NEW MEXICO OIL CONSERVATION DIVISION

STATE LAND OFFICE BUILDING

STATE OF NEW MEXICO

CASE NO. 10860

IN THE MATTER OF:

The Application of Armstrong Energy Corporation for an Unorthodox Oil Well Location, Lea County, New Mexico.

BEFORE:

DAVID R. CATANACH

Hearing Examiner

State Land Office Building

November 4, 1993

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 NEW MEXICO OIL CONSERVATION DIVISION:

ROBERT G. STOVALL, ESQ.
General Counsel
State Land Office Building
Santa Fe, New Mexico 87504

FOR THE APPLICANT:

CAMPBELL, CARR, BERGE & SHERIDAN, P.A.
Post Office Box 2208
Santa Fe, New Mexico 87504-2208
BY: **WILLIAM F. CARR, ESQ.**

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EXAMINER CATANACH: At this time, we'll call Case 10860.

MR. STOVALL: Application of Armstrong Energy Corporation for an unorthodox oil well location, Lea County, New Mexico.

EXAMINER CATANACH: Are there appearances in this case?

MR. CARR: May it please the Examiner, my name is William F. Carr with the Santa Fe law firm Campbell, Carr, Berge & Sheridan. We represent Armstrong Energy Corporation, and I have one witness.

EXAMINER CATANACH: Any additional appearances?

Would the witness please stand to be sworn in.

ROBERT MICHAEL BOLING

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

EXAMINATION

BY MR. CARR:

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

A. Robert Michael Boling.

Q. Mr. Boling, where do you reside?

A. Roswell.
Q. By whom are you employed?
A. Armstrong Energy Corporation.
Q. In what capacity?
A. As a consultant geologist.
Q. Have you previously testified before this Division?
A. Yes.
Q. At the time of that prior testimony, were your credentials as a petroleum geologist accepted and made a matter of record?
A. Yes, they were.
Q. Are you familiar with the application filed in this case on behalf of Armstrong Energy Corporation?
A. Yes.
Q. Are you familiar with the proposed well?
A. Yes, I am.
Q. Have you made a geologic study of the area which is involved in this case?
A. Yes, I have.
MR. CARR: Are the witness' qualifications acceptable?
EXAMINER CATANACH: They are.

Q. Mr. Boling, would you briefly state what Armstrong seeks with this application?

A. Armstrong seeks approval of an unorthodox well location for our Mobil Lea State Well No. 4, to be drilled as an oil well to the Cherry Canyon portion of the Delaware formation, in the Northeast Lea Delaware pool, 1155 feet from the south line and 1770 feet from the west line of Section 2, 20 South, 34 East.

Q. Have you prepared certain exhibits for presentation here today?

A. Yes, I have.

Q. Would you refer to what has been marked as Armstrong Exhibit No. 1, identify this, and review it for Mr. Catanach?

A. Exhibit No. 1 is a land plat, showing portions of Township 19/34 and 20/34, with Section 2 highlighted in yellow. The proposed location is shown in the southeast of the southwest of Section 2.

It's in a standard 40-acre location. The yellow is acreage that is controlled by Armstrong through farmout or outright ownership.

The current development of the pool, we have drilled three wells in the southwest quarter

of Section 2, labeled 1, 2 and 3 there, all to the same reservoir that we're shooting for in the unorthodox location.

We have two wells, 1 and 2 in the northeast quarter of Section 2, into the same reservoir also.

The well that is in the northwest of the southeast, labeled Harken Exploration No. 1, was originally drilled by Spectrum 7. It is also a Delaware producer out of a Cherry Canyon sand, approximately 250 feet above the reservoir that we're producing out of, and there's no vertical communication between these reservoirs.

The well in the northeast of the southeast of Section 3, labeled 8, is a Read E. Stevens Mark Federal No. 8. That well has yet to be completed, but it encountered only six feet of the reservoir sand that we're producing from, and the entire six-foot interval is below the apparent oil-water contact.

Q. Mr. Boling, Armstrong is proposing to dedicate the southeast of the southwest of 2, to the well?

A. Yes, sir.

Q. That's a standard 40-acre tract?

A. Yes, sir.
Q. The proposed location is actually encroaching to the north and the west, is that correct?
A. Yes, sir.
Q. So you're only moving toward acreage which is controlled by Armstrong?
A. That's correct.
Q. Since Armstrong is the only operator toward whom the well is being moved, there were no other operators to whom notice of this application needed to be provided, is that correct?
A. That's correct.
Q. Why is Armstrong proposing to drill at this location?
A. We feel that by drilling in the proposed location, we're going to be able to encounter a significant amount of reservoir sand above--significantly more sand above the oil-water contact, than was encountered in the Spectrum 7 No. 2 well, which was the dry hole in the center of the southeast of the southwest of 2.
Q. Let's go now to Armstrong Exhibit No.

2. Could you identify and review that?

A. No. 2 is a stratigraphic cross-section, A to A', west to east, hung on the base of the producing interval, and also has the top of the producing interval marked.

This cross-section basically shows the variability across the southwest quarter of Section 2, in terms of thickness and porosity in the reservoir.

The well on the extreme left is the Read E. Stevens No. 8 well. As you can see, the minimum porosity cutoff for reservoir here is 15 percent. As you see in the well on the left, there is six feet of sand, at the very base of the interval, that exceeds the minimum porosity criteria of 15 percent.

The next well, the Mobil Lea State No. 2, has 97 feet of porosity greater than 15 percent, and has been completed, as the perfs indicate, in the upper portion of the reservoir.

The next well is our proposed location, showing that we anticipate the top of the producing interval and, therefore, the thickness is to be approximately the same in the Mobil Lea State No. 4 as we encountered in the Mobil Lea

State No. 2.

The next well is the Spectrum 7 Mobil State No. 2, which is the dry hole in the southeast of the southwest of 2, and this well has 76 feet of porosity greater than 15 percent in it.

The last well is the Spectrum 7 No. 8 well, which shows they have 18 feet of the interval that we're producing in left. And, as you can see, the Spectrum 7 No. 1 has produced in the interval between 5640 and 5700, much above the interval that we're producing.

Q. Let's go now to the next cross-section. It's also a cross-section A-A'. Exhibit No. 3. After we get that out, could you explain what the difference is in this cross-section from the one you just presented?

A. Exhibit 3 are the same wells, also stratigraphic cross-sections hung on the base of the producing interval, but the exhibit uses the resistivity log so that we can indicate the oil-water contact in the reservoirs.

Again, on the far left, the Mark Federal No. 8, you can see that their six-foot interval falls entirely below the oil-water

contact, whereas the Mobil Lea State No. 2 has 63 feet of reservoir sand above the oil-water contact.

We anticipate a little less than that in the Mobil Lea State No. 4, but much more than in the Spectrum 7 No. 2 dry hole, which only has 18 feet of sand above the oil-water contact.

The dry hole, in the southeast of the southwest, is 18 feet above the oil-water contact, and the Spectrum 7 No. 1, as you can see, its 18 feet of porosity is entirely below the oil-water contact.

Q. Let's go now to your structure map, Exhibit No. 4.

A. Exhibit 4 is a structure map constructed on the base of the producing interval. It shows the proposed location.

The base of the productive interval we anticipate will be approximately a -2310 in the proposed location, approximately 10 feet high on the base of the interval to the Spectrum 7 No. 2 dry hole, which is in the southeast of the southwest, and approximately 10 feet high to the base of the productive interval in our Mobil Lea State No. 2 well.

Q. All right. Let's go now to Exhibit 5, the net porosity isopach?

A. Exhibit 5 is a net porosity isopach map, with porosity in excess of 15 percent. As you can see, the dry hole in the southeast of the southwest has 74 feet of sand above 15 percent porosity.

I anticipate that, in the proposed location, we should have 95 feet of sand. This 20 feet of sand that we're going to gain will all be above the oil-water contact.

So, referring back to the cross-section in Exhibit 3, there were 18 feet of sand above the oil-water contact in the dry hole in the southeast/southwest. With this 20-foot gain, we should have 38 feet of reservoir sand above the oil-water contact in the proposed location.

Q. All right, Mr. Boling, let's go to Exhibit No. 6, and would you now review the structure on the top of the producing interval?

A. Exhibit 6 is a structure map on the top of the productive interval. The purpose of mapping the top of the interval is to serve as a check on whether or not the other two maps make sense. If you take the base, the top, which is

at a -2190, subtract it from the base which we anticipate to be 2310, you get an interval of 120 feet.

We know that, in this reservoir sand, there's approximately eight feet at the top and 15 to 20 feet on the base of the sand that is less than 15 percent porosity. If you take that 23 feet away from 120, you end up with about 97 feet of interval that should be porosity, and that is what the isopach map indicates. That's just a check, to kind of tie your work back together and make sure you haven't made an error.

Q. Basically, what Armstrong is doing is proposing this unorthodox location to maximize this, from a geological point of view?

A. That's correct. We hope to encounter this 20 feet additional sand, which will allow us to recover more reserves from this location and not waste any of the reserves.

Q. In your opinion, is this location necessary to produce the reserves in the Delaware under this acreage?

A. Yes.

Q. In your opinion, is this the best available location in the southeast of the

southwest of Section 2?

A. It is.

Q. In your opinion, will approval of this application and the drilling of this well enable Armstrong Energy Corporation to produce reserves that otherwise will not be recovered?

A. Yes.

Q. Will correlative rights be protected if this application is approved and the well drilled?

A. Yes.

Q. Would the rights of any other interest owner be impaired by the unorthodox location?

A. No.

Q. How soon do you anticipate commencing the well?

A. We have a rig available that will become available in approximately 22 days.

Q. Were Exhibits 1 through 6 prepared by you?

A. Yes, they were.

MR. CARR: At this time, Mr. Catanach, we move the admission of Armstrong Energy Corporation Exhibits 1 through 6.

EXAMINER CATANACH: Exhibits 1 through

6 will be admitted as evidence.

MR. CARR: That concludes my direct examination of Mr. Boling.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Boling, just to kind of review, basically what you've said is at your proposed location, you're going to gain about 20 feet of sand thickness above the oil-water contact?

A. That's correct.

Q. Is that relative to the No. 2 well?

A. That's relative to the dry hole labeled No. 2 in the southeast/southwest.

Q. Relative to the closest standard location, do you have an estimate of what you might be gaining?

A. Yeah. In a location 330 or 990 from the south and 1650 from the west, I anticipate that we would gain 10 additional feet of sand and thickness but, because of the topography, we would only get five feet net gain above the oil-water contact. So, we would only go from 18 to 23 feet, as opposed from 18 to 38 feet, in a standard location.

Q. The No. 2 was a dry hole since it was

drilled?

A. Yeah. The No. 2 was drilled several years prior to our commencement of our development out there, and an upper interval was tested in that well and tested water. The interval that we're producing from was not tested in that wellbore.

Q. Is it possible that well could be productive from the interval you're producing from?

A. Yes. I anticipate that it would be.

Q. Why would Armstrong choose to drill a new well in that quarter section?

A. There is no apparent logical reason for the well not to have produced in the interval that was tested, based on well performance in the area. The fact that the sand that was tested in the well appears to be reservoir quality, in terms of porosity and resistivity response, and the fact that they got water, led us to believe that there was, most probably, a bad cement job in that hole and we did not want to take a risk of not being able to get off a successful completion.

EXAMINER CATANACH: I don't have

anything else.

MR. CARR: We have nothing further in this case, Mr. Catanach.

EXAMINER CATANACH: There being nothing further in this case, Case 10860 will be taken under advisement.

(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. 10860, heard by me on November 4 1993.

David R. Catanach, 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 November 11, 1993.

CARLA DIANE RODRIGUEZ, RPR
CSR No. 4