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. 10838

APPLICATION OF HARVEY E. YATES COMPANY

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: David R. Catanach, Hearing Examiner

October 7, 1993

Santa Fe, New Mexico

This matter came on for hearing before the Oil Conservation Division on October 7, 1993, at Morgan Hall, State Land Office Building, 310 Old Santa Fe Trail, Santa Fe, New Mexico, before Deborah O'Bine, RPR, Certified Court Reporter No. 63, for the State of New Mexico.

I N D E X

October 7, 1993
Examiner Hearing
CASE NO. 10838

E X H I B I T S

A P P E A R A N C E S

FOR THE DIVISION: ROBERT G. STOVALL, ESQ.
General Counsel
Oil Conservation Commission
State Land Office Building
310 Old Santa Fe Trail
Santa Fe, New Mexico 87501

FOR THE APPLICANT: LOSEE, CARSON, HAAS & CARROLL
P.O. Drawer 239
Artesia, New Mexico 88210-0239
BY: ERNEST L. CARROLL, ESQ.

EXAMINER CATANACH: We're going to skip the other Santa Fe case, 10775. That's going to go to the end of the docket because that is opposed, and we're going to go to Case 10838.

MR. STOVALL: Application of Harvey E. Yates Company for an unorthodox oil well location, Lea County, New Mexico.

EXAMINER CATANACH: Are there appearances in this case?

MR. CARROLL: Yes, Mr. Examiner. I'm Ernest L. Carroll of the Artesia law firm of Losee, Carson, Haas & Carroll, and I am here today on behalf of the Harvey E. Yates Company, and I have two witnesses.

EXAMINER CATANACH: Additional appearances? Will the two witnesses please stand and be sworn.

(Witnesses sworn.)

MR. CARROLL: We'd first call Miss Darr to the stand.

SHARI DARR,

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

EXAMINATION

BY MR. CARROLL:

Q. Would you please state your full name and by whom you are employed for the record.

A. Shari Darr and Harvey Yates Company.

Q. How are you employed by the Harvey E. Yates Company?

A. As their land manager.

Q. Miss Darr, have you had occasion to previously testify before the Oil Conservation Division and have your credentials accepted as a professional petroleum landman?

A. Yes, sir, I have.

Q. Are you familiar with the facts surrounding this particular application made on behalf of Harvey E. Yates?

A. Yes.

MR. CARROLL: Mr. Examiner, I would tender Miss Darr as an expert in the field of petroleum land management.

EXAMINER CATANACH: Miss Darr is so qualified.

Q. (BY MR. CARROLL) Miss Darr, would you briefly state for the record what this application is that's being made by the Harvey E. Yates Company?

A. We are seeking authorization to drill our Young Deep Unit No. 21 at an unorthodox oil well

location.

Q. You have prepared certain exhibits, have you not, for presentation here today?

A. Yes.

Q. Would you turn to Exhibit No. 1. Would you please identify for the record what that exhibit is, and then if you would relate the significance to this application.

A. Exhibit No. 1 is a basic land plat, and we've placed a border around the unit boundaries which the unit is in Township 18 South, Range 32 East, and it covers the south half of Section 3, the south half of Section 4, and all of Sections 9 and 10.

We've placed on green arrow on this plat indicating the unorthodox well location.

Q. This particular Young Deep Unit, this unit is operated by Harvey E. Yates Company, is it not?

A. Yes, it is.

Q. This particular unit actually has more than one horizon unitized; is that correct?

A. Yes.

Q. What are the horizons that are unitized for purposes of this?

A. There's a Wolfcamp, a Bone Spring, and a Delaware.

Q. This particular well that we're seeking this application with reference to, what is the projected horizon for it?

A. The Wolfcamp.

Q. Would you turn to your Exhibit No. 2? Would you identify what this exhibit is and its significance for the record?

A. This is a plat prepared by our drafting department, and it uses the same border and outlines the unit, and we have indicated the Wolfcamp participating area by not crosshatching it.

Q. So the area in which this projected well, this No. 21 well, is going to be drilled is within the participating area of the Young Deep Unit for the Wolfcamp formation?

A. It is, and it's indicated once again by a green arrow.

Q. This particular well that is being sought to be drilled, this No. 21 well, that is the -- it is within -- it's being drilled in what one would normally call the five spot location, is it not?

A. It is.

Q. It's going to be drilled in amongst four other wells that Harvey E. Yates presently operates?

A. That's correct.

Q. Exhibit No. 3, would you turn to that? What is Exhibit No. 3?

A. Exhibit No. 3 shows what would be the northeast quarter of the southwest quarter of Section 3. We've blown it up. And the broken line square in the middle shows where an orthodox well location would be within that quarter section, quarter quarter. And if you'll look in the lower left-hand corner there, we've indicated where our well will be, and it's not within that orthodox area.

Q. So basically this plat is just to depict how this well is unorthodox with respect to this application?

A. That's correct.

Q. For this particular area in spacing regulations, it should have been drilled 330 off of all the quarter quarter lines; is that correct?

A. That's correct.

Q. With respect to the notice, I believe that you contacted the Division and was advised that, since this was within the unit that's being operated and within the five spot location, no other notice was necessary to be given?

A. That's correct.

Q. From the land standpoint, the application,

the granting of this application, would it prevent waste and protect correlative rights, in your opinion?

A. Yes. Yes, it would.

MR. CARROLL: Mr. Examiner, I would move admission of Harvey E. Yates Company's Exhibits 1, 2, and 3.

EXAMINER CATANACH: Exhibits 1 through 3 will be admitted as evidence.

MR. CARROLL: I would pass the witness at this time

EXAMINATION

BY EXAMINER CATANACH:

Q. Miss Darr, I am a little unclear on your Exhibit No. 2. You said the participating Wolfcamp area is shown as what?

A. Not being crosshatched.

MR. CARROLL: Mr. Examiner, at one time part of the area in this unit was deleted from the Wolfcamp participating area. And if you see down in the legend, the crosshatched area on the western edge is what was deleted from the Wolfcamp. That does not affect this location.

Q. (BY EXAMINER CATANACH) Your Exhibit No. 3 shows well No. 10. The proposed well No. 21 will actually be in the same proration unit as the No. 10,

the same 40 acres?

A. It will be right in the middle of that quarter section almost.

MR. STOVALL: You're almost in four proration units; right?

THE WITNESS: Right. It will include a bit of that proration unit.

Q. (BY EXAMINER CATANACH) So it will actually share the proration unit that the No. 10 is occupying?

A. Part of it, yes.

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

MR. CARROLL: Mr. Brooks.

LARRY BROOKS,

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

EXAMINATION

BY MR. CARROLL:

Q. Would you please state your name and occupation and by whom you're employed for the record.

A. Larry Brooks, Harvey E. Yates Company.

Q. How are you employed?

A. Geologist.

Q. Mr. Brooks, have you had an occasion to

testify prior to this hearing for the Division or Commission and have your credentials as petroleum geologist accepted?

A. I have.

Q. Mr. Brooks, are you familiar with the geological facts concerning this application that is being made by Harvey E. Yates today?

A. Yes, I am.

MR. CARROLL: Mr. Examiner, I would tender Mr. Brooks as an expert in the field of petroleum geology.

EXAMINER CATANACH: Mr. Brooks is so qualified.

Q. (BY MR. CARROLL) Mr. Brooks, you have prepared certain exhibits today, have you not?

A. Yes.

Q. Mr. Brooks, I don't know, did you need to comment with respect to Exhibit No. 2, first of all, before you got into your exhibits?

A. Yes, I would. Basically, surrounding the Wolfcamp participating area colored in blue, you'll see noncommercial Wolfcamp tests. In the center of the participating area, you'll see two triangles. Those are proposed recompletions to the Wolfcamp. And then one circled, which is an economic Wolfcamp

producer from the AC and AF horizon.

Basically, what it shows is a limit to the extent of the Wolfcamp trend to the north, to the west, and to the south. I will get into this later, but there are debris flows that trend from northwest to southeast.

Q. Mr. Brooks, could you just summarize, first of all, what is the thinking behind, the motivation behind seeking in drilling this particular well at this unorthodox location?

A. It satisfies really two criteria. One to economically intercept the Wolfcamp carbonate reservoir, which is based on considerable seismic control in the area, and the anomaly maps -- isochron maps of those anomalies.

The other thing is to efficiently set up our five spot for the Bone Spring waterflood. Had this been just a Bone Spring depth to the B zone carbonate, it would be fulfilling the rule being within ten foot off the lease line to set up a five spot.

Q. Mr. Brooks, if you would turn now to your first exhibit, I believe it's Exhibit No. 4, and if you would identify what it is and then its significance.

A. Exhibit No. 4 is an isochron map from the Penn Shale to the AE. This is an anomaly within that time unit.

Basically what it shows is the seismic control. We have five lines, and there are two lines that are off the scope of this map that control this prospect. Isochron units there are roughly equivalent to 5 mils equal 47 feet.

What I've done is I've contoured the thickest part of the anomaly. If you'll notice in the northwest northwest of 10, the Young Deep No. 1 is at a 35 mil contour, and the proposed location, the Young Deep 21, is just in a 40 mil contour.

Going north of that, you'll see in the section southwest of the northwest, it's a Marathon well. They had shows, but in the AF and AC and AE they were tight. And it also shows that right under 30 mils is your economic carbonate growth limit for this reservoir.

Q. Is there anything else that you'd like to comment on with respect to this exhibit?

A. No.

Q. Would you turn to your next exhibit and identify it also for the record -- this would be Exhibit 5 -- what it is and then its significance.

A. Exhibit 5 is another isochron map. This is a more limited isochron map to the main anomaly. This is the top of the AF to the base of the AG.

Basically what this shows is the Young Deep 1 is within a 30 mil closed contour. This closed isochron has about 40 mils of closure. It has a velocity sag underneath setting up the debris flow. This would show the high energy access in the main fan of your debris load.

Q. Anything else that you'd like to comment with respect to this?

A. No.

Q. If you would turn to your Exhibit No. 6 and identify it for the record and then its significance.

A. Exhibit No. 6 is a stratigraphic cross-section A-A'.

MR. STOVALL: Mr. Brooks, if you give us a sheet, we need to unfold it.

THE WITNESS: Exhibit No. 6 is a cross-section A-A' which runs roughly west to east from our Young Deep 20 through the Sinclair well just out of the unit in Section 2. What I've done here is correlated AB to the Penn Shale.

The Young Deep 1 well is our present completion, and it is completed from perfs 10,406 to

446 and 10,590 to 10,600. This well was acidized, sort of treated tight, left it shut in overnight, and came on, two swab runs and kicked off flowing. It was capable of 1,000 barrels a day, but it's completed at the top allowable.

Basically, you'll see from the AF zone, from 10,590 to about 10,780 a real thick dolomite that has up to 11 percent porosity. This is the anomaly that's referred to in Exhibit 5 as the AF to AG anomaly.

We feel we treated into this anomaly, and this is what is so critical to the location of the Young Deep 21. As closed within that contour, it is only about 120 to 143 acres.

These things are very linear debris flows. They don't fan out real wide and cover vast sections of land. They're narrow in troughs, subsurface troughs, and they fill in the lows in the Young Deep 1.

This is stratigraphic; so it looks like it's real thick. If it was hung structurally, the Young Deep 1 is at the lowest point in that channel.

Q. Anything else you'd like to comment on with respect to this?

A. Basically, it shows all the other

miscompletions, the zones that were tested in the Wolfcamp and tight. The Young Deep 1 is the only current Wolfcamp producer in the Young Deep Unit.

Q. If you would turn to your next exhibit, Exhibit 7, and identify it for the record.

A. Exhibit 7, again, is a cross-section, a stratigraphic cross-section, from north to south from the Love "3" Federal #1 to the Young Deep 1 to the Young Deep 29, showing the same zones annotated, any perforations or tests, and the results.

Again, the Young Deep 29 had tested the uppermost carbonate perfs in the AC, and it completed initially for 816 barrels a day for about a half day and died and was tight. There was no economic production ever established.

The Love "3" Federal #1 drilled by Marathon tested all zones and had good shows but was tight also, lacked reservoir quality.

Q. Mr. Brooks, based upon your geological interpretation of this area, is it your opinion that if this well is not drilled at this unorthodox location, that in all likelihood it would miss the productive area of the Wolfcamp in this particular region?

A. That is correct. If you see the narrow

necking of Exhibit 5, the isochron in AF to AG, you'll see you have to pretty much be within 30 mils. Twenty-five mils or less results in a tight completion.

Q. In your opinion, Mr. Brooks, is it necessary in order to protect the correlative rights of the owners of the rights here and to prevent waste to grant this application?

A. It is.

Q. Mr. Brooks, is there anything else that you would care to inform the Division Examiner of with respect to this application? Anything I've overlooked?

A. No.

MR. CARROLL: Mr. Examiner, I would tender admission of Mr. Brooks's Exhibits 4 through 7.

EXAMINER CATANACH: Exhibits 4 through 7 will be admitted as evidence.

MR. CARROLL: Mr. Examiner, at this time I would pass the witness.

MR. STOVALL: Mr. Examiner, before you start, I've got a question.

EXAMINATION

BY MR. STOVALL:

Q. I want a brief geologic education here, if

you would, Mr. Brooks.

A. Sure.

Q. What is an isochron, and what's a mil?

A. Isochron is a unit of equal time. The anomaly is any change within that unit that can be correlated back to producing intervals.

What we have here, and you'll notice the cross-sections go from AC to Penn Shale, I've correlated all six seis lines that run across this prospect, and they are anomalous to what oil field jargon would be called footballs. Okay? This is a bifurcation of a constant peak and separating into a doublet. This doublet encapsulates top and bottom of the debris flow. This is a significant anomaly in seismic evaluation.

The zone that you see, the AF zone in the Young Deep 1 is the thickest part of that doublet. Okay? You're coming along, tracking railroad-track type seismic lines, and all of a sudden you have a bifurcation, and an amplitude change is considered to be an amplitude anomaly. It is that anomaly that we're searching for on seismic to delineate these narrow and small Wolfcamp trends.

The basic environmental setting is, you have a Wolfcamp shelf to the northwest that runs to

the northwest of the prospect. It runs southwest to northeast. Debris flows bypass in a northwest to southeast manner along submarine canyons, topographic low expressions. This debris is a limestone to dolomite. It can vary.

The fact is it's being deposited on shales that are soft, sediment at the time of deposition, not exposed to marine. Debris coming off the shelf is faster in speed than, say, Young Deep-Bone Spring carbonate which spreads out on sand. You can't incise too much in sand because you have a hardness of sand that's different than the carbonates.

In this case, you have soft shales that can be pushed out of the way quite easily in narrow troughs. So the energy efficiency of moving these debris flows into the basin can cover greater distances.

Q. In other words, it's a seismic way of depicting the shape or thickness of the reservoir?

A. Exactly. They can be converted to isopach maps and integrating well control, which have been done. Roughly, where you see 30 mils, multiply it by about 9.7, 9.5, and it will give you about 300 foot of thickness, 280 feet of thickness.

That's gross interval. You'll net out of

that about 120 foot of clean carbonate in any single debris flow because you've got some interbedded shales that are below seismic resolution of 14 mils, 13 mils.

MR. STOVALL: I don't consider myself an expert, but at least I've got a better feeling.

EXAMINATION

BY EXAMINER CATANACH:

Q. I thought you testified, Mr. Brooks, that you wanted to stay on the bottom side of the 25 line?

A. No, no, no. I want to stay within the thickest part of that anomaly. Anything out of that -- if you'll refer to both exhibits. At 26, 27 mils in the Young Deep 29, this is in Exhibit 4, resulted in a tight well.

If you look at the Section 3, between 28 and 29 mils of the Marathon Love well was also tight. They had more shale within that package.

By subsurface mapping, this 35 mils that we had in the Young Deep 1 was a successful carbonate completion. We stand to be at 40 mils at the Young Deep 21.

Other tests that were tight, you look over here to the southwest at the Young Deep 20, it's within the 25 to 30 mil range, and it is also tight in the carbonate.

On Exhibit 5, you'll notice that we'll be within 30 mils. Now, this is a more limited isochron. This is limiting it to the limit of resolution of that thickness, taking it out of the zone that's immediately above it. And that limits it more to within the 25 mil -- actually, 30 mil window. But that 30 mils is a single zone.

The 40 mils is the AE right above it, which is another 100 foot of carbonate.

Q. Am I correct in understanding that the only production within the unit in the Wolfcamp now is from the No. 1 well?

A. That's correct. We have tested three other wells, the Young Deep 31, the Young Deep 29, and the Young Deep 20. The only other two wells that have sufficient carbonate to really test would be really the 3-4. The 4-1 has a zone in it, but it's really thin. It may end up being another part of the deleted acreage within the participating area.

Q. The rest of these wells are all Bone Spring producers?

A. That's correct.

Q. And you ultimately plan to set up a waterflood in the Bone Spring?

A. That's correct.

Q. Do you know when that's going to occur?

A. We're under pressure maintenance at this point. We do have Socorro PRRC doing an inverse modeling study right now, and we should have our results within a month or two, but it is eventually moving to five spot.

Q. There is a pressure maintenance underway at this time?

A. Um-hm, has been for several years. In fact, the Young Deep 1 was an injector, and before plugging it, I evaluated the Wolfcamp for recompletion. We then changed the flood pattern to the Young Deep 3-1.

Q. Would you anticipate that well being a dual completion?

A. No, I wouldn't at this point, no.

Q. You're going to deplete the Wolfcamp first?

A. Exactly, since the waterflood is down the road.

Q. Now, within your -- looking at either your Exhibit 4 or 5, you think the productive area within the AF and AG zones is going to be within, as you say, the 25?

A. No. I feel that the productive interval on Exhibit 5 will be between 27 and anything greater than

30. 30 is a producer; okay?

Q. So anything greater than 27?

A. Yeah, 27 because 24 is getting on the edge, and you're getting pretty risky there. You look at 29 on Exhibit 5, it's only about 8 mils of that AF zone.

Looking on Exhibit 4, you can see you had 27 mils of total isochron, and it was tight. You look up to the Marathon well to the north, you had 27, 28 mils, and it was tight.

So now you're pushing it up to a minimum of 30 mils in one exhibit and 27 in another, remembering that the one that shows 27 mils is the actual debris flow itself. And from evidence it shows that 27 mils of gross carbonate is ineffective as a Wolfcamp producer. You can deduce that 27 mils to 30 mils of a single carbonate, we have experience over to several fields to the east where if you don't have 100 foot of clean carbonate, it's tight. And it's also Wolfcamp, and it's from these zones.

Q. So at a 27 in terms of thickness, you're looking at, did you say -- what was the conversion?

A. Twenty-seven times 9.5, about 230 feet of gross anomaly. Of that, you'll net out about 100 and some feet of carbonate because you've got some shales that are below resolution.

Q. And at your proposed location, you're going to have approximately, what do you think?

A. Two hundred and eighty-five feet plus of gross carbonate, of which I expect about 130 foot of clean carbonate with porosity.

Q. Now, you could drill a well at a standard location, but you're really trying to get that location at the 40-acre, five spot pattern?

A. Right.

Q. That's probably the main consideration?

A. That would be the main consideration. Otherwise, if we didn't do that, we could go down to the south and drill between the 7 and the 6, and it would probably even be thicker, but this, like I said, it satisfies the two criteria. We really are wanting to set up a flood, and we can't see leaving the Wolfcamp behind in the process.

EXAMINER CATANACH: I don't have anything else. Anything else? If there's nothing else, the witness may be excused. Anything further?

MR. CARROLL: Mr. Examiner, that completes our case.

EXAMINER CATANACH: There being nothing further, Case 10838 will be taken under advisement.

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 I caused my notes to be transcribed under my personal supervision, and that the foregoing transcript is a true and accurate record of the proceedings of said hearing.

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 16, 1993.

Deborah O'Bine

DEBORAH O'BINE
CCR No. 63

OFFICIAL SEAL
Deborah O'Bine
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires: Sept. 19, 1994

October 7
David A. Catanach

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