NEW MEXICO OIL CONSERVATION DIVISION

STATE LAND OFFICE BUILDING

STATE OF NEW MEXICO

CASE NO. 10965

IN THE MATTER OF:

The Application of Southland Royalty Company for a High Angle/Horizontal Directional Drilling Pilot Project and Special Operating Rules Therefor, San Juan County, New Mexico.

BEFORE:

MICHAEL E. STOGNER

Hearing Examiner

State Land Office Building

May 12, 1994

REPORTED BY:

CARLA DIANE RODRIGUEZ
Certified Shorthand Reporter
for the State of New Mexico

ORIGINAL

A P P E A R A N C E S

FOR THE APPLICANT:

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EXAMINER STOGNER: At this time I'll call next case, No. 10965, which is the application of Southland Royalty Company for a high-angle/horizontal directional drilling pilot project, special operating rules therefor, San Juan County, New Mexico.

At this time I'll call for appearance.

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

EXAMINER STOGNER: Are there any other appearances? Will the witnesses please stand to be sworn.

[And the witnesses were duly sworn.]

MR. KELLAHIN: Thank you, Mr. Examiner. We'll call at this time Mr. John Zent. Mr. Zent is a petroleum landman with Meridian. He resides in Farmington.

JOHN ZENT

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

EXAMINATION

BY MR. KELLAHIN:

Q. For the record, sir, would you please

state your name and occupation?

A. My name is John Zent. I'm a petroleum landman employed by Meridian, Oil, Inc.

Q. On prior occasions have you testified, Mr. Zent, as a petroleum landman, and had your qualifications accepted as a matter of record before the Division?

A. Yes, sir.

Q. In your capacity as a landman with your company, have you made a study of the land ownership involved in this application by Southland Royalty Company to drill a high-angle horizontal well in San Juan County, New Mexico?

A. Yes, I have made a study of the area of ownership in the general vicinity of our application, and I've prepared two exhibits, Exhibits Nos. 2 and 3 in the exhibit book.

MR. KELLAHIN: We tender Mr. Zent as an expert petroleum landman at this time.

EXAMINER STOGNER: Mr. Zent is so qualified.

Q. Mr. Zent, let's turn to the plat behind Exhibit tab No. 2.

MR. KELLAHIN: Exhibit 1, Mr. Examiner, is simply another copy of the application which

outlines the request.

Q. Behind Exhibit tab No. 2, Mr. Zent, is this the first display that you prepared?

A. Yes, it is. And what Exhibit 2 depicts is spatially the dedicated proration unit for the Jernigan No. 3 Dakota, the location being the east half of Section 24, 27 North, 9 West.

It also shows the current surface location of said well, being 1290 feet from the north line and 1100 feet from the east line of said Section 24, and an approximate azimuth and projected total depth, or projected bottomhole depth of location.

That isn't to say that Southland will take the well to that extent, but that is the maximum extent that we would drill and still be in the legal window for the Dakota proration unit, staying 790 feet from the exterior boundary of the east half of Section 24.

Q. If the project is successful, the Jernigan No. 3 well would be productive in what pool?

A. It would be in the Basin-Dakota Pool.

Q. Spacing for the Basin-Dakota Pool is what, sir?

A. 320 acres.

Q. And the proposed dedication, then, to the well, would be what portion of Section 24?

A. It would be the east half of Section 24.

Q. Have you made a tabulation of the offset operators to that spacing unit, and are they identified on this spacing unit?

A. Yes, I have identified the offset operators, and have shown on the exhibit those direct and diagonal offsets. No. 1 shows Meridian to be the offset operator. The northeast diagonal offset operator is Amoco, identified as No. 2, and the northwest diagonal offset operator is Texaco, Inc., identified as No. 3, with their mailing addresses.

Q. Have you caused notification to be sent to those offsetting operators of this application?

A. Yes, I have.

Q. To the best of your knowledge, Mr. Zent, have any of those offsetting operators filed an objection to the granting of this application?

A. They have not.

MR. KELLAHIN: Mr. Zent, marked in the exhibit package is Exhibit 9. It's not in the book itself but is submitted with the exhibits. That is our certificate of mailing, and the return receipt cards from Amoco and Texaco.

Q. Employees of Meridian Oil Company act as agents or personnel on behalf of Southland Royalty Company, do they not, Mr. Zent?

A. That is correct. Southland Royalty Company is a wholly-owned subsidiary of Meridian Oil Holdings, Inc. Southland is a bonded operator and will operate this well under their name. All of their activities are conducted by employees of Meridian Oil, Inc.

Q. When we look at the east half of Section 24, what type of leasehold ownership are we dealing with?

A. That is a Navajo tribal lease, one lease covering the entire east half of Section 24. The lease was dated 1956, with a five-year primary term. It's been held by continuous production since that date.

Q. In order to obtain approval for drilling of a well on that type of lease, to whom do you submit your application for permit to

drill?

A. To the Bureau of Land Management.

Q. Let me ask you, sir, to tell us approximately where we are. Where's this project?

A. This project is approximately 12 miles northeast of Huerfano Trading Post. Huerfano Trading Post is a small trading post located on Highway 44, from Cuba to Farmington, and it's about 12 miles northeast of there.

Immediately adjacent to Huerfanito federal unit area, in the same approximate area.

Q. In the east half of 24, are there any currently existing Dakota wells, other than the Jernigan No. 3?

A. No, there are not.

Q. What is your understanding of the current status of the Jernigan No. 3?

A. The Jernigan No. 3 well is currently a nonproductive well that previously produced out of both the Mesaverde and the Dakota formations.

Q. Let's turn now, sir, to the document behind Exhibit tab No. 3. Identify for us what you've shown on that display.

A. What Exhibit No. 3 shows is a

nine-section area immediately surrounding our Jernigan No. 3 application. The Jernigan No. 3 drill block is depicted with a horizontal cross-hatch, and we show the orientation of all the Dakota wells in those nine sections.

As you can see, nearly all the Dakota wells are stand-up proration units, and we also depict all the Dakota locations on those nine sections. I might say, this was a computer-generated map, and I have a little bust in that Township 9 West shows an offset that isn't actually there. As you can see on subsequent exhibits, that offset doesn't occur like that. Again, it just is a computer bust on our part.

Q. The alignment of the sections is misconfigured, if you will?

A. That is correct.

Q. As far as Section 24 goes, to the best of your knowledge, that is a standard size and shape of a section?

A. Yes, sir. It contains 320 acres.

Q. The east half will contain 320 acres?

A. That is correct. I'm sorry.

Q. Your proposed orientation for this

spacing unit, if you're successful with the horizontal technology, is to continue to be the east half of the section?

A. That is correct.

MR. KELLAHIN: That concludes my examination of Mr. Zent. We move the introduction of Exhibits 1, 2, 3 and 9.

EXAMINER STOGNER: Exhibits 1, 2, 3 and 9 will be admitted into evidence at this time, and I have no questions of Mr. Zent.

MR. KELLAHIN: Call at this time Mr. Chip Head. Mr. Head is a geologist, also residing in Farmington.

And, for your information, Mr. Examiner, behind Exhibit tab No. 4, Mr. Head has provided a summary of his project. We don't propose to read that to you.

We're going to start with Exhibit No. 5 as the display from which he will describe his project, and in doing so he'll cover all the points that are shown on the written narrative behind Exhibit tab No. 4.

CHARLES F. HEAD

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

EXAMINATION

BY MR. KELLAHIN:

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

A. Yes. My name is Charles Head, and I'm a petroleum geologist employed by Meridian Oil in Farmington.

Q. On prior occasions, Mr. Head, have you testified and qualified as an expert witness in the field of petroleum geology?

A. Yes, sir, I have.

Q. Do your duties as a petroleum geologist for Meridian Oil Company include determining any remaining potential in what is about to be identified as the basal Dakota sandstone of the Dakota pool?

A. Yes, they do.

Q. As part of that study, have you completed a geologic evaluation and now have certain recommendations to the Examiner with regards to the application of horizontal technology for wells drilled to that formation?

A. That is correct.

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

EXAMINER STOGNER: Mr. Head is so qualified.

Q. For the record, Exhibit tab No. 4, behind that tab is your written summary?

A. That is correct.

Q. Let's turn behind Exhibit tab No. 5. Before we talk about the details, give us a general geologic summary, or a characterization, of the geologic target that you're looking for here.

A. Okay. The geologic target that we are attempting to characterize in this booklet is a basal Dakota sandstone, which is at the base of the Dakota-producing interval and it rests unconformably on a water-producing member of the Upper Morrison, which we refer to as the Burro Canyon.

Q. The Examiner is familiar with the vertical distance of the Dakota pool. When we look at that entire vertical distance, give us a general idea of where we're going to find this basal Dakota sandstone.

A. Probably the best illustration of that would be in Exhibit No. 6. You'll note at the bottom of the three-well cross-section there, the

basal sandstone member of the Dakota is at the bottom there and is highlighted with a red target annotation with an arrow. The subject well, by the way, is the right-hand member of that three-well cross-section.

Q. Let's start there. Let's look at that cross-section, and give me a historical summary of what has happened with the Jernigan No. 3 well.

A. Okay. The Jernigan No. 3 well was originally completed in the Marine Dakota interval, the perforations of which are noted on the cross-section, on the right-hand log, between approximately 6400 and 6510. The lower perforations around 6500 are actually the Dakota main body, which is a nonMarine interval.

Q. Does the Dakota main body contribute production in the Dakota pool?

A. Yes, it does. The Dakota main body consists of distributary deposits of fluvial and deltaic sandstones, which are variable in thickness and somewhat discontinuous across the area. Where they are very thick, they provide good reservoirs, as we can see in the log to the left of the three-well cross-section.

Q. Your plan is to reenter the Jernigan No. 3 well, and drill a horizontal well to test for production in the basal sandstone?

A. That is correct.

Q. Describe for us the characteristics and the geologic position of the basal sandstone in the relation to the Dakota main body and to the Burro Canyon immediately underneath the basal sandstone.

A. The basal sandstone member of the Dakota formation is a valley-fill deposit, which rests unconformably on the Burro Canyon, which is a fluvial sandstone.

Q. Have vertical wells been drilled into the basal sandstone, in a effort to achieve gas production out of that member?

A. Yes, they have. Approximately 15 to 20 wells in the study area have been completed in the basal Dakota sandstone, along with the Upper Marine and nonMarine sandstone members of the Dakota.

However, the high treating pressure of the basal Dakota sandstone has somewhat limited the efficiency of the fracture stimulation efforts to produce it, and we feel that a lot of

the energy that was spent on these completions went into the more porous and permeable and pressure-depleted, for that matter, Marine and nonMarine sands above it.

And also, some attempts to complete were met with water production, which drowned out whatever gas production was associated with the basal sandstone, and we feel that that water was probably from the underlying Burro Canyon sandstone, directly beneath the basal Dakota.

Q. Geologically, then, what are you trying to achieve with a horizontal well that you have not been able to achieve with a vertical well?

A. We're trying to avoid any kind of contact with the underlying Burro Canyon which, once again, is highly water-saturated. We feel this is one of a couple of methods or technologies, if you will, that we would like to employ in the area, to attempt to produce commercial hydrocarbons from this unit.

Q. Let's go back now to the area map, which is the display behind Exhibit tab No. 5. Can you identify, from this display, the potential area for which horizontal technology could be applied if this initial effort is

successful?

A. Yes, I can.

Q. Describe that for us.

A. First of all, this is a basal Dakota sandstone isopach with a contour interval of five feet. The darker-shaded areas indicate thicker trend in that sand, and the green dots indicate approximately 40 existing wells, which we feel are prospective for basal Dakota development based upon isopach thickness of 15 feet or more.

Q. Why have you chosen the east half of Section 24 for the initial reentry of an old vertical well and the application of the horizontal technology?

A. The criteria which we defined, as being indicative of basal Dakota hydrocarbon potential, are favorable in the east half of Section 24. And also, that wellbore is mechanically favorable in that it has 5-1/2-inch casing run, which will allow us to use somewhat larger tools in our horizontal leg.

And also. It is a BLM demand well or inactive well as was stated earlier, so there are several factors involved that make that a favorable location for attempting this

technology.

Q. Apart from the identification of the Jernigan No. 3 well, on Exhibit 5, you've identified two other wells by name?

A. That is correct.

Q. Those are the other two wells on the cross-section that we just looked at?

A. The two wells in the cross-section are just wells that were used for correlation purposes.

The other two wells which we are planning to exploit, to attempt to exploit, isolate and exploit the basal Dakota, are actually on the map area there on the thick trend on the isopach map, in approximately the center of the map.

Q. Let's turn past that display and look at the next display. That's identified as figure 2, and it's shown to be basal Dakota porosity?

A. That is correct. This is a basal Dakota apparent porosity isopach, with a contour interval of two percent porosity.

Q. How is this information meaningful to you, as a geologist?

A. This is additional criteria that I used

to select favorable areas for basal Dakota development. Basal Dakota porosity ranges from approximately 5 to 14 percent. The average is around 9 percent. The Jernigan porosity is around 11 percent, so we feel that it is a little bit more favorable, relatively.

And also, the more porous trends that are illustrated on this isopach map coincide with thicker isopach trends on the previous map.

Q. Having identified a spacing unit that has the minimum criteria for the porosity thickness that you want, what other criteria did you look at, geologically, to decide if this spacing unit was acceptable for this project?

A. We could turn to the next exhibit.

Q. All right, sir. What is that? It's identified as figure 3, and says "Basal Dakota Water Saturation Isopach"?

A. Right. That is a relative basal Dakota water saturation isopach. Once again, this is additional criteria that I used to high grade my prospects.

Q. Are you still mapping that same basal sandstone member of the pool that we identified on the cross-section?

A. That is correct.
Q. This is the same interval that you showed on your Dakota porosity isopach?
A. That is correct.
Q. What does this water saturation isopach show you?
A. First of all, the contour interval is 10 percent water saturation. The light-colored portions of the map indicate areas with lower water saturation, specifically less than 40 percent.

The areas that are shaded in blue, indicate areas of apparent water saturation greater than 40 percent. The 40 percent cutoff was arrived at to distinguish what I feel is irreducible water versus movable water in the basal Dakota interval.

And, once again, there is good agreement with the lower water saturation trends illustrated on this map with the isopach thick trends, and also the porosity thicks.
Q. What's the point of this information, then, in terms of deciding where to locate the horizontal well?
A. To attempt to avoid any movable water

that could be in the matrix of the basal Dakota.

Q. You've described for us geologically the reason that you want to have a horizontal well versus a vertical well. You've described for us the characteristics of the reservoir, why you've picked this half section.

Describe for us now why you've decided to go in the direction you've chosen--which was southwest, wasn't it?

A. Yes, sir. We might refer to Exhibit No. 7 for that.

Q. Behind Exhibit tab 7, there are four displays on figure 5?

A. Right.

Q. What are we looking at?

A. This is a natural fracture strike histogram from formation micro scanner images that were taken from a nearby well last year. The data is from the shallow cretaceous, but it agrees quite well with images that were taken from the lower cretaceous, approximately 10 miles to the west.

I might draw your attention to the figure in the upper right-hand side. You'll note that the azimuth, primary azimuth, of

well-developed, open, natural fractures, is northeast/southeast.

Q. That's identified as the Lower Fruitland formation?

A. That is correct.

Q. Why is that of importance to you over the other three?

A. Because that, we feel, is--the cleating and the fractures in the Fruitland formation, we feel, reflects the fracturing in the Pictured Cliffs, which is in the lower left, and that's also a reflection of the deeper cretaceous fracture orientations.

Q. Based upon this data, then, what is the orientation of the fracture system, as you expect to find it, in the basal Dakota?

A. I expect the fractures to be oriented approximately northeast/southwest.

Q. How does that information, then, help you decide which way to orient the azimuth of the horizontal?

A. We plan on orienting our horizontal sidetrack in the same general azimuth; in other words, to the south/southwest from the well location.

Q. What's your reason to go parallel to the strike of the potential fracture system, as opposed to perpendicular to the strike of the fracture?

A. Well, our intent is to avoid fracture communication with the underlying water prone Burro Canyon formation.

Q. It's an effort to minimize, again, the opportunity of having this wellbore affected or influenced by water?

A. That's correct. It's an effort to minimize the risk associated with intersecting water-filled natural fractures from the Burro Canyon and the Morrison below.

Q. In the prior cases we've done for your company as well as for Meridian, applying horizontal technology, do we have a similar example of anything that we've done thus far, for this type of reservoir that you've just described?

A. No, sir, we really don't. This is the first time that we have attempted to employ this technology to avoid a known matrix water-bearing zone.

Q. Summarize, then, for us, what you're

proposing to do.

A. We're attempting to exploit a sand which heretofore has been very difficult to exploit but, because of its high treating pressure and close proximity to a water-bearing zone, this is one of two techniques that we're going to attempt this year in order to try to produce commercial hydrocarbons from this particular interval.

Also, there are a number of depleted Dakota wells in the immediate area that we could employ this technology on or in, if it is successful. So it's quite attractive to us. There's a lot of up-side that's associated with this, if it's successful, but it is extremely risky.

Q. The typical vertical Dakota well, historically, has been gas productive out of other members of the pool, other than this basal Dakota sandstone member?

A. That's correct.

Q. That is because the water encroachment has come up from the Burro Canyon--

A. That's correct.

Q. --into the basal sandstone, and either

precluded or made extremely difficult the removal of gas from the basal sandstone?

A. That's correct. And, when that happens, we have to squeeze the basal interval to try and isolate the water, and that's extremely difficult to do.

Q. And then typically what's happened, if there's gas reserves in the basal sandstone, they've been abandoned because of the water encroachment?

A. That's correct. Because the water from this relatively overpressured zone, I say "relatively overpressured," to the marine sands, will tend to drown out or could drown out and damage the formation, the Marine or the main gas-productive members of the Dakota.

Q. Describe the composition of the Burro Canyon and the basal sandstone. Is there any kind of barrier to flow between those two zones or formations?

A. In the study area, no, there's not, with the exception of just a couple of wells, and one of those wells we've targeted for a limited rate fracture stimulation. But, for the most part, it is a sand on sand unconformable

relationship, with little or no barrier between the two.

Q. What are you going to tell the drilling engineer to do with regards to where he keeps and positions the horizontal?

A. I will make a detailed structure map based on the top of the target, and I will be out on location communicating with him at each survey point to ensure that our well path is going to intesect the top of the target, where we want to intersect it.

And also, we will be able to stay within the target without going through the bottom of it, into the water productive zone below.

Q. How thick is the basal sandstone member that is your horizontal target?

A. Roughly, it's about 16 feet. And, of that 16 feet, about half of it has some primary matrix porosity. That's in the upper portion of the sand, and that's where we intend to keep the drill bit over the entire lateral extent.

Q. In order to make those type of operational decisions in the field, do you desire the flexibility of being allowed to change the

azimuth or the direction, so long as you stay within a drilling window that's confined by a rectangle 790, inside the standard sized spacing unit?

A. Yes.

Q. In terms of the length of the lateral, what is the anticipated maximum project length of that lateral?

A. Right now we have programmed the well for 800 feet in length, but we would be--that's certainly subject to change, depending on what sort of hydrocarbon shows we have.

Q. So in the field, when you're doing the process, you and the drilling people will make judgments and decisions about how far to drill the lateral?

A. That's correct.

MR. KELLAHIN: That concludes my examination of Mr. Head. We would move the introduction of his Exhibits 4, 5, 6 and 7.

EXAMINER STOGNER: Exhibit 4 through 7 will be admitted into evidence at this time.

EXAMINATION

BY EXAMINER STOGNER:

Q. Mr. Head, in looking at your Exhibit

No. 7. You show the fracture orientations but don't show the fracture orientations of the Dakota. Was that not available, or was that survey not run down to that area?

A. That is correct. This data was taken from a Fruitland Coal-Pictured Cliffs well approximately a year ago, so the formation at total depth was the Pictured Cliffs.

Q. Are there any wells in the area that you could verify this information, or have you verified it?

A. As I mentioned before, this data agrees quite well with a well that was drilled through the Gallup-producing interval, approximately 10 miles to the west of this location, and the fractured strike histogram data agreed quite well. And the Gallup, of course, is directly above the Dakota, so that is the best data that we have at this point in time.

Q. Even though you're talking about a total depth of the Dakota out here of, what, several hundred feet?

A. Total interval thickness of the Dakota?

Q. Yes.

A. Probably about 400 feet, right.

Q. You feel that's still accurate, even down to the basal?

A. I do.

Q. It's interesting that you're going parallel, avoiding the fractures, if I understand you right, is that correct?

A. That is correct.

Q. Do you propose any stimulation to the wellbore, the horizontal section?

A. No, sir. I don't think that that is an alternative for us or an option at this point because of the probability of fracturing into the underlying Burro Canyon.

Q. I take it the water encroachment is up through these fractures in the Dakota, or is it into the matrix also?

A. I think that it's mainly fracture-filled water, but in some cases we've seen a wet response on resistivity and neutron data in the area that indicates that the matrix has been contaminated by water, or gas has been displaced, and that's the reason why I decided to map apparent water saturation in the basal Dakota sand.

Q. What is the Burro Canyon? What kind of

formation is it?

A. That's a fluvial or river channel sand that meanders through the area. It's highly variable in thickness, and it's quite porous relative to the basal Dakota. It's about 16 percent average porosity versus, oh, around half that for the target sand.

Q. When I look at your figure 3 of your Exhibit No. 5, which is the water saturation, is this actual Dakota water or is it part of the Burro that has contaminated the Dakota interval?

A. That's unknown. The resistivity of water data that we have indicates that it's probably Burro Canyon water, to the best of our knowledge, but it's extremely difficult to isolate a water sample or to correlate it to a specific interval in the Dakota.

Q. Is it more likely than not, in completing these wells out here, to not perforate the basal Fruitland?

A. To not perforate? I'm sorry.

Q. To not perforate that basal sandstone?

A. Yes. It has been avoided by most operators. That's why only 20 wells out of approximately 250 or so in the study area, have

been completed or attempted completions in that interval.

EXAMINER STOGNER: I have no other questions of this witness at this time, Mr. Kellahin. He may be excused.

MR. KELLAHIN: Call at this time our drilling engineer, Mr. Dan Voecks.

DAN T. VOECKS

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

EXAMINATION

BY MR. KELLAHIN:

Q. Sir, would you please state your name and occupation?

A. My name is Dan Voecks. I'm a drilling engineer with Meridian Oil in the Farmington office.

Q. On previous occasions, Mr. Voecks, have you testified before the Oil Conservation Division as a drilling engineer?

A. No, sir, I have not.

Q. Summarize for us your education.

A. I worked in the oil field from 80 to 87. I went to San Juan College in Farmington from 87 to 90, and then I transferred to New

Mexico Tech, and received my bachelor's of science in petroleum engineering in May of 93.

Q. Subsequent to graduation, have you been employed as a drilling engineer by any other company?

A. No, sir, I have not.

Q. How long have you been employed by Meridian Oil Company?

A. I started work with Meridian Oil on January 3, 1994.

Q. How long have you been employed in the capacity of drilling engineer?

A. Since that time.

Q. Describe for us generally what your duties are as a drilling engineer.

A. My duties are to prepare cost estimates for drilling wells, and write procedures for the drilling operation.

Q. Have you been asked to do those activities for the Jernigan No. 3 reentry, and to design a program for that well to be utilized as a horizontal well?

A. Yes, sir, I have.

Q. Describe for us what activity you have undertaken.

A. As far as the drilling procedure?

Q. Yes, sir. You have a drilling program that includes a drilling procedure?

A. That's correct.

Q. You can describe that procedure, and then you can identify for us on the displays the illustration of how you're going to initiate and complete that drilling program?

A. Okay.

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

EXAMINER STOGNER: Mr. Voecks is so qualified.

Q. Let's start first with the horizontal view, if you will, the first display. You have a surface location and a proposed project bottomhole. As I asked Mr. Head, are you going to be able to drill and complete this well and stay confined to a drilling producing window that is 790 feet from the outer boundaries of the spacing unit?

A. To the best of our ability, we will.

Q. All right, sir. Let's take the existing well, the Jernigan No. 3. What's its current status?

A. It's nonproductive.
Q. What will you do, first of all, with regards to that well?
A. The first thing we will do is cement the existing Dakota perforations and the Mesaverde perforations.
Q. What will you do to determine the mechanical integrity of the existing wellbore?
A. After we've cemented the Dakota and Mesaverde perfs, we'll run a cement bottom log and repair the casing as necessary.
Q. Then what do you do?
A. After we've assured that we have a good integrity in our casing, we'll then set a whip stock and mill a window in our existing casing, at our kickoff point of 6252.
Q. All right, sir, let's turn to the well plan that's shown on the vertical scale. You've got that display in front of you?
A. Yes, sir.
Q. How was the decision made to use 6252 as the kickoff point?
A. The geologist, Mr. Head, told me where he would like to be horizontal in that basal Dakota, and he and I decided to use a

medium-radius build for our build angle. And we back-calculated up to the existing casing where we needed to exit.

Q. You have your kickoff point established. Now what do you do?

A. After we've established our kickoff point, as I stated previously, we'll set a whip stock and cut a window in our existing casing, then we'll run a 4-3/4-Inch bit on a downhole motor with a steering tool, that will have a gamma ray and a measurement-while-drilling device.

Q. Is that device sophisticated enough so you'll be able to know where it is, subsurface, as you monitor from the surface?

A. Yes, it will. There's three things that will help us. We have a gamma ray which will correlate back to our vertical hole and tell us where we are, as far as formation tops go, and the tool itself will tell us an azimuth and an inclination, to tell us which direction we're heading and what angle.

Q. Then what do you do?

A. Then we'll build this at approximately 16 degrees per hundred foot until we get to our

horizontal at 90 degrees.

Q. Then what happens?

A. At that point, we'll continue horizontal for another 800 foot.

Q. And you and Mr. Head worked together and tried to maintain, to the best of your ability, a certain position within the basal sandstone member of the Dakota?

A. Exactly.

Q. Once you're satisfied that you've drilled the well as far horizontally as you want to go, and you stop drilling, what, then, will you do?

A. It's going to be an open hole completion. We'll then just remove all our drilling tools and we'll run our production tubing back in the hole and, more than likely, set a packer in the five and a half, to completion.

Q. What are your choices on where you set that production tubing in relation to the packer?

A. We can put a tailpipe below the packer, and run it to any depth that we want in the well.

Q. Where will you set the packer?

A. We'll set the packer immediately above

the window that we set.

Q. And then you're ready to produce the well, right?

A. Ready to produce.

Q. There won't be any kind of stimulation program, frac treatment, acid job or anything else?

A. There could possibly be an acid job.

Q. You can make those choices in the field at the time you set up the well for protection?

A. More than likely, we would try to produce the well. If it wasn't producing, we would probably try an acid job to enhance the production.

MR. KELLAHIN: That concludes my examination of Mr. Voecks. We move the introduction of his exhibits behind Exhibit tab No. 8.

EXAMINER STOGNER: Exhibit No. 8 will be admitted into evidence at this time.

MR. KELLAHIN: That concludes my examination.

EXAMINATION

BY EXAMINER STOGNER:

Q. This will be done with a downhole

motor, is that correct?

A. Yes, sir.

Q. What will the drilling fluid consist of?

A. To optimize our motor performance and bit performance, we're going to use a water with some polymer, a light-weight water, to try and keep it at about 8.8 pounds per gallon.

Q. There will be, subsequent to the drilling of this well, no other attempted completions, as far as reperfs or anything such as that, in the Upper Dakota area?

A. No, sir, there will not.

Q. The kickoff point at 6252, is that in the Dakota or is that above the Dakota?

A. That will be above the Dakota.

EXAMINER STOGNER: I have no other questions of Mr. Voecks. He may be excused.

MR. KELLAHIN: That concludes our presentation,.

EXAMINER STOGNER: Does anybody else have anything further in Case 10965? If not, this case will be taken under advisement. And with that, this hearing is adjourned.

(And the proceedings concluded.)

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 10965, heard by me on 12 May 1994.

Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

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

I, Carla Diane Rodriguez, 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 May 20, 1994.

Carla Diane Rodriguez

CARLA DIANE RODRIGUEZ, RPR
CCR No. 4