees of communication between the reservoir is highly variable.

Q. Why don't we go to the next exhibit, cross-section A-A', Exhibit Number 9, and briefly review that for Mr. Stogner?

A. This is a little broader look across the Lusk Deep Unit. This is a northwest-to-southeast, again the stratigraphic cross-section, again flattened at the base of the massive middle Morrow shale. I won't go into the detail on it that I did on the last cross-section. I was providing it more for the Examiner, just to show a representative section of the Lusk-Morrow in Townships 19 South, 31 and 32 East.

On the cross-section, again, you see our "A", "B" and "C" sands. I have DSTs and the DST information included on those cross-sections, the perforated intervals, completion dates, the cumulatives.

Again, this cross-section illustrates a typical Morrow stratigraphy, multiple completion zones and cumulatives varying from anywhere -- on these wells, from .2 BCF to 3 BCF.

Q. Mr. Joyce, when we look at Exhibits 8 and 9, the

two cross-sections, is it fair to say that the information you presented in detail on Section 19 is fairly typical of the general Morrow characteristics across this pool?

A. Yes.

Q. Let's go to what has been marked Marbob Exhibit Number 10. Could you identify that first and then review for Mr. Stogner what this exhibit shows?

A. Exhibit 10 is a structure contour map drawn at the base of the Morrow "C", overlain in red by a gross isopach of the Morrow clastic interval.

Briefly discussing the structure, the black lines, you have a north-northwest/south-southeast-trending structural nose that plunges to the south southeast at approximately 100 to 200 feet per mile.

Highlighted there in the light gray is approximately 125 feet of structural closure, with the line of structural closure at minus 8850 feet.

In red is the isopach of the Morrow clastic interval, and highlighted in red is an isopach thin that is closely coincident with the highest point of structural closure. It's something you would kind of expect to see.

I guess noteworthy are the structural relationships of the Lusk 5, 2 and 1 to the structural closure. As you'll notice, the Number 1 and the 2 well are more at the crest of the structure, while the Number 5, the

big-cum'ing well, is slightly off the crest of the structure. And the 14, mapped at this horizon shows to be downdip of the Number 5, but if you'll draw a structure map at the producing "C" sand interval, the 14 is definitely 15 feet updip to the Number 5.

Q. Let's go to the gross isopach on the Morrow "A" sand, Exhibit 11. Would you review that?

A. Okay, this is one of the original prospect maps for our Lusk 14 well. It's a gross sand isopach overlaid on the Morrow clastic isopach. For sand cutoffs I used classified sands as anything cleaner than 50 units API, gamma-ray units.

This map just is a general map showing an east-west trend of Morrow sands. There's really no correlation of thick sand buildups into the thicks of the entire Morrow clastic section.

I posted -- At our Lusk 14 location we expected to see somewhere over 100 feet of total Morrow sands at that location, and we saw approximately 118 feet.

Q. Let's go now to Exhibit 12, your map of the "B" sand.

A. Exhibit 12 is again one of the original prospect maps for the Lusk 14. Again, it's a gross sand isopach of the "B" or the middle Morrow interval, which is defined on the cross-sections. What we see are generally northwest-

southwest-trending sand thicks and thins.

Our prospect, we had a mapped thick of approximately 60 feet at the Lusk 14 section. We saw a total of 40 feet at the Lusk 14. So this map needs to be updated a bit.

Q. And this map, Exhibit -- Let's go now to the map of the "C" sand, Exhibit Number 13, and this is a copy of the map that was submitted in December of 1998; is that correct?

A. Yes.

Q. And what have you done to this map since then?

A. I posted the -- Again, similar to the other maps, another prospect map, this is the "C" sand interval, using the same gamma-ray cutoffs. Again, we see north-to-south trending, thickening and thinning "C" sand. We had hoped to see upwards of 50 feet of "C" sand buildup at our Lusk 14 location. We saw a total of 16 feet of "C" sand.

Q. Basically, what conclusions can you reach from your geological study of this area?

A. Some of the conclusions are that the Lusk 16 Deep Unit Well Number 14 encountered sands that had been not effectively produced by existing wells in this pool.

We conclude that this is a typical Morrow reservoir with multiple potentially productive sands. The producing intervals correlate across the reservoir, however

the reservoir quality of the sands is highly variable. And we also conclude that the well spacing greater than one well per 640-acre spacing unit is required to efficiently produce the Morrow reservoir in this area.

Q. Mr. Joyce, were Exhibits 6 through 13 either prepared by you or compiled under your direction?

A. Yes, they were.

MR. CARR: At this time, Mr. Stogner, we would move the admission into evidence of Marbob Exhibits 6 through 13.

EXAMINER STOGNER: Exhibits 6 through 13 will be admitted into evidence at this time.

MR. CARR: And that concludes my direct of this witness.

EXAMINATION

BY EXAMINER STOGNER:

Q. In your Exhibit Number 10, I'm still a little confused to what you're trying to show me here. You've got your Morrow "A" sand. This is your -- Why don't you just go over this one again in a little bit more detail?

A. Number 10?

Q. Yes.

A. Number 10 is, in black, is a structure contour, contoured at the base of the Morrow "C". In red it is overlain by the gross isopach of the entire Morrow clastic

interval. So we're looking at the lower surface of the Morrow and dropping the entire Morrow clastic on top of it.

Q. Okay, I thought one was showing an upper and one was lower.

A. No.

Q. You're just comparing that "C" with the whole that is found in the Morrow; is that right?

A. Basically, just showing the thinning that's occurring on top of the structure and really -- Well, the important thing, as I mentioned, was the Lusk Deep Unit Number 1, drilled in the northeast quarter of 19, had the sand quality been the same in the Number 1 as the Number 5 well, you would have expected to see a much higher cum at that Number 1 location than the Number 5 location.

EXAMINER STOGNER: I don't think any questions of me are going to add anything or subtract anything, so you may be excused.

You have one more witness?

MR. CARR: Yes, I do, Mr. Stogner.

EXAMINER STOGNER: He's a reservoir engineer?

MR. CARR: Yes, sir, he is.

EXAMINER STOGNER: Okay.

MR. CARR: At this time, Mr. Stogner, we'd call Larry Scott.

EXAMINER STOGNER: Before we do this, let's go

off the record for a little bit.

(Off the record at 11:52 a.m.)

(The following proceedings had at 11:54 a.m.:)

EXAMINER STOGNER: All right.

LARRY SCOTT,

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

DIRECT EXAMINATION

BY MR. CARR:

Q. Could you state your name for the record, please?

A. Larry Scott.

Q. Mr. Scott, where do you reside?

A. Hobbs, New Mexico.

Q. By whom are you employed?

A. Lynx Petroleum Consultants, Incorporated.

Q. Is Lynx Petroleum Consultants, Incorporated, an operator in this pool?

A. Yes, we are.

Q. And what is your position with Lynx?

A. I'm a vice president.

Q. And by professional background, what is your field of expertise?

A. Bachelor of science in engineering, University of Texas, and 27 years of experience in the oil and gas industry, the last 20 in southeast New Mexico.

Q. Have you previously testified before this Division?

A. Yes, I have.

Q. At the time of that testimony, were your credentials accepted and made a matter of record?

A. Yes, they were.

Q. Were you qualified as a reservoir engineer at that time?

A. That is correct, sir.

Q. Are you familiar with the Application filed in this case on behalf of Marbob Energy Corporation?

A. Yes, I am.

Q. Are you familiar with the Lusk-Morrow Gas Pool?

A. Yes, I am.

Q. Have you made an engineering study of the Morrow formation in the area which is the subject of this Application?

A. Yes, I have.

Q. And are you prepared to share the results of your work with Mr. Stogner?

A. Yes, I am.

MR. CARR: Are Mr. Scott's qualifications acceptable?

EXAMINER STOGNER: They are.

Q. (By Mr. Carr) Mr. Scott, would you identify for

the Examiner what it is that you've attempted to do with the data available to you on this reservoir?

A. With the data available, we attempted to determine whether one well could effectively drain 640 acres in this pool, and if not, whether 160 acres might be more appropriate spacing?

Q. Could you just generally describe for us how you went about approaching this task?

A. Well, we concentrated on the data in Section 19. This section has three Morrow wells that either are producing or have produced. We utilize pressure data, the completion information, and cumulative recovery data from that section and believe that we can extrapolate those results out to include the pool.

Q. With three wells on this section, what would be the effective spacing within this section as it stands today?

A. Approximately 200 acres, 213 acres.

Q. Let's go to what has been marked as Marbob Exhibit Number 14. Would you identify that and review it for the Examiner?

A. Marbob Exhibit 14 is a bubble map surrounding the El Paso or Marbob Lusk Deep Unit Number 5. This well has had a cumulative recovery of 9.3 BCF, primarily from the interval 12,400 to 12,412.

Volumetrics calculations indicated that the well should have been able to drain in excess of 950 acres. You'll note in that exhibit that the drainage radius encompasses both the Lusk Deep Unit Number 1 well and the recently drilled Lusk Deep Unit Number 14.

Q. When you look at this exhibit, would it be fair to conclude that this interval in all wells in Section 19 should have been drained?

A. That is correct, sir.

Q. Let's go back now, and let's look at Exhibit Number 8, the four-well cross-section, and I'd ask you to go through this cross-section and, if you could, compare the information available to you on the Lusk Deep Number Well [*sic*] in the northeast quarter of this section and the Lusk Deep Number 5, the well that is the principal producer in that section.

A. Okay, as Martin has previously mentioned, the Lusk Deep Unit Number 5 made the vast majority of its gas out of the zone 12,400 to 12,412, or lower Morrow. It was perforated -- additional pay was perforated in 1983 in the "A" and "B" sections, but these intervals do not appear to have contributed a significant volume to the total cum.

In contrast, Lusk Deep Unit Number 1 has cum'd 3.06 BCF from Morrow intervals from the top "A" zone down through the "C", and several lenses that were completed in

the Number 1 well appear to have contributed significant gas to that cum, where they didn't in the Number 5.

And the conclusion that I drew from that was that sand lens discontinuities, even over the 2900-foot separation between the two wells, precluded effectively draining out to that distance.

Q. Let's now, using Exhibit Number 8, compare the information you have on the Lusk Deep Well Number 5 and the new Lusk Deep Unit Well Number 14.

A. Well, the Lusk Deep Number 14, in contrast to the Lusk Deep Unit Number 1, is currently completed in the same interval that produced all of the gas in the Number 5. And this, I think, is evidenced by the bottomhole pressure on the RFT test of 1900 p.s.i.

A lower lobe of that had, I believe, 4300 p.s.i. on the RFT, so that particular lens was not completely drained by the Number 5, but appears to have been partially drained. I believe that the 800 million cubic feet developed in this sand is probably -- that there was probably no gas from that zone that would have been recovered by the Number 5 well, as it was already approaching economic limit when it was downhole commingled with the Atoka.

Q. Is it fair to say that by drilling the additional well, what you have done is recovered new reserves, not

just more quickly -- or accelerate the recovery of reserves in this zone?

A. All of the 800 MM in this lens, I believe, are new reserves. In addition, in the "A" and "B" sections of the Morrow, we had 10 RFT points, six of which yielded data that allowed us to extrapolate bottomhole pressure. And of the six, the average reservoir pressure was 3480 p.s.i.

So here we have a section in the Morrow that has been produced for 37 years with, on average, two-thirds of the original reservoir pressure still in place.

Q. Can you estimate the reserves that were developed by the Lusk Deep Unit Well Number 14?

A. In the upper sands -- now, this would be in addition to the 800 MM currently producing -- in the upper sands my estimate was 2.2 BCF, and in the sands that were classified as tight, if we can come up with an effective fracture-stimulation scheme, an additional 1.4 BCF might be developed.

Q. In your opinion, would any of this gas have been recovered if the pool had been developed under rules that provide for one well for each 640-acre spacing unit?

A. I don't believe that any of this gas would have been recovered.

Q. Now, we've been focusing on the information on Section 19. In your opinion, is the data obtained from

your work in Section 19 representative of the entire reservoir?

A. Although I did not do a detailed study of the entire reservoir, I believe it can be extrapolated, yes.

Q. In fact, we're looking at the best part of the reservoir, are we not?

A. That is correct.

Q. And if we were to then take the information on this portion of the reservoir and apply it to poorer parts of the reservoir, wouldn't the case for additional wells even be stronger?

A. I believe that is correct.

Q. Could you summarize for the Examiner the conclusions that you've reached from your work on this particular pool?

A. I do not think that the Lusk Deep Unit Number 5 effectively developed the Morrow reserves in Section 19, and that 160-acre spacing, based on the historical data that we have, would be more appropriate to the task.

Q. If you developed the pool on what is an effective 160-acre spacing pattern, in your opinion will reserves be recovered that otherwise would not be produced?

A. That is correct.

Q. And that would prevent waste?

A. That is correct.

Q. What would be the impact in denying this Application on the correlative rights of interest owners?

A. I believe that we would leave developable gas in the ground.

Q. Now, Marbob is also requesting amendment of the well-setback requirements. Could you explain the reason for that?

A. Well, 160-acre setbacks would be appropriate -- or 660 setbacks would be appropriate to 160-acre infill spacing.

Q. And would this bring the development of this reservoir in line with the recent changes to Oil Conservation Division General Rule 104?

A. That is correct.

Q. In your opinion, will approval of this Application otherwise be in the best interest of conservation?

A. Yes, I do.

Q. Was Exhibit 14 prepared by you?

A. Yes, it was.

MR. CARR: May it please the Examiner, at this time I would move the admission into evidence of Marbob Exhibit 14.

EXAMINER STOGNER: Exhibit Number 14 will be admitted into evidence.

MR. CARR: And that concludes my direct examination of this witness.

EXAMINATION

BY EXAMINER STOGNER:

Q. When you said that, or verified that Section 19 was the sweet spot or the good spot of the reservoir --

A. Yes, sir.

Q. -- is that in today's standards, or even historically?

A. I believe that 9.3-BCF cum is about double the next best well in the pool.

Q. For historical production?

A. Yes, sir, that is correct.

Q. Again, when did that Number 5 well come on line?

A. 1963.

Q. One of the first wells out there?

A. That would be correct.

Q. What kind of a water encroachment are we seeing out there in these old wells?

A. I don't believe that there's an active water drive in this reservoir. However, looking at some of the abandonment pressures in there, I believe water eventually is detrimental to cumulative recoveries.

EXAMINER STOGNER: I don't believe I have any other questions of this witness.

MR. CARR: That concludes our direct presentation, Mr. Stogner.

EXAMINER STOGNER: Mr. Carr, I'd like to see you and Mr. Raye Miller --

MR. CARR: Okay.

EXAMINER STOGNER: -- in my office.

Let's take a 10-, 15-minute recess. We'll reconvene at this, and we'll make a decision on how we proceed from here. And in the meantime, Mr. Kellahin can be getting prepared for the next case.

(Off the record at 12:07 p.m.)

(The following proceedings had at 12:30 p.m.:)

EXAMINER STOGNER: Okay, this hearing will come to order.

I'll at this time take Case Number 12,444 under advisement.

(Thereupon, these proceedings were concluded at 12:30 p.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 12444, heard by me on 29 June 2000.

, 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 July 6th, 2000.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 2002