STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

EXAMINER HEARING

IN THE MATTER OF: CASE 9715

Application of Benson-Montin-Greer Drilling Corporation for a horizontal directional drilling pilot project, special operating rules, and a non-standard oil proration unit in the West Puerto Chiquito-Mancos Oil Pool, Rio Arriba County, New Mexico.

TRANSCRIPT OF PROCEEDINGS

BEFORE: MICHAEL E. STOGNER, EXAMINER

STATE LAND OFFICE BUILDING

SANTA FE, NEW MEXICO

October 4, 1989

A P P E A R A N C E S

FOR THE DIVISION:
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BY: WILLIAM F. CARR, ESQ.

# I N D E X



## E X H I B I T S

1. Plat

HEARING EXAMINER: The hearing will come to order. We'll call the next case, No. 9715.

MR. STOVALL: Application of Benson-Montin-Greer Drilling Corporation for a horizontal directional drilling pilot project, special operating rules, and a non-standard oil proration unit in the West Puerto Chiquito-Mancos Oil Pool, Rio Arriba County, New Mexico.

HEARING EXAMINER: Call for appearances.

MR. CARR: May it please the Examiner, my name is William F. Carr with the law firm of Campbell & Black, and we represent Benson-Montin-Greer Drilling Corporation, and I have one witness.

HEARING EXAMINER: Are there any other appearances?

MR. LUND: If you please, Mr. Examiner, my name is Kent Lund on behalf of Charles B. Sanchez, Belen, New Mexico. We have no witnesses. We are representing Amoco Production Company, and we will not present testimony in the hearing.

HEARING EXAMINER: Mr. Carr, you may proceed.

MR. CARR: At this time we'll call Albert R. Greer.

ALBERT R. GREER,

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

DIRECT EXAMINATION

BY MR. CARR:

Q. Will your state your full name for the record, please.

A. Albert R. Greer.

Q. Where do you reside?

A. Farmington.

Q. Mr. Greer, by whom are you employed and in what capacity?

A. Benson-Montin-Greer Drilling Corporation. I'm an officer and an engineer.

Q. Have you previously testified before the Oil Conservation Division and had your credentials as a petroleum engineer tendered and made a matter of record?

A. Yes, sir.

Q. Are you familiar with the application filed in this case?

A. Yes, sir.

Q. Are you familiar with what is being proposed in this matter?

A. Yes, sir.

MR. CARR: Are the witness's qualifications

acceptable?

HEARING EXAMINER: Mr. Greer's qualifications are so accepted.

Q. (BY MR. CARR) Mr. Greer, would you briefly state what Benson-Montin-Greer seeks with this application?

A. Yes, sir. We seek exception from the specialty pool rules with respect to the acreage dedication to the well, exception to the vertical drilling requirements such that we can exceed the 5 degree maximum, and we seek exception to the bottom hole location of the well with respect to unit boundaries or proration unit boundaries.

We also ask for a change in allowable for just this well and its dedicated acreage.

Q. Mr. Greer, have you prepared an exhibit for presentation in this hearing?

A. Yes, sir.

Q. That's what's been marked as Benson-Montin-Greer Drilling Corporation No. 1?

A. Yes, sir.

Q. Would you refer to the first page of this exhibit, a plat, and identify that for the examiner, please.

A. Yes, sir. This is an orientation plat.

The well is located within the Canada Ojitos Unit in the West Puerto Chiquito-Mancos Pool. This plat shows the outline of the unit. The subject well is in Section 16, 25 North, Range 1 West. It's noted with a yellow parallelogram offsetting it and including it.

Q. What acreage do you propose to dedicate to this well?

A. We'd like to dedicate two standard proration units, namely Sections 15 and 16, which would be 1,280 acres.

Q. What is the ownership of each of these proration units?

A. They're all committed to the Canada Ojitos Unit.

Q. So the working interest ownership is common?

A. Yes, sir.

Q. Is this federal land?

A. Yes, sir.

Q. Have you reviewed this proposal with the Bureau of Land Management?

A. Yes, sir.

Q. What has been their response?

A. They've approved it.

Q. Is there any offsetting acreage that is not

within the Canada Ojitos Unit?

A. No, sir.

Q. So there was no offsetting interest owner to whom notice needed to be given of this application?

A. That's correct.

Q. Would you now refer to the gray sheets, the next set of exhibits in Exhibit 1, and I'd ask you to refer to the plat and explain exactly the purpose for today's proposal.

A. This plat shows a part of the Canada Ojitos Unit and lands offsetting the unit to the west. The purpose of drilling the well or sidetracking the existing well -- and that's our plan, not to drill a new well but to sidetrack an existing well -- is to increase production in the area just east of the green outlined area.

We have found from production and testing that the Pressure Maintenance Project is moving oil into the west boundary area of the unit. This is indicated by the graph just opposite this plat. This shows production from wells during the last year; that's December 88-January 89 period in which there was no allowable restriction for Gavilan and West Puerto-Chiquito wells.

We can see that for wells on the row of

sections two miles east of the boundary, a production rate of about 220, 225 barrels per day; also about 200 to 225 barrels per 640-acre section. Nearing the unit boundary, the rate is down to about 100 to 125 barrels a day.

West of the boundary into Gavilan, the production rates are like 10 to 15 barrels a day maximum, with the exception of one well that's real close to the unit receiving some pressure maintenance support.

So the problem that we have is it's the poor oil recovery of Gavilan and the oil pressure of Gavilan may work its way back into the unit. So we would like to increase production east of this low pressure boundary area to try to intercept the oil before it gets into the area which we think may in time have a lowered recovery efficiency than what we have now.

Q. Mr. Greer, would you now refer to the tan page which follows in Exhibit 1, and I first would ask that you explain to the examiner the current status of the A-16 well?

A. Current status, it's producing from a vertical hole, drilled some 20-odd years ago.

Q. What zones is it producing from or has it

produced from?

A. It initially was completed in the C zone and produced about 120,000 barrels of oil. The well initially had a production rate of about 35 barrels per day of stabilized production, which probably is a record for the San Juan Basin for a well of 35 barrels a day of initial production, and produced 120,000 barrels of oil.

Of course, the reason for that is the Pressure Maintenance Project. We had hopes of increasing its production. It had declined from 35 barrels a day to 15 barrels a day; and so two or three years ago, we shut the well in, in preparation of fracing the A and B zones.

We fraced A and B zones with water, water gel, and not only did it not pick up production in A and B zone, we damaged the C zone. So the production rate now is something like about 5 barrels a day.

Q. All the production from this well has been from the Mancos?

A. Yes, sir.

Q. What is the general nature of the Mancos formation in the area?

A. It's a fractured shale. We found the reservoir comprises fractured blocks. Ordinarily,

when we drill the well, it's bottomed in a fractured block. The fractured blocks have tighter permeability than the overall fracture system which surrounds the fractured blocks.

When a well is fraced, sometimes we were successful in hooking up the wellbore with the fracture system; sometimes we weren't. In this instance, we were not very successful.

So our hope here is by drilling in the direction that we think is perpendicular to the main fracture orientation, that perhaps we can intercept fractures with this horizontal wellbore that we were unable to do with the fractured treatment.

Q. All production to date in this well has been from the West Puerto Chiquito-Mancos oil well pool; is that right?

A. Yes.

Q. And it's also been within the Canada Ojitos Unit?

A. Yes, sir.

Q. Would you go to the tan page from this exhibit and review the information contained on this exhibit?

A. The tan page is simply a schematic of equipment in the wellbore. Of particular interest is

the fact that we have 7-5/8 inch intermediate casing run to a few hundred feet above the pay zones between the Niobrara and the top of the line, another 150 or so feet above that.

Our plan then is to cut a window above the 5-1/2 inch liner at approximately 6,000 feet, and from this window drill a well directionally pretty much to the east.

As we reach the A and B and C zones, the hole will be deviated to approximately 90 to 91 and 92 degrees and run horizontally for 1,500 feet or so. Total of about 2,000 feet from the service location is our projected end of the hole.

Q. Mr. Greer, the reason you will be at a 91-degree angle is to keep it within the natural slope of the formation?

A. The formation slopes up to the east from this well, and so it would take a 1 or 2 degree angle above horizontal to stay within or parallel to the beds.

Q. Next go to the next page on Exhibit 1, the blue page, and I'd ask you to review what is shown on this exhibit.

A. We show here the project area, which is 1,500 feet north-south and 2,000 feet east-west. The

well located on the west side of the project area, the dashed -- small dashed lines show the parallelogram within which we expect to keep the wellbore.

We haven't decided exactly on the direction that we want to drill the well. It's generally east. We may want to go a little north of east, maybe a little bit south of east. We're still studying that. But whatever we decide on, we will keep the wellbore within that area.

Q. In your opinion, will this well drain all the acreage that's dedicated to it?

A. Oh, yes, and much more, of course.

Q. Do you request that the well be afforded an allowable equal to the allowable that would be set for each of the two sections dedicated to the well?

A. Yes, sir.

Q. Anything further on this exhibit?

A. I believe that's all. Let's see. The wellbore --

Q. Let's go now to the last page in Exhibit No. 1, the pink page. I'd ask you to explain to Mr. Stogner exactly how you intend to drill this well.

A. We will cut a window at the point marked B on this plat at approximately 6,000 feet, drill the well with only a slight vertical deviation until we

reach about 6,500 feet, and then commence a sharper angle, and then reach horizontal at about 600 feet -- 500 to 600 feet horizontally from the existing wellbore. And from that point with a 90, 91 or 92-degree angle, drill out for another 1,400, 1,500 feet.

Q. Will you run directional surveys on the well to establish the exact location?

A. Yes, sir.

Q. When you complete the well, are you intending to use any particular type of equipment or materials in the well?

A. Well, we're thinking about a very simple completion. We propose to run a slotted liner.

So the formation open to the slotted liner would be from the window at about 6,000 feet, down through the curve, and all the way out to the end of the wellbore. We probably will just have the slots in the liner at a lower depth. Probably the highest point of the slots will be at the A or B zone, and we may even keep the slots down as low as the C zone. But all of the zone open to the wellbore will be within the vertical limits of the West Puerto Chiquito-Mancos Pool, as defined by the formation.

Q. Based on the vertical fracturing in this

reservoir, do you have an opinion as to how much of the Mancos that you may be able to drain with this proposed horizontal well?

A. Well, what we hope with the horizontal well is to increase its productivity. We have found that all of the wells in this area drain their proportional share of the entire Pressure Maintenance Project, which is some 30,000, 40,000 acres.

This well will drain its share of it. The share it will drain will just depend on the capacity of the well, how successful we are in intersecting vertical fractures.

Q. When do you propose to go forward with your plans to actually commence the horizontal drilling?

A. We would plan on doing the drilling next spring. Right now we're thinking about starting in the month of May.

Q. What is the reason for the delay?

A. We just don't want to get into a project like this in the wintertime.

Q. In your opinion, will granting this application be in the best interests of conservation, prevention of waste, and protection of correlative rights?

A. Yes, sir.

Q. Was Exhibit No. 1 prepared by you?
A. Yes, sir.
MR. CARR: At this time, Mr. Stogner, we move the admission of Benson-Montin-Greer Drilling Corporation's Exhibit 1.
HEARING EXAMINER: Exhibit No. 1 will be admitted into evidence.
MR. CARR: That concludes my direct examination of Mr. Greer

DIRECT EXAMINATION

BY HEARING EXAMINER:

Q. Mr. Greer, I'm referring to the pink page. This is your schematic. What will your hole size be coming out of the window?
A. The casing is 7-5/8. We're planning on a 6-3/4 inch hole.
Q. That will be a 6-3/4 inch hole all the way to the end of the hole?
A. Yes, sir.
Q. If I understood that right, you're going to set a liner in the window and have a slotted liner all the way to the end of the hole?
A. Yes, sir. The slots will come from the end of the hole back toward the existing wellbore, perhaps as high as the A zone, but not above that, but the

liner itself will be opened back up into the casing. That will be the seal that we will have on the liner will be at the window.

Q. So none of the curved portion from under the window will be cemented? It will be open hole?

A. Yes, sir, that's correct.

Q. What size of slotted liner will that be?

A. We're toying with either a 5 inch or 5-1/2 inch. We may have to go down to 4-1/2 inch. It will just depend on how we feel we've managed to keep the hole in shape. If it looks like it's a good gauge hole, we'll go with the largest liner we think we can put in.

Q. While drilling the lateral portion of this well, what mud or fluid will you be utilizing?

A. Well, we will probably be continuing our investigation in that respect all the way up until the time we drill the well. We have hopes that -- as you know, there are a lot of horizontal wells being drilled now, and they're using different fluids, and we recognize that we have here a sensitive formation, sensitive to water.

The fact is we fraced the well initially with oil, got reasonably good production, tried fracing the other two zones with water and damaged the

formation. We found other wells we've damaged with water.

We hesitate to use a water-based mud. We're thinking perhaps of an oil-based mud, a lightened fluid. We've considered foam.

To answer your question, we're not completely settled on it.

Q. That will be determined whenever you get to that point?

A. Right.

Q. Has there been a company decided on who will actually be doing the directional drilling portion of this well yet?

A. We've had bids from I believe three different companies, and we're still looking -- we like some of the equipment from one company, some from another. We're still a little undecided on that.

Q. At what point are these wells in this pool put on pump?

A. The history is that, initially, when a pool is first discovered, we put the wells on the pump immediately, and we used submersible hydraulic pumps where we could produce at rates of 400 to 500 barrels a day.

When we commenced gas injection, pressure

maintenance, then with the gas system in place, we moved principally to gas lift. We could lift larger volumes more efficiently.

And so most of the wells went to gas lift. We would have been able to produce wells to depletion with gas lift, except when Gavilan production came along, the production dropped on the west boundary. Then the continuous gas lift system, we were not able to lift the several hundred barrels a day of oil. So then we put some of the wells on electric submersible pumps and hydraulic submersible pump. And our intention is finally, upon completion, to return to plunger gas lift.

Q. How will this well be produced and pumped? What do you plan to utilize?

A. If the well produces as I think it will, we will probably -- it will probably either flow, or we will have gas lift. There's a substantial gas cap in the area now, and some of the wells receive enough of that gas to pull without the help.

Q. If you have to go to gas lift, a string of tubing will be run to what depth in this well?

A. We're thinking now that we would run the tubing to somewhere in the bend of the curve. Naturally, we'd like to get as low as we can. We

don't want to take the chance of having a problem of getting the tubing stuck.

If the well will just clean itself out -- and that's one reason we're planning on a slotted liner. We are not planning to frac the well. We found that sand coming back, we think, would be a very difficult problem to handle. So we have hopes that the wellbore will stay open, that we can run tubing, oh, perhaps to within, oh, 100 feet of the bottom, say, in that part of the curve where -- do you see points E and F? That will be approximately a 45-degree angle at that point.

I think a good place to run it would be probably at about point F.

Q. Referring to the blue portion, your plans are to run perpendicular to the natural fracs in that formation; so, therefore, the fracs run in a north-south direction?

A. Generally, the aerial photos that we've studied, it would appear that we have a set of fractures sort of north-northwest, and then at almost right angles to that. We think the stronger fractures are the more north and south rather than east-west.

We've determined that from interference tests, production and the pressure data, a lot of

which has been reported here to the Commission.

On the other end, there's going to be a strong tendency subsurfacewise, we think, for those fractures, maybe to be parallel to the strike.

At present, the parallel to the strike would be, if we intersect that at right angles, that would be closer to the lower dashed line. If we go parallel to the surface indication fractures, it would be more like the north-dashed line.

I frankly don't know what we'll finally decide on. I really believe we'll decide to cut it in the middle and go due east.

Q. You're not going to get started on this project until spring. Will this well still be on production in the vertical production of the hole?

A. Yes, sir.

Q. Until that time?

A. Yes, sir.

Q. And then the present 5-1/2 inch liner will be pulled and cemented?

A. What we're thinking about, the existing 5-1/2 inch liner is cemented. So we will just put a bridge plug in there, seal it off, and then cut a window up above the existing liner.

Q. So if at any time you choose, you could run

back into the vertical portion of this wellbore into the 5-1/2 inch?

A. We've talked to the directional people about that and other people, and they've all discouraged us from thinking that we have that as a final option. They think it's going to be very difficult once we have sidetracked the hole to get back in the old hole. We've never tried it.

I don't see why it would be so difficult, but they've all discouraged us from thinking that we've got that as an option.

Q. Have they discouraged it because of the whipstock tool being so difficult to pull?

A. No. The whipstock procedure itself -- and we have done whipstock operations ourselves, and that's pretty simple. Cut the window, run the whipstock, and get your deviated hole.

Coming back, most of them like to set a metal tool that helps in the deviation, and that metal tool is cemented in place where it's just pretty hard to go back in and pull it out because of its angle.

HEARING EXAMINER: I have no further questions of Mr. Greer. Are there any further questions of this witness?

MR. CARR: Nothing further, Mr. Stogner.

HEARING EXAMINER: You may be excused.

Does anybody have anything further in Case No. 9715?

Good luck, Mr. Greer.

CERTIFICATE OF REPORTER

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

I, Deborah O'Bine, Certified Shorthand Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Commission of 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 October 31, 1989.

Deborah O'Bine

DEBORAH O'BINE
CSR No. 127

My commission expires: August 10, 1990

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9715, heard by me on 4 October 1989.

Michael E. Stogner, Examiner
Oil Conservation Division

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

9 August 1989

EXAMINER HEARING

IN THE MATTER OF:

Application of Benson-Montin-Greer Drilling Corporation for a horizontal drilling pilot project, special operating rules therefore, and a non-standard oil proration unit, West Puerto Chiquito-Mancos Oil Pool, Rio Arriba County, New Mexico. CASE 9715

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division: Robert G. Stovall
Attorney at Law
Legal Counsel to the Division
State Land Office Building
Santa Fe, New Mexico

For the Applicant:

MR. STOGNER: Call next Case 8715.

MR. STOGNER: Application of Benson-Montin-Greer Drilling Corporation for horizontal drilling -- directional drilling pilot project, special operating rules therefor, and a nonstandard oil proration unit, West Puerto Chiquito Mancos Oil Pool, Rio Arriba County, New Mexico.

MR. STOGNER: Call for appearances.

Nobody here for Benson-Montin-Greer?

MR. STOVALL: Mr. Examiner, there being nobody to appear and not having any reason, I'm going to request on behalf of the Division this case be continued to August 23rd, to determine whether or not Benson-Montin-Greer wishes to pursue this application.

Or we can continue it to September 9th at the Examiner's discretion.

MR. STOGNER: Case Number 9715 will be continued to the Examiner's Hearing scheduled for September 6th, 1989.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C. S. R. DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9715, heard by me on 9 August 1989.

, Examiner
Oil Conservation Division