NEW MEXICO OIL CONSERVATION DIVISION

STATE LAND OFFICE BUILDING

STATE OF NEW MEXICO

CASE NO. 10488

IN THE MATTER OF:

The Application of Meridian Oil, Inc., for a high angle/horizontal directional pilot project, special operating rules therefor, a nonstandard oil proration unit, a special project oil allowable, and special GOR assignment, San Juan County, New Mexico.

BEFORE:

DAVID R. CATANACH

Hearing Examiner

State Land Office Building

June 25, 1992

REPORTED BY:

DEBBIE VESTAL
Certified Shorthand Reporter
for the State of New Mexico

ORIGINAL

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EXAMINER CATANACH: At this time we'll call Case 10488.

MR. STOVALL: Which appears in bold, Application of Meridian Oil, Inc., for a high angle/horizontal directional drilling pilot project, special operating rules therefore, a nonstandard oil proration unit, a special project oil allowable, and once again a special GOR assignment, San Juan County, New Mexico.

EXAMINER CATANACH: Why is that in bold, Mr. Stovall?

MR. STOVALL: I want to know why the others were not in bold.

EXAMINER CATANACH: Are there appearances in the case?

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of the Santa Fe law firm of Kellahin, Kellahin & Aubrey appearing on behalf of Meridian Oil, Inc., and I have three witnesses to be sworn.

MR. CARR: May it please the Examiner, my name is William F. Carr with the Santa Fe law firm, Campbell, Carr, Berge & Sheridan. I'd like to enter my appearance for Mr. Robert R. Click, an offsetting owner.

MR. STOVALL: What is that last name?
MR. CARR: Click, C-l-i-c-k.
EXAMINER CATANACH: Any other appearances?
Mr. Kellahin, are you using the same witnesses that were --
MR. KELLAHIN: Paul Allan is the additional witness to be sworn. Mr. Hornbeck and Mr. Alexander are the same.
[The witnesses were duly sworn.]
MR. STOVALL: The record will reflect that Mr. Hornbeck and Mr. Alexander were already sworn.
MR. KELLAHIN: I'd like to recall Mr. Jim Hornbeck. May the record reflect that Mr. Hornbeck is already under oath and is previously qualified as an expert witness?
EXAMINER CATANACH: Okay.

JAMES HORNBECK

Having been duly sworn upon his oath, was examined and testified as follows:

EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Hornbeck, let's direct your attention now to what is called the USA No. 2

well. Find the display for us that gives us an area map by which you can help the Examiner locate where this particular well is.

A. That map is located as the first page behind the tab Exhibit 4.

Q. When we look at that display, how do we find the well?

A. The USA No. 2 Niobrara recompletion is located with the star in the southwest of Section 24 in Township 32 North, Range 13 West, New Mexico.

Q. Describe for us the current status of the well that now exists at that location?

A. It is nonproductive and completed in the Dakota.

Q. What is the plan?

A. The plan is to abandon the existing Dakota perforations and come back and attempt a side track lateral in the fractured Niobrara zone.

Q. Again why do you want to apply horizontal technology to the Niobrara in this portion of the basin?

A. Well, there are two main reasons we'd like to try. One is the fact that it is

strategically located along the Hogback monoclinal flexure on the structure map that's included here, which is once again, the top of the Gallup is structured and contour interval being 100 feet.

It shows the USA No. 2 location to be right at the very bottom of the monoclinal flexure. And we have found that in several other wells located along the monoclinal flexure on the northwestern side of the basin that they have been able to make commercial completions in the fractured Niobrara in this structural setting.

The success rate has been very small. Very rarely is there a successful completion. And with horizontal technology we feel we can increase the odds of a successful completion in the Niobrara.

Q. Help orient us to where this well is in relation to Black Diamond wells.

A. This well is probably about ten miles to the due northeast up near the Colorado-New Mexico border and is dealing with a section of rock geologically is that much, much thinner bedded and finer grained and depends solely on natural fracturing for commercial production of

hydrocarbons.

Q. Take us to the large display, the small copy of which is found behind exhibit tab No. 5 --

A. That's correct.

Q. -- and help us understand the basin and reasons for your conclusions about the orientation of the fractures and then the direction of the lateral that you propose for the recompletion.

A. On both sides of this display, we have put the USA No. 2 log. And this zone in through here is -- this is a gamma ray and a resistivity log.

Q. At what location on the type log are you referring to as "here"?

A. This is the USA No. 2.

Q. On the type log then --

A. I'm sorry.

Q. -- where is it?

A. Between the depths of 6000 feet and 6200 feet, we have what can be shown to be very thinly bedded and very fined grained silts, sandstones, and shales. And that is the interval that we're targeting with the lateral.

With regard to the orientation of the wellbore, this information has been compiled that shows a north -- 72-1/2 degrees east and north 17-1/2 degrees west directions for the most probable direction of fracturing in the subsurface. And that information has been compiled by some published work done by the USGS, in which they measured joint patterns along the Hogback to the direct north of this particular wellbore.

Jointing in rock on the surface is extrapolated to fractures at depth in the subsurface, and these are the orientations that would fit in the location of the USA No. 2 well.

Q. If you'd come back to your seat, let's pick up with another display.

A. [Complied.]

Q. We've looked at the structure map behind Exhibit 4. If you'll look at the next display after the structure map, what is shown at that point?

A. This map is a summary of completions in the Niobrara within the immediate area of the USA No. 2 plug-back candidate.

Q. A while ago you concluded that a

vertical well in the Niobrara was highly risky; that it didn't justify your company attempting further developments in this area?

A. That is correct. And I think that's borne out by this map.

Q. Describe for us how that supports that conclusion.

A. There are some production "cums" for the particular wells that have been attempted to be completed in the Niobrara and on this map. And, as you can see, the highest "cum" within the area of the USA No. 2 recompletion candidate is only 214 barrels of oil.

Q. Following that display is another area map. What's identified and described on that display?

A. This is a regional overview of Niobrara pools within the area of the USA No. 2. The large arrow points to the location of the USA No. 2 in 32 and 13 West. And I guess the important thing here to point out is that about four miles due southwest is a small fractured Niobrara pool, the La Plata pool. And other than that there isn't any production in the area of our attempted recompletion.

Q. The Gallup or the Niobrara in this particular area is not within the current horizontal limits of either a Gallup or a Niobrara oil pool?

A. That is correct.

Q. Statewide spacing for oil at this depth would be 40 acres for a vertical well?

A. That is correct.

Q. What is the proposed nonstandard oil spacing unit for this well?

A. We are requesting 160 acres.

Q. Why are you requesting 160 acres?

A. We are requesting 160 acres for this particular project based on the fact that location of the wellbore and mechanical limitations of reentering an existing cased well and drilling out the distance we would like to go limits us to about 1,000 feet, which would be to the edge of the 160-acre requested spacing unit.

Q. And if you dedicated less than 160 acres, then you would have a lateral that is too short?

A. That is correct.

Q. Why not extend this further and go to a 320-spacing as you have proposed in the other two

wells?

A. Well, I kind of touched on it in the prior response. The mechanical technology is just not there for slim-hole tools, side-tracks to span the entire length of the 320. We think if we can go the distance that we envision between 1000 and 1500 feet, we'll be pushing the edge of drilling technology.

And in addition there's an additional geologic complication in that the dip of these rocks, the Niobrara beds in this particular location is so steep that we are already drilling at about 94 degrees to stay within them for what we're requesting, 1500-foot lateral as it is. To go the additional 320 would be probably very difficult. It wouldn't be "probably"; it would be difficult.

Q. When you look at the Niobrara reservoir within the boundaries of the southwest quarter of the section, is that geologically suitable where each of those 40-acre tracts is positioned where they will contribute oil to that wellbore if this is productive?

A. Well, we believe it will. The joint pattern kind of bears that out as far as we can

tell. The perpendicular fractured directions or joint patterns which can be interpreted to be subsurface fracture directions would mean that we'll have intersecting fracture patterns that should effectively drain the majority of the oil in that drill block.

Q. What is Meridian seeking for a project oil allowable for this particular well?

A. The standard, four times the 40-acre standard allowable.

Q. For the four spacing units then that would be dedicated to this well?

A. That is correct.

MR. KELLAHIN: That concludes my examination of Mr. Hornbeck, Mr. Examiner.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Hornbeck, is this Niobrara interval, is it present in most of the basin?

A. Yes, it is. It's kind of a leopard. Sometimes it has white spots and sometimes it has black. It changes its makeup quite a bit across the basin. This particular package, the Niobrara package is present throughout the basin and has been the major focus of directional drilling

throughout the San Juan Basin.

Q. There could be a lot of potential?

A. There could be a lot of potential.

Q. Your fracture orientations were determined from surface --

A. Mapping.

Q. -- mapping.

A. Yes.

Q. Okay. That's the only evidence you have or data you have at this point?

A. That is all we have at this time, yes.

Q. Are you going to verify that?

A. Unfortunately we can't in this wellbore. Being already cased and cemented, there is no tool that will determine fracturing that we could run in this wellbore. Given the opportunity for a new drill, if based on some success in this wellbore, we certainly would be looking at it very carefully.

EXAMINER CATANACH: I have nothing further.

MR. KELLAHIN: I'd call Mr. Paul Allan. Mr. Allan is the drilling engineer.

PAUL AllAN

Having been duly sworn upon his oath, was

examined and testified as follows:

EXAMINATION

BY MR. KELLAHIN:

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

A. Paul Allan. I'm a drilling engineer with Meridian Oil.

Q. Mr. Allan, on prior occasions have you testified as a drilling engineer with regards to your company's horizontal projects in the basin?

A. Yes, I have.

Q. What particular well did you testify about?

A. The Huerfano Unit 300 and the Huerfano Unit 218.

Q. With regards to the USA No. 2, have you also performed the drilling functions to design the drilling plan and the completion program for the well?

A. Yes, I have.

MR. KELLAHIN: We tender Mr. Allan as an expert drilling engineer.

EXAMINER CATANACH: Mr. Allan is so qualified.

Q. (BY MR. KELLAHIN) Let me have you turn

to the drilling plan for the USA 2. Before we discuss the actual schematic, which is the first display behind Exhibit No. 3, tell the Examiner how this particular plan is similar to or different from the others that you've been involved in.

A. This is different from the Huerfano Unit 300 in that we are using an existing wellbore and existing location. It is slim-hole technology, and that's another difference between this and the 300.

Q. The 218 was slim-hole technology, wasn't it?

A. Correct. The differences between this well and the Huerfano Unit 218 are in the casing size. The Huerfano Unit 218 we were drilling out of 4-1/2 inch casing; this is on a 5-1/2. The other major difference is just in the structure of the zone. The dip here is 12-1/2 degrees. The Huerfano Unit 218 had a relatively flat dip.

Q. Okay. Take us through the well plan.

A. Okay. First off, we'll go in and squeeze-cement the Dakota from 5750 to TD. We'll then go in and mill the 5-1/2 casing. We'll mill a 60-foot section and under-ream at that point to

get out to the original rock. We'll then go in and set a cement kickoff plug and commence directional drilling at that point.

Q. How will you complete the well for production?

A. We're going to run a perforated tubing into the open hole and open-hole complete it. We'll pack it off into the vertical wellbore. And if need be we can run a pump down to that point.

Q. What is the economic advantage to Meridian and any other working interest owner attempting to recomplete Dakota wells into the Niobrara? Can you give us a sense of whether or not there is an advantage to this technology?

A. A new drill comparable to this would run in approximately $750,000 to $1 million. This is approximately a $300-$350,000 project.

Q. Describe for us the aspects of the slim-hole technology that will be applied to this well.

A. The tool availability has increased greatly with respect to motors and MWDs and steering tools. In addition, we're combining air drilling expertise that we feel we have a fairly

good grasp on with the slim-hole technology into this new method.

Q. Are there any mechanical limitations as to the distance you can drill the lateral with slim-hole technology?

A. As this is a completely new area, we don't have that information as of yet. The models we have run have indicated that we can expect to get 1500 feet out or thereabouts. Overall we've got a plan for 1494 right now, which is within reason.

Q. Let's look specifically at figure No. 2 following Exhibit No. 3 and let's talk about the slope in the bed of the Niobrara and how you propose to intersect that and then set it up for production.

When you look at the display, the dashed line represents the slope or --

A. Right.

Q. -- or the deposition of the Niobrara?

A. Right. That was taken from surface structure. And it could vary slightly, but that is our best estimate of what the dip is. We'll drill into that using an air/mist system and drill to the hard line, if we can get that far,

which is 1494 feet, given the 27-1/2 degree azimuth that we've planned.

Q. When you set the well up for production, tell me again how do you set it up for production within the horizontal interval.

A. We will be running perforated tubing to TD, and the tubing will then run up to approximately 5650 feet. We'll pack it off at that point and either produce through the existing casing or run a pump to that point on the tubing.

Q. What is the up-hole point at which the perforations start for production in the interval?

A. We'll run them throughout the zone of interest. We can monitor through mud logs when we're seeing shows and that type of thing and space the perforations accordingly.

Q. And then the last display within that exhibit set is the one that shows the bird's-eye view and at least the planned projection of the azimuth within the spacing unit?

A. Right.

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

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Allan, the direction of this wellbore will not change?

A. No, it will not.

Q. It's a set direction?

A. Correct.

EXAMINER CATANACH: I don't have any other questions.

MR. KELLAHIN: Okay. I'd like to call Mr. Alexander at this time. May the record reflect, Mr. Examiner, that Mr. Alexander is a qualified expert and is under oath and remains qualified in this case?

EXAMINER CATANACH: The record shall reflect that.

ALAN ALEXANDER

Having been duly sworn upon his oath, was examined and testified as follows:

EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Alexander, let me have you turn your attention to Exhibit 2 and to the ownership plats that are behind that display. Did you have those prepared?

A. Yes, sir, they were prepared under my supervision.

Q. What's the purpose of the display?

A. The purpose of the display is simply to show the location of the well in proximity to the offset drilling blocks, and the offset drilling blocks are numbered. On the second page of that exhibit, the second and the third page of that exhibit, we have listed the parties that we have notified as offset operators or owners.

Q. And has that notification occurred, Mr. Alexander?

A. It has.

Q. And to the best of your knowledge, that ownership is correct and accurate?

A. Yes, sir.

Q. And with the exception of Mr. Click's inquiry to you, have any other interest owners expressed any comments or interests in the application?

A. No, sir, they have not.

MR. KELLAHIN: Mr. Click has entered his appearance through Mr. Carr. That concludes my examination of Mr. Alexander.

EXAMINATION

BY EXAMINER CATANACH:

Q. Did you say, Mr. Alexander, that's all Meridian owned, the southwest quarter?

A. Yes, sir, that's correct.

EXAMINER CATANACH: I don't have anything else. The witness may be excused.

MR. KELLAHIN: We move the introduction of Exhibits 1 through 6. 6 is the Certificate of Mailing and the Affidavit.

EXAMINER CATANACH: Exhibits 1 through 6 will be admitted as evidence.

MR. KELLAHIN: That concludes our presentation, Mr. Examiner.

EXAMINER CATANACH: Mr. Kellahin, can you give me a rough draft on this case too?

MR. KELLAHIN: Yes, sir. I'll be real smooth.

EXAMINER CATANACH: These are getting pretty routine, Mr. Kellahin. Do you think we better do something about that? Get some administrative rules together?

MR. KELLAHIN: I hope not. I still have a daughter in college, Mr. Examiner.

EXAMINER CATANACH: There being nothing further, Case 10488 will be taken under

advisement.

[And the proceedings were concluded.]

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 10481, heard by me on June 25 1982.

David R. Catanach, Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

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

I, Debbie Vestal, Certified Shorthand Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I caused my notes to be transcribed under my personal supervision; 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 7, 1992.

DEBBIE VESTAL, RPR
NEW MEXICO CSR NO. 3