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:	
APPLICATION OF YATES PETROLEUM CORPORATION FOR AN UNORTHODOX GAS WELL LOCATION TO ACCOMMODATE THE REDEDICATION OF ACREAGE FOR GEOLOGIC REASONS, LEA COUNTY, NEW MEXICO	CASE NOS. 12,130
APPLICATION OF YATES PETROLEUM CORPORATION FOR EXTENSION OF THE VERTICAL LIMITS OF THE SAND SPRINGS-ATOKA GAS POOL AND FOR SPECIAL POOL RULES, LEA COUNTY, NEW MEXICO	and 12,128 (Consolidated)

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

ORIGINAL

BEFORE: MARK ASHLEY, Hearing Examiner

April 1st, 1999

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MARK ASHLEY, Hearing Examiner, on Thursday, April 1st, 1999, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

* * *

I N D E X

April 1st, 1999
Examiner Hearing
CASE NOS. 12,130 and 12,128 (Consolidated)

* * *

E X H I B I T S

Applicant's	Identified	Admitted
Exhibit 1	8	14
Exhibit 2	8	14
Exhibit 3	9	14
Exhibit 4	10	14
Exhibit 5	9, 11	14
Exhibit 6	20	25
Exhibit 7	21	25
Exhibit 8	21	25
Exhibit 9	22	25
Exhibit 10	22	25

* * *

A P P E A R A N C E S

FOR THE DIVISION:

RAND L. CARROLL
Attorney at Law
Legal Counsel to the Division
2040 South Pacheco
Santa Fe, New Mexico 87505

FOR THE APPLICANT:

CAMPBELL, CARR, BERGE and SHERIDAN, P.A.
Suite 1 - 110 N. Guadalupe
P.O. Box 2208
Santa Fe, New Mexico 87504-2208
By: WILLIAM F. CARR

* * *

WHEREUPON, the following proceedings were had at 9:27 a.m.:

EXAMINER ASHLEY: At this time the Division calls Case 12,130.

MR. CARROLL: Application of Yates Petroleum Corporation for an unorthodox gas well location to accommodate the rededication of acreage for geologic reasons, Lea County, New Mexico.

EXAMINER ASHLEY: Call for appearances.

MR. CARR: May it please the Examiner, my name is William F. Carr with the Santa Fe law firm Campbell, Carr, Berge and Sheridan. We represent Yates Petroleum Corporation in this matter, and I have two witnesses.

I would also request, Mr. Examiner, that you also call at this time Case Number 12,128. The cases are interrelated, and we would request that they be consolidated for the purpose of hearing.

EXAMINER ASHLEY: Okay, the Division also calls Case 12,128.

MR. CARROLL: Application of Yates Petroleum Corporation for extension of the vertical limits of the Sand Springs-Atoka Gas Pool and for special pool rules, Lea County, New Mexico.

EXAMINER ASHLEY: Call for appearances? Is there any others?

MR. CARR: If not, Mr. Examiner, at this time we call Eric Cummins.

EXAMINER ASHLEY: Will the witnesses please stand and be sworn?

(Thereupon, the witnesses were sworn.)

ERIC CUMMINS,

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 you state your name for the record, please?

A. Eric Cummins.

Q. Will you spell your last name?

A. C-u-m-m-i-n-s.

Q. Where do you reside?

A. Artesia, New Mexico.

Q. By whom are you employed?

A. Yates Petroleum Corporation.

Q. Mr. Cummins, what is your position with Yates Corporation?

A. Geologist.

Q. Have you previously testified before this Division?

A. No, I have not, sir.

Q. Could you summarize for the Examiner your

educational background?

A. I have a bachelor of science degree in geology from New Mexico State University in 1988, master of science in geology from the University of Southwestern Louisiana, 1990.

Q. Since graduation in 1990, for whom have you worked?

A. I worked for Texaco Exploration and Production in New Orleans, Louisiana, through 1994, for Western Atlas C&P Services in Houston, Texas, till June, 1996, and until that time I've been with Yates Petroleum -- since that time I've been with Yates Petroleum.

Q. Mr. Cummins, are you familiar with the Applications filed in each of these cases?

A. Yes, I am.

Q. And have you made a geological study of the area which is the subject of the Applications?

A. Yes, I have.

Q. Are you prepared to present the results of your work to the Examiner?

A. Yes, I am.

MR. CARR: We would tender Mr. Cummins as an expert witness in petroleum geology.

EXAMINER ASHLEY: Mr. Cummins is so qualified.

Q. (By Mr. Carr) Mr. Cummins, would you briefly

summarize what it is that Yates Petroleum Corporation seeks in these cases?

A. Yates seeks authorization to change the spacing and proration unit dedicated to its Sand Springs State Well Number 1, located 330 from the north line, 1650 from the west line in Section 11 of Township 11 South, Range 34 East, in the Atoka and Morrow formations, Sand Springs-Atoka Gas Pool, from a north-half to a west-half spacing and proration unit.

We also seek approval of an unorthodox gas well location for the Sand Springs State Well Number 1 for the west-half spacing unit, and also an order extending the vertical limits of the Sand Springs-Atoka Gas Pool, to include both the Atoka and Morrow formations, and for issuance of special pool rules for the expanded pool, including provision for a second gas well on each standard spacing and proration unit.

Q. How is the location for the Sand Springs State Com Number 1 unorthodox?

A. It's too close to the north line of the section.

Q. It was unorthodox when it was originally drilled, was it not?

A. That is correct.

Q. But now if you are able to reorient the spacing unit, you're going to be, based on the rules, even further

encroaching on the acreage to the north?

A. That is correct.

Q. Let's go to Exhibit Number 1, and I'd ask you to just identify that and review the information on this exhibit for the Examiner.

A. Exhibit Number 1 is a land plat in the immediate area. It shows -- and the red dot is the Sand Springs "ASU" State Number 1. It shows other Yates acreage in the area, also other owners and operators in the area.

The yellow outline is the current proration unit. The orange outline is the proposed amended proration unit.

Q. What are the current boundaries for the Sand Springs-Atoka Gas Pool?

A. All of Section 1 and the south half of Section 2.

Q. Is Exhibit Number 2 a notice affidavit confirming that notice of these Applications has been provided to all affected parties?

A. Yes, it is.

Q. And to whom was notice provided?

A. Notice was provided to all operators within one mile of the proposed pool boundaries and all parties affected by the unorthodox well location.

Q. What is the status of the ownership throughout Section 11?

A. Section 11 has common ownership, Yates Petroleum,

et al., 100 percent. Therefore, reorientation of the proration unit will not result in the adjustment of any of the owners' interests in the area.

Q. Let's go to Exhibit Number 3. What is this?

A. Exhibit Number 3 is a stratigraphic cross-section, A-A', through the north -- east-west, through the northern part of the area.

I would also at this time refer you to Exhibit Number 5, which is a net channel sand map. It has the two cross-sections that I'll refer to laid out on the map.

Q. The traces for the cross-section are shown on Exhibit 5?

A. That's correct.

Q. All right, let's go to cross-section A-A', and I'd ask you to review that.

Q. Cross-section A-A' is a stratigraphic cross-section east-west through the northern part of the area. The westernmost well in Section 10 is the Mobil State "GG" Number 1. It goes east through the three wells currently in the north half of Section 11 and north to the Yates Tenneco "ADP" State Number 1 in the southeast corner of Section 2.

The cross-section shows the location of basal Atoka-Morrow channel sands present in the north half of Section 11. It shows that in Section 10, the Mobil State

"GG" Number 1, on the left side of the cross-section, the sands are not present. And also on the farthest right well, the Yates Fed Tenneco "ADP" State Number 1, the sands are not present.

Q. Anything else with this exhibit?

A. No, there's not.

Q. All right, let's go to the southern cross-section, B-B'.

A. Cross-section B-B' is a stratigraphic cross-section through the southern part of the area. It extends from the J.M. Huber Gulf State A 1 in the southeast corner of Section 23, east to Section 25, to the Yates Petroleum Carper McAlester Number 1, and northeast to the Bogel Farms State Number 1 in Section 13.

This again shows the presence of the basal Atoka-Morrow channel sands in the center part of the cross-section, but not present on either side, constraining the width of the channel sands.

Q. Mr. Cummins, can you explain to the Examiner and show the Examiner why it is that Yates is requesting an order that combines the Atoka and the Morrow formations in this area?

A. Yes, if you'll refer to, again, cross-section B-B', on the top of the cross-section I've marked the top of the Atoka formation. From the top of the Atoka, down to

the top of the Mississippian Chester formation, is a section of sandstone, shale and limestone that is fairly consistent, and there is not a reliable geologic marker on which to pick the top of the Morrow formation.

Q. Let's go now to Exhibit 5, and I'd ask you to review the information on the isopach map for the Examiner.

A. Exhibit 5 --

Q. Your net channel sand map.

A. -- is a net channel sand map through the area. It shows the three wells that you've seen previously on cross-section A-A', in the north half of Section 11, that have the basal Atoka-Morrow channel sands present. And to the south, the well referred to in cross-section B-B', in the northwest quarter of Section 25, that also has the basal Atoka-Morrow channel sands present.

It also shows other control in the area, that we're deep enough to penetrate the section but did not have any of the channel sands present, therefore constraining the width of the channel, and the contours represent my interpretation of the orientation of the channel sands.

Q. Mr. Cummins, I'd like you to explain to the Examiner the benefits that will result from reorienting the spacing units within Section 11, the standup units proposed by Yates. You might want to refer to Exhibit Number 1 again, as you review that.

A. Yes. Yates desires to re-enter one of the wells that are in the northeast corner of Section 11, but we're currently restricted because of the proration unit. We would like to reorient the proration unit to a west half, to allow us to re-enter one of the other wells in the northeast quarter of the section. It would be the most economical way to get a second well in the section and result in more efficient drainage of the remaining reserves.

Q. Do you know at this time if there are sufficient reserves in this pool to justify drilling a second well in Section 11?

A. No, sir, we at this time do not know.

Q. And by being able to reorient the spacing unit, instead of drilling a new well, you would be able to re-enter and recomplete in the existing well in the southeast of the northeast?

A. That's correct.

Q. Would you just generally summarize your geological conclusions?

A. In this area, we believe that there is essentially one reservoir section, the Atoka-Morrow section, and there is not a good geological reason to separate the two formations, as I referred to earlier, from the top of the Atoka formation to the top of the Chester

formation. Reorientation of the spacing unit is necessary in order to allow us to re-enter one of the wells in the east half of Section 11, and an unorthodox location results if we take this approach.

Q. When we look at this pool, have all the wells in the pool been -- have any of the wells been new drills?

A. No.

Q. They're all recompletions or using existing wellbores to test the Atoka in this area?

A. That's right.

Q. And that's what you're attempting to do, again, by reorienting the spacing units, is enable you to get another well in the formation. Based on that information, you will be able to determine whether or not it's possible to drill stand-alone wells to this depth; is that right?

A. That's correct.

Q. And the locations of these wells are -- The wells are drilled so the unorthodox locations are locked in; isn't that right?

A. That's correct.

Q. You're seeking approval for the locations on the -- spacing unit?

A. That is right.

Q. Will Yates also be calling an engineering witness to discuss the portion of the case related to the need for

second wells on the spacing units?

A. Yes, we will.

Q. Were Exhibits 1 through 5 prepared by you or compiled under your direction and supervision?

A. Yes, they were.

MR. CARR: At this time, Mr. Ashley, we would move the admission of Yates Exhibits 1 through 5.

EXAMINER ASHLEY: Exhibits 1 through 5 will be admitted as evidence.

MR. CARR: That concludes my direct of this witness.

EXAMINATION

BY EXAMINER ASHLEY:

Q. Mr. Cummins, the north half right now is currently dedicated to the Sand Springs "ASU" State Number 1?

A. That's right.

Q. And that was a re-entry?

A. Yes, it was.

Q. And it's producing right now?

A. It's currently shut-in, but capable of production.

Q. And it has the nonstandard location approval for the north half?

A. Yes, it does.

Q. Okay. And by reorienting to the west half, then, you would re-enter a well in the east half, the northeast quarter of Section 11?

A. Yes, we're looking right now at re-entering the well that's in the southeast of the northeast quarter.

Q. Okay. Do you know if this -- I guess that's the Springs Number 1 that's in the southeast of the northeast? That's the one you want to re-enter?

A. Yes, that's correct.

Q. Would that be a standard location?

A. Yes, I believe it would.

Q. Okay. And you say -- Okay, now, back to extending the vertical limits to include Atoka and the Morrow for this pool, you say it's essentially one reservoir, there's really no -- you can't really differentiate between the Atoka-Morrow?

A. You can't really differentiate between the Atoka-Morrow --

Q. Okay.

A. -- in this area.

Q. So like on cross-section B-B', would it be possible that that upper channel sand in the Carper McAlester State A Number 1, I mean, could you say that that might be Atoka -- you wouldn't know for sure if that was Atoka or Morrow?

A. That is correct.

Q. Okay. And you also want to have in the special pool rules approval for an additional well in each spacing unit; is that correct?

A. That's correct.

Q. Will that be addressed by another witness?

A. Yes.

EXAMINER ASHLEY: Okay. I have no further questions, Mr. Cummins. Thank you.

MR. CARR: Mr. Ashley, at this time we call Dave Pearson.

DAVID PEARSON,

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

DIRECT EXAMINATION

BY MR. CARR:

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

A. David Pearson.

Q. Where do you reside?

A. Artesia, New Mexico.

Q. By whom are you employed?

A. Yates Petroleum.

Q. And what is your position with Yates?

A. I'm a reservoir engineer, petroleum engineer.

Q. Have you previously testified before this

Division?

A. Yes.

Q. At the time of that testimony, were your credentials as an expert in reservoir engineering accepted and made a matter of record?

A. Yes.

Q. Are you familiar with the Applications filed in these cases?

A. Yes.

Q. Have you made an engineering study of wells in the area of interest?

A. Yes.

Q. And are you prepared to share the results of your work with the Examiner?

A. Yes.

MR. CARR: Are the witness's qualifications acceptable?

EXAMINER ASHLEY: They are.

Q. (By Mr. Carr) Now, initially, Mr. Pearson, could you -- I'd like to have you review for us the history of the well currently producing from the Atoka in the north half of Section 11.

A. The well -- The situation, generally speaking, in the area is a little bit confusing because there's been a sequence of name changes as wells have been drilled,

plugged and abandoned and re-entered.

But I'll start with the Sand Springs Number 1, which is the well most recently drilled -- or re-entered and deepened by Yates Petroleum. The well was originally drilled to about 10,500 feet as a Wolfcamp test, and was re-entered this fall -- or last fall -- by Yates Petroleum and deepened to the Devonian and recompleted eventually -- after being tested in the Devonian, recompleted eventually to the Atoka or Morrow sands that you see here today.

Q. And is that well currently producing?

A. The well has been on production. It is today currently shut in as a function of market conditions.

Q. But it is capable?

A. It is capable of production, it was on production until a few weeks ago.

Q. And the north half of Section 11 is dedicated to that well?

A. That is correct.

Q. There's also a second wellbore that is available that could be used to test the Atoka in the north half?

A. That's correct.

Q. And that is the well shown on Exhibit 1 in the southeast of the northeast?

A. That is correct. It's labeled on Exhibit 1 as the Trainer Springs Number 1 and is labeled on cross-

section A-A' as the Helbing and Podpechan Kelce State Number 1. There have been two name changes on that and probably will be a third, so...

Q. Is that well in the southeast of the northeast of 11 the only other well in the section that could reasonably be used to attempt an additional completion in the Atoka, without drilling a new wellbore?

A. No, it would be possible, or it might be possible, to re-enter the well that is variously labeled -- on Exhibit Number 1 it's labeled Ashman and Hillard Number 1. For mechanical reasons, it's much more attractive to us, in addition to the location being slightly better, it is a legal location at the well in the southeast of the northeast. So we would prefer to re-enter, both for mechanical reasons and because it would be a clearly legal location in an east-half proration unit.

Q. In any event, all of those wells are in the north half of the section?

A. That's correct.

Q. By re-orienting the spacing units, you would then be able to complete a well in the Atoka on an east-half standup unit?

A. Correct.

Q. All right. How many wells are there in this area with a long enough production history for you to be able to

actually plot the reserves?

A. There are actually two wells in the Sand Springs-Atoka Pool that have a suitable history for making an estimate of the ultimate recoverable reserves:

The Tenneco "ADP" State Com Number 1, which is variously labeled on the different base maps. On Exhibit Number 1 it is shown as the Yates Petroleum Tenneco State "ADP" Number 1. It would be in the southeast quarter of irregular Section Number 2.

There is a second well in the southwest quarter of irregular Section Number 1, which is labeled on Exhibit Number 1 as the Sinclair 840 State Lea. On Exhibit Number 5 it's shown as the Yates Petroleum Lagarto State unit. That also is confusing in that there is a Yates Petroleum Lagarto State Unit in Section 13. We're going to refer to the one in Section 1.

Q. Okay, let's start with the Tenneco well in Section 2 --

A. Yes.

Q. -- and let's go to Exhibit Number 6, and I'd ask you to explain what that shows.

A. Okay, Exhibit Number 6 is a *Dwight's* production plot showing the daily gas rate, the daily condensate rate and the daily water rate produced by the Tenneco "ADP" State Com Number 1. The well began production in 1989 and,

using the last three or four years of history, I have an established decline rate that is relatively consistent with the overall life of the well and used that decline rate and the most recent production rate to make an estimate of the remaining recoverable reserves from that well.

Q. And is that estimate shown on the next exhibit, Exhibit Number 7?

A. Yeah, the calculations that go into that exhibit are shown on Exhibit Number 7.

Q. And what does that show you?

A. Exhibit Number 7 shows that the estimated remaining recoverable reserves from the well are about 250 million cubic feet. Exhibit 6 shows that the cumulative production to date for the well is about 800 million cubic feet. It yields an estimated ultimate recovery from the well of just over 1 BCF, 1060 million cubic feet.

It's also important to note that the well has produced about 80 percent of its reserves, so the error in that EUR is probably relatively low.

Q. All right, let's go to the other well, the well in the southwest of Section, the Lagarto well, and I'd ask you to identify and review Exhibit Number 8.

A. All right. Exhibit Number 8 also is a *Dwight's* production plot of the production history of the Lagarto AMZ State Number 1, operated by Yates Petroleum. The well

was completed in mid-1990 and has been on production continuously since then.

I have used this production plot, which shows the daily gas production rate, the daily oil production or condensate production rate and the daily water production rate to estimate a decline rate for the well using the last four or five years of production history.

Q. Let's go to your decline curve analysis on the Lagarto, Exhibit Number 9, and I'd ask you to review that.

A. All right. Exhibit Number 9 shows a decline analysis calculation to estimate the remaining ultimate -- or the remaining recoverable reserves from the Lagarto State Number 1. That would be about 600 million cubic feet. The cumulative production to date from the Lagarto State Number 1 is about 1.2 BCF, yielding an estimated ultimate recovery from the well of about 1.8 BCF.

Q. All right, let's go to Exhibit Number 10. What is that?

A. Exhibit Number 10 is the combination of the material balance decline curve estimates of recoverable reserves, and original gas-in-place calculation based on those recoverable reserves for each well, and a volumetric calculation to estimate the drainage area, or the storage volume required to reservoir that volume of hydrocarbons.

The first part, or the first half, is the

calculation for the Lagarto State Number 1 in the southwest quarter of Section Number 1. It shows that using an 80-percent recovery factor and recoverable reserves of about 1.8 BCF original gas in place would be 2 1/4 BCF or 2.24 BCF.

The calculation of the hydrocarbon storage capacity required would yield an area, given the thickness from the logs and the porosity from the logs, of about 180 acres for the Yates Tenneco "ADP" State Number 1, which is located in the southeast quarter of irregular Section Number 2. A similar series of calculations shows original gas in place of about 1.3 BCF and an areal extent of the reservoir required to store that much gas of about 160 acres, 158 acres.

Q. So you have two wells that immediately offset one another. One can drain approximately 180 acres, the other about 150 acres?

A. That's correct.

Q. What conclusions can you reach from this?

A. My primary conclusion from this would be that the 320-acre proration unit could not be efficiently drained by one well.

Q. In your opinion, is a second well necessary to effectively drain the reserves under these 320-acre units?

A. That would be correct.

Q. What would be the impact on Yates if this Application were denied?

A. If the Application were denied, Yates would be denied its right to efficiently produce its reserves beneath its proration unit.

Q. At this time, would Yates go forward and drill a stand-alone well to test the Atoka in this section?

A. At this point in time, no, we would probably not. Although the ultimate recoverable reserves appear to be attractive for a stand-alone well, I would draw your attention to the amount of time that it takes to produce the reserves. Recoverable reserves of about 1.1 BCF from the Tenneco well will take approximately 15 years to produce, and recoverable of about 1.8 BCF from the Lagarto well are going to take nearly 20 years to recover.

Q. Is it possible that you could ultimately want to develop the area with four wells per section?

A. That's correct.

Q. In your opinion, would approval of the Application impair the correlative rights of any interest owner in the area?

A. No.

Q. You're only draining the acreage that's dedicated to those wells?

A. That's correct.

Q. Will approval of the Application otherwise be in the best interests of conservation, the prevention of waste and the protection of correlative rights?

A. Yes.

Q. Were Exhibits 6 through 10 prepared by you?

A. Yes.

MR. CARR: At this time, Mr. Examiner, we would move the admission into evidence of Yates Exhibits 6 through 10.

EXAMINER ASHLEY: Exhibits 6 through 10 will be admitted as evidence.

MR. CARR: And that concludes my direct of Mr. Pearson.

EXAMINATION

BY EXAMINER ASHLEY:

Q. Mr. Pearson, in the two wells that you just described, could you give me the depth of the perforations?

A. Yes -- Actually, I can't on the Lagarto, but it's very similar to the Tenneco perforations, and if you can get your Section A-A' out --

Q. Okay.

A. -- there's a pay zone at about 11,900 feet. That's a CNL/LDT. It's the far right-hand well, I'm sorry. It's identified on this cross-section as the Petroleum Reserve Tenneco State Number 1.

Q. Okay.

A. And there's a pay zone that begins at about 10,000 -- or excuse me, at about 11,904, and the perforated interval is from roughly 11,910 to -16, that little bit of gas show there, a crossover effect on the density neutron logs.

The Lagarto was not included on this section, but the depth of the pay zone perforations is very similar, and there's not a lot of structural relief.

EXAMINER ASHLEY: I have no further questions, Mr. Pearson. Thank you.

THE WITNESS: You're welcome.

MR. CARR: May it please the Examiner, that concludes our presentation in this case.

EXAMINER ASHLEY: There being nothing further in this case, Case 12,130 will be taken under advisement.

(Thereupon, these proceedings were concluded at 10:00 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 12130, heard by me on 4-1 1999.

Mark Ashley, Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

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

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; 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 April 4th, 1999.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 2002