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. 12,027
APPLICATION OF BONNEVILLE FUELS CORPORATION FOR POOL CONTRACTION, POOL CREATION AND SPECIAL POOL RULES, SAN JUAN COUNTY, NEW MEXICO	ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

August 20th, 1998

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, August 20th, 1998, 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.

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I N D E X

August 20th, 1998
Examiner Hearing
CASE NO. 12,027

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A P P E A R A N C E S

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By: PAUL R. OWEN

ALSO PRESENT:

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* * *

WHEREUPON, the following proceedings were had at 9:17 a.m.:

EXAMINER CATANACH: All right, at this time we'll call Case 12,027.

MR. CARROLL: Application of Bonneville Fuels Corporation for pool contraction, pool creation and special pool rules, San Juan County, New Mexico.

EXAMINER CATANACH: Call for appearances in this case.

MR. CARR: Paul Owen of the Santa Fe law firm of Campbell, Carr, Berge and Sheridan, for the Applicant, Bonneville Fuels Corporation. I have three witnesses in this case, Mr. Examiner.

EXAMINER CATANACH: Call for additional appearances.

Will the three witnesses please stand to be sworn in?

(Thereupon, the witnesses were sworn.)

MR. OWEN: I call Mr. Philip Wood.

PHILIP G. WOOD,

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

DIRECT EXAMINATION

BY MR. OWEN:

Q. Mr. Wood, please tell us your full name for the

record.

A. My name is Philip Garrison Wood.

Q. Where do you live?

A. I live in Littleton, Colorado.

Q. And what do you do there? Who do you work for?

A. I'm employed by -- as land manager for Bonneville Fuels Corporation.

Q. And how long have you worked for Bonneville?

A. I've worked for Bonneville fuels for four months.

Q. How long have you been a landman?

A. I've been a landman for 18 years.

Q. Have you previously testified before the OCD and had your credentials as a landman made a matter of record?

A. I have.

Q. Are you familiar with the Application filed in this case by Bonneville Fuels Corporation?

A. I am.

Q. Are you familiar with the status of the lands in the subject area?

A. I am.

MR. OWEN: Mr. Examiner, are the witness's qualifications acceptable?

EXAMINER CATANACH: They are.

Q. (By Mr. Owen) Mr. Wood, why don't you tell us what Bonneville seeks with this Application?

A. Bonneville's Application is really twofold. One is to contract the existing Kutz-Gallup Pool by removing lands in Section 11, 14 and 13, combining those lands with other current land-pooled lands to form a new pool which we are suggesting be called the Kutz-Gallup South Pool, and to provide special pool orders for that new pool.

Q. What portions of Sections 11, 14 and 13 are you seeking to delete from the existing Kutz-Gallup Pool?

A. We're recommending that we delete the southwest quarter of Section 11, the northwest quarter and the southwest northeast of Section 14, and the west half southwest quarter of Section 13.

Q. Okay. And in turn, what acreage are you seeking to include in the new Kutz-Gallup South Pool?

A. We're recommending that the new pool consist of lands covering the south half of Section 11, south half of Section 13, all of Section 14, and the northeast quarter of Section 15.

Q. Are you also seeking special pool rules for the new pool?

A. We are. Pool rules that we're suggesting and recommending would be 80-acre spacing, with 330-foot setbacks from the outer boundary of the spacing unit.

Q. What are the rules that govern the development of the existing Kutz-Gallup Pool?

A. The existing Kutz-Gallup Pool was established in 1960. It was established around statewide rules, 40-acre spacing, 80 barrels a day allowable, 330-foot setbacks from the outer boundary of the spacing unit.

Q. Are there any special pool rules that you're aware of for the Kutz-Gallup Pool?

A. Not that I'm aware of, no.

MR. OWEN: Mr. Examiner, the order establishing the Kutz-Gallup Pool is Order Number R-1825, dated November 1st, 1960.

Q. (By Mr. Owen) Has there been Gallup production from this pool since the inception of the Kutz-Gallup Pool?

A. To be honest, I'm not sure when production was first established.

Q. Is it fair to say that we're moving to the later life of the formation?

A. It's -- In Bonneville's opinion, we certainly are; that is correct.

Q. Okay. Why don't we take a look at Exhibit Number 1, the map of the current pool. Why don't you review this exhibit for us?

A. Okay, Exhibit 1 is -- Identified in red is the boundary of the existing Kutz-Gallup Pool, and the wells shown on the map are the deeper penetrations, certainly not all the penetrations in the area. It wouldn't include the

Fruitland Coal or the Pictured Cliffs.

Q. Now, I notice two wells in Section 14 there. What are the two wells that are indicated in Section 14?

A. The wells in Section 14 are the Fullerton Federal 11, which is one of Bonneville's producing wells, as well as, I believe, the Fullerton Federal 8 --

Q. Okay --

A. -- which has been plugged and abandoned.

Q. The Fullerton Federal 8 is the one without a well name below it; is that right?

A. Correct, that is correct.

Q. And that one has been plugged and abandoned?

A. I believe so, yes, sir.

Q. What about the well in Section 13 there?

A. That's the Fullerton Federal 9, which is also operated and owned by Bonneville Fuels.

Q. Now, the Fullerton Federal 11 and the Fullerton Federal 9, are those the two wells that you're using as a basis for this Application?

A. They are.

Q. Okay. Let's go ahead and move to Bonneville Exhibit Number 2. Why don't you review that exhibit for the Examiner, please?

A. Bonneville Exhibit Number 2 shows -- is representative of two things: One, the red line is to show

our proposed new pool boundary, as well as to show working interest ownership in the Gallup formation, in the immediate vicinity of the new pool.

Q. Now, Section 11, I notice on this map, is entirely contained in yellow, but the red line cuts across the --

A. Right --

Q. -- half line there.

A. -- we did have some additional lease information, based upon some leases that we have interest in. We went ahead and put that on, just to give the Commission an idea who some of the owners are in the immediate area.

Q. Does this map reflect all hydrocarbon wells drilled in the area?

A. No, it only reflects the deeper penetrations that have been drilled in the area, the Dakota and Gallup formations.

Q. Okay. Now, are the Bonneville wells identified on this map?

A. They are, the Fullerton Federal 11 in Section 14, the Fullerton Federal 9 in Section 13.

Q. Who operates the other acreage in the proposed new pool?

A. Additional owners, working-interest owners, would be Burlington Resources Oil and Gas, Louis Dreyfus Gas

Holdings, Conoco and Marathon Oil Company, in addition to Bonneville.

Q. Now, these are actually the operators of the acreage, as well as being --

A. They are owners of, in most cases, operating rights and/or record title --

Q. Okay.

A. -- since these are federal leases in additional formations, but for sure in the Gallup formation.

Q. Okay. Have you had any contacts with these operators regarding the new pool?

A. The only contacts we've had were via the notices that were sent out in relation to this hearing.

Q. Okay. Let's go ahead and take a look at Bonneville Exhibit Number 3. Why don't you identify that for us and review it for the Examiner?

A. Bonneville Exhibit Number 3 is merely to show what the existing Kutz-Gallup Pool would -- the lands that -- the revised pool boundary, after the lands that we're recommending to be culled out were culled out.

Q. What does the light blue dashed line indicate?

A. The light blue dashed line -- which I apologize, it's supposed to be a mile outside and it ended up being a half mile. Our draftsman put it down. But it was meant to just sort of give a visual acreage that is associated or in

near proximity to the pool.

Q. Okay. What efforts did you make to give notice of this hearing? To whom did you provide notice of this hearing?

A. We provided notice to operators of all wells, Dakota-Gallup wells, within a mile radius of the existing pool, as well as our new proposed pool, as well as we did a state, county and Bureau of Land Management check for owners of rights in the Kutz -- or in the Gallup and Dakota formations, and sent them notice as well.

Q. So did you send notice to the operators in the new pool and the proposed pool, of the Gallup and Dakota formations, and all the working interest owners in the proposed new pool?

A. That is correct.

Q. Did you also provide notice to all operators located within one mile of the --

A. Yes, of both boundaries, the current existing boundary, as well as our new proposed boundary.

Q. Is Bonneville Exhibit Number 4 an affidavit confirming that notice of this hearing was sent to those persons whom we've just discussed?

A. It is.

Q. Okay. Were Bonneville Exhibits Numbers 1 through 4 prepared by you or compiled under your direction?

A. They were.

MR. OWEN: Mr. Examiner, I tender Exhibits 1 through 4.

EXAMINER CATANACH: Exhibits 1 through 4 will be admitted as evidence.

MR. OWEN: That's all I have of this witness.

EXAMINATION

BY EXAMINER CATANACH:

Q. Just go over the sections that you're going to delete from the Kutz, or you want to delete again. I have the southwest quarter of Section 11; is that right?

A. That's correct.

Q. Northwest quarter and southwest of the northeast of -- What section was that?

A. Fourteen.

Q. Fourteen. Okay, and the west half, southeast of 13; is that right?

A. West half, southwest of 13.

Q. West half, southwest. Okay, and that's it?

A. That is correct.

Q. And your new pool would consist of the south half of 11, south half of 13, all of 14, and the northeast of 15?

A. That is correct.

Q. Okay. And you've notified all operators within

the current and proposed pool boundaries?

A. Correct.

Q. And all operators within a mile of both?

A. Correct.

Q. And all leasehold interest owners?

A. As best we could determine, yes, sir. As far as they had rights in that formation.

Q. Are you satisfied that you got a complete listing of those?

A. Well, as some of the title -- This is an old field. Some of the title is a little rough, but we did the best we could with the information we had available.

Q. I notice in your Exhibit 4 there were at least a few that were not -- you were not able to locate some of these owners?

A. That's correct. Several of them had no -- Several of the conveyances were fairly old. We were -- Many of them lacked zip codes, things of that sort. We did the best we could to track them down, but -- but you're correct.

MR. OWEN: Mr. Examiner, I notice that at least two of the return envelopes were addressed to Atlantic Richfield Company, at two different addresses, and we do have a return receipt card from a third letter that was addressed to Atlantic Richfield Company in Midland, and

that was received and signed for by --

EXAMINER CATANACH: Okay, finally got one to ARCO?

THE WITNESS: Right, as well as Vastar in Houston.

EXAMINER CATANACH: How about Marathon?

MR. OWEN: I don't notice a return receipt card for Marathon, Mr. Examiner.

EXAMINER CATANACH: Seems to me they'd be pretty easy to find.

Q. (By Examiner Catanach) How about Consolidated?

A. Consolidated merged with Hugoton Energy.

Q. Did you notice them?

A. We noticed the -- I'm looking at the list now. I just know that from past experience. These came right out of the record. If the record wasn't changed or so noted, then perhaps not.

MR. CARROLL: Well, we just noticed there's three addresses for Marathon.

THE WITNESS: We used all addresses that were of record.

EXAMINER CATANACH: Okay, they did get delivery in the Houston office.

THE WITNESS: Okay. If there were multiple addresses, we used them all.

MR. OWEN: Mr. Examiner, I do note that you are correct, Marathon did receive and signed for notice letter in their Houston office.

MR. CARROLL: Two P.O. boxes in Houston they signed.

MR. OWEN: Right.

THE WITNESS: Once again, if there were multiple listings, we used whatever listings were available.

Q. (By Examiner Catanach) Okay, did you find that -- Okay, I guess Consolidated was not notified, then?

A. Well, notice was sent to the last address of record.

MR. CARROLL: Is Consolidated an interest owner in the proposed pool?

THE WITNESS: They are not an interest owner in the immediate -- No, not in the proposed pool. They were picked up on record checks outside the existing boundary.

MR. CARROLL: As an operator of a well within one mile?

THE WITNESS: No, as just an interest owner in the Gallup formation.

MR. OWEN: Mr. Examiner, if I remember correctly, the rule requires notice to all operators within the pool, within one mile of the pool, for both proposed and existing. All operators did receive notice. It's my

understanding that Consolidated is an interest owner, not an operator, and I think that notice has been provided in accordance with NMOCD rules.

MR. CARROLL: Well, the rule requires all operators of wells and each unleased mineral owner, so this list of interest owners includes all operators of wells and each unleased mineral interest owner?

FURTHER EXAMINATION

BY MR. OWEN:

Q. Mr. Wood is there any unleased -- I'm not sure. Are there any --

A. No.

Q. -- unleased tracts within the area?

A. No unleased tracts.

Q. Okay.

A. It's an old pool. We chose to do a little overkill as far as notice, rather than -- We figured more was better.

Q. Do you know off the top of your head where Consolidated interests is?

A. I believe Consolidated -- although I don't have the documents to support it; they weren't of record when we checked -- I believe Consolidated merged into Hugoton Energy, which according to last reports has since merged into Chesapeake.

Q. Okay. Do you know where their interests were in the area here?

A. Not off the top of my head, no.

EXAMINER CATANACH: Okay. We have no further questions of this witness.

MR. OWEN: Okay. Call Mr. Bob Kozarek.

BOB KOZAREK,

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

DIRECT EXAMINATION

BY MR. OWEN:

Q. Would you please tell us your name for the record?

A. Bob Kozarek.

Q. And where do you live?

A. Denver, Colorado.

Q. Who do you work for?

A. Bonneville Fuels as senior geologist.

Q. How long have you been with Bonneville?

A. Three years, approximately.

Q. How long have you been a geologist?

A. Twenty years.

Q. Have you been a petroleum geologist that whole time?

A. Correct.

Q. Have you previously testified before the OCD and had your credentials as a petroleum geologist accepted and made a matter of record?

A. Yes, I have.

Q. Are you familiar with the Application filed in this case by Bonneville?

A. Yes, I am.

Q. Have you made a geologic study of the area which is the subject of the Application?

A. Yes, I have.

Q. Are you prepared to share the results of that study with the Examiner?

A. Yes, I am.

MR. OWEN: Mr. Examiner, are the witness's qualifications acceptable?

EXAMINER CATANACH: Yes, they are.

Q. (By Mr. Owen) All right, let's take a look at Bonneville Exhibit Number 5, the structure map. Can you please review that map for the Examiner?

A. This is a structure map on top of the lower Gallup. It's a marker bed within the Gallup. It shows basically just northdip into the San Juan Basin with some small anticlinal-synclinal noses that plunge northward into the Basin. These noses may have something to do with enhancement of the reservoir quality, but they really don't

have anything to do with the hydrocarbon entrapment.

We see across the study area -- Well, I should point out to you, I don't have the unit, our new proposed unit, out in here, but it would consist of the south half of Section 11, the south half of Section 13, all of Section 14, and the northeast quarter of Section 15.

If we look from -- to the northwest, which is -- most of those oil wells up there are the oil wells that have produced out of the older Kutz-Gallup Pool, going from there to our wells in Sections 13 and 14 and then on down further southeast yet to the Angel Peak Gallup Pool, we see that in general we're moving from northwest to southeast, we're moving in an updip direction.

And as we do so, we notice a change in the GORs of these Gallup wells from Kutz-Gallup Pool, which has GORs of approximately 3000 to 1 on the average, to Angel Peak-Gallup Pool, which has GORs of about 70,000 to 1. And our area, the proposed pool, in between those two areas which has intermediate GORs of about 40,000 to 1.

Q. Is the production in the proposed new pool distinctly different from that in the existing Kutz-Gallup Pool?

A. The quality of production appears to be different. We notice some reservoir-quality differences that the engineering witness will testify to later, but

primarily what we see are differences in the GOR. We feel it's caused by the structure and some stratigraphic reasons, which we'll go through in the additional geologic exhibits.

Q. Why don't we go ahead and do that? Let's turn to Bonneville Exhibit Number 6. Would you review that for the Examiner, please?

A. Yes, this is an isopach, net isopach, of the lower Gallup lower pay sand, and I've broken the -- based on some of the older pool studies that were in the *State of New Mexico Field Guidebook*, they had an upper and a -- they had a lower Gallup upper and lower pay sand, and I've used the same designation. This is the isopach of the lower pay sand.

And you can see from this isopach in the older Kutz-Gallup Pool that most of the wells that are productive in the Gallup are productive from this lower pay sand.

Also notice that for almost its -- for the most part, this lower pay sand does not cover -- go across the acreage that we're wanting to include in the Kutz-Gallup South new proposed pool designation, that being the south half of Section 11, south half of 13, all of 14 and northeast of 15.

So we feel like this pay sand is unlikely to project across this pool -- proposed pool area.

Q. Do you expect the wells in the new pool to be, then, producing from a different zone and have production different from the wells in the existing Kutz-Gallup Pool?

A. Correct.

I'd also like to point out, as was previously testified to, that these are only the Gallup and deeper penetrations. There are numerous Pictured Cliffs, Fruitland Coal and a few Fruitland sand gas wells in here, in addition to these deeper wells.

Q. Now, you mentioned the upper pay sand. Is that what's -- Is that reflected on your next exhibit, Exhibit Number 7?

A. Correct, Exhibit Number 7 is a net isopach of the lower Gallup upper pay sand. We see a northwest-southeast-trending sand that appears to be a marine sand. This sand is likely to be the only one present across the new proposed pool.

And once again, point out that there's a distinct difference between the GORs from this sand, from the northwest in the older Kutz-Gallup Pool, with approximately 3000-to-1 GOR, to Angel Peak-Gallup, which has approximately 70,000-to-1, to our new proposed pool, which is approximately 40,000 GOR.

Q. Okay. Now, comparing Exhibit Number 7 to Exhibit Number 6, are you having commingled production from some of

the wells in the existing Kutz-Gallup Pool, in both --

A. There are --

Q. -- upper and lower pay sands?

A. There are several wells. I believe there were two in Section 4, and there may have been one in 9 -- I can't quite recall that right now -- that were -- oh, there's also one in Section 2, that were productive out of both the upper and lower pay sand, within the lower Gallup.

Q. But because the lower pay sand is not present in the new proposed pool, you don't expect any production from that zone --

A. That's correct.

Q. -- is that right?

A. I guess I should -- I'd like to also point out, there's one rather difficult well in the Angel Peak field area in Section 19 of 27 North, 10 West, the well that's in the northeast quarter. I've got a designation there of NDE, which means not deep enough, and a question mark behind that.

That well had a -- The only log that I could procure on that was a well was very difficult -- or a log, excuse me, a log that was very difficult to interpret, and from the -- based on the correlation I could make and where the perfs were, it looks like it didn't penetrate this zone, but I'm not sure of that.

So I just wanted to point that out, that it was a little bit of a problematic well.

Q. Okay. Why don't we take a look at your cross-section?

A. Okay, fine. If we keep out Exhibit Number 7, it shows the line of cross-section, A-A', a west-to-east cross-section that goes through the new proposed Kutz-Gallup South Pool.

And the first thing that we can -- If you compare Exhibits 6 and 7, you'll see that this line of section goes south of the zero edge of the lower Gallup lower pay sand. So we won't see any lower Gallup lower pay sand on this cross-section.

But this is a stratigraphic cross-section hung on top of the lower Gallup, and we can see on the western edge just a hint of the lower Gallup upper Pay sand. We come into the Bonneville Fuels Fullerton Number 2J, and we can see we have some development of that sand.

The Fullerton Federal Number 11, in the southwest northwest of Section 14, has the sand present and productive in it.

The Fullerton Federal Number 8 also has the sand. It was productive, since been plugged.

The Fullerton Federal Number 9, the sand is present and productive.

And the Fullerton -- or the -- it should be -- It says Federal Federal; it should be Fullerton Federal Number 10, has the sand present in it but is basically tight, has zero net.

We can also -- I can show you that where the lower sand would have come in had it been here -- if we look at the Fullerton Federal Number 11, for instance, it would have been at a depth of about 5940. That's the zone where that lower sand comes in. And you can see that there's really no indication of it.

I guess if you go to the well on the far west, the Frontier Number 1-D Bolack, you can see that it's trying to develop there at about 5950 --

Q. Now, the two wells that --

A. -- development --

Q. The two wells that you're going to include in the new proposed pool are the Federal Fullerton Number 11 and the Number 9; is that right?

A. Correct. The 8 would be within the area designated also. And that well is important to us, and we can see that this well was completed in 1961, and they perf'd 5824 to -38.

They had attempted a Dakota completion. The Dakota was not capable of commercial production. They came up and completed the lower Gallup upper pay sand, and --

from those perfs I had mentioned and completed it flowing -- IP'd flowing at 12 barrels and 325 MCF of gas per day.

The cumulative production on that well is approximately 4000 barrels of oil and 153 million cubic feet of gas. That comes out to just under a 40,000-to-1 GOR.

It's significant in that it's the only well that we have within this immediate study area that's a Gallup-only completion.

Q. Now, both the Number 9 and the 11 are recompletions in the Gallup; is that right?

A. The Number 11 is a recomplete, and we have the perfs on there.

It was originally completed in the Dakota in 1962 for 1.7 million. It's made about 12,000 barrels of oil and 1.5 BCF of gas from the Dakota.

We recompleted it in the Gallup in December of 1996. Perfs are shown on the cross-section. It IP'd at 9 barrels of oil and 340 MCF of gas per day.

That's a commingled well in the commingled Dakota-Gallup production, knowing that the Dakota is pretty long in the tooth here and well along -- pretty near depletion. The cumulative Dakota-Gallup production is 890 barrels of oil and 79 million cubic feet of gas.

The Fullerton Federal Number 9 was a well that

was drilled in 1961. They plugged and abandoned it at that time. We went in and, off the same drillpad, redrilled that well. And right now again, I don't recall if it was a redrill or a re-entry; I'm not sure.

And we completed that in the Dakota and the Gallup -- the perfs are shown on the cross-section -- and have a cumulative production from the Dakota-Gallup of about 500 barrels of oil and 8 million cubic feet of gas since July of last year, July, 1997.

Q. Now, we're going to call an engineering witness that can talk about the trend of the GORs, but based on your geological study, what conclusions have you reached about this area?

A. There appears to be reason to call for some separation of reservoir. It's not anything that you can see clearcut, like a structure, a four-way closure or a fault that separates these two pools that we already have and the one that we are proposing today to designate as a new pool, but there's a gradation of the GORs which we feel is due to the structural gain that you have as you go from northwest in the Kutz-Gallup to the southeast in Angel Peak.

We also see that there are two sands that are present and productive within the area. In our new pool designation, we are only anticipating that the lower Gallup

upper pay sand would be present. The main sand that's at Kutz-Gallup field, the lower pay sand, would be not present in the area.

And we see a difference in the quality of production in the wells that we have completed so far in the Gallup, in the new pool in Sections 13 and 14, in that those wells appear to have poor reservoir quality in general.

Q. Now, you talk about there not being a dramatic geologic structure or separation here. Is there a geologic separation between the Angel Peak Pool and the existing Kutz-Gallup Pool?

A. There's two pool designations.

Q. But is there a -- is there a --

A. -- geologic reason?

Q. -- geologic separation, yeah?

A. It looks like it's one continuous reservoir from Kutz-Gallup all the way down to Angel Peak-Gallup, and yet there are two different pool designations for that area, for those two pools.

Q. And does it appear that those two different pool designations are proper because the geologic structure lends itself to different types of production between the two pools?

A. There's certainly a change in the structure,

and -- that I think is verified by the change, dramatic change, in GORs.

Q. Okay. Were Exhibits Numbers 5 through 8 prepared by you or under your direction?

A. Yes, they were.

MR. OWEN: Mr. Examiner, I move the admission of Bonneville Exhibits 5 through 8.

EXAMINER CATANACH: Exhibits 5 through 8 will be admitted as evidence.

MR. OWEN: And that's all I have for this witness.

EXAMINATION

BY EXAMINER CATANACH:

Q. What sand is being produced at Angel Peak? Is it the upper?

A. It looks like the lower Gallup upper pay sand.

I haven't included all that, but the -- in this study, the wells that are closest to -- or included in this study, do produce out of the upper pay sand. The geologic *Field Guidebook* for the -- this field, indicates that it's entirely out of the upper pay sand. So --

Q. Okay.

A. -- I used that knowledge and information in conjunction with what I had included in this study to -- And I would assume that all of it is out of the upper pay.

Q. The lower pay sand that you have mapped in portions of 15 and 22, has that ever been produced by anyone?

A. Oh, that pod down there? No, not to my knowledge.

That's -- Yeah, that's interesting in and of itself. I don't know how to account for that, exactly, that development of that sand through there. If it's a splay that comes off that other -- It looks like the -- that lower pay is a little bit different animal than the upper.

It's shown to be sitting on top of an unconformity, which would make you believe it's like a valley-fill sequence, and following an erosional valley with this splay off it, I don't know how to connect it. You can see all those zeroes in there. I wouldn't know how to get it connected to a sand source there. But it is -- indeed, some sand there.

You can see, I have two of my wells with question marks, because they're either poor well quality -- log quality, or just a questionable correlation. But there's something happening down in that area with those -- that you couldn't deny.

Q. As far as you know, there were only a very few wells in the main Kutz Pool that produced from this lower

sand?

A. I -- The upper -- upper sand --

Q. Lower.

A. -- or the lower?

Q. Lower.

A. Most of them produced out of the lower sand.

Q. Most of them did produce out of the lower sand?

A. Yes. And a few of them produced out of the upper sand. Does that --

Q. I thought it was the other way around. I thought -- Wasn't the upper sand the main producing sand of the Kutz?

A. I think it's the lower sand, is the main, and the --

Q. Okay.

A. -- and the upper one is the secondary sand. The upper pay sand is the main pay sand at Angel Peak.

I had -- My records show there were four wells that produced out of the upper pay sands in Kutz-Gallup.

And not all of those wells that are on there do produce out of the Gallup. They may have Gallup present in porous, meaning it was -- met my porosity criteria cutoff, but this net isopach is porosity greater than 6 percent.

MR. OWEN: Mr. Examiner, perhaps there's a little bit of confusion. All of the wells are producing out of

the lower Gallup, and then we're talking about the --

THE WITNESS: Right.

MR. OWEN: -- lower pay sand and the upper pay sand.

THE WITNESS: Oh, yeah. Yeah, we've --

MR. OWEN: Okay.

THE WITNESS: -- got that distinction.

MR. ASHLEY: The proposed pool is producing out of the upper pay sand?

THE WITNESS: Correct. And the three wells are -- It has or is now producing, yes. There has been no lower pay sand.

Q. (By Examiner Catanach) What's Angel Peak spaced on? Do you know?

A. I don't know offhand.

MR. OWEN: I believe our engineering witness can testify to that.

Q. (By Examiner Catanach) We're just wondering if it might be more appropriate to extend the boundary of the Angel Peak to take in these wells. Have you guys looked at that, or --

A. There's -- We're on a little lower GOR, and we feel like the reservoir quality is not quite the same as what it is at Angel Peak, and our engineer will testify to that.

We feel like the permeability is significantly less than what the average reported permeability is at Angel Peak. So we feel like we have distinctions between both pools.

Q. Do you think you're kind of in a transition area with your wells?

A. Correct, that's what -- that's exactly we feel with this.

EXAMINER CATANACH: Okay, I have nothing further. This witness may be excused.

MR. OWEN: I just have one quick question.

FURTHER EXAMINATION

BY MR. OWEN:

Q. The wells that are producing out of the upper pay sand in the existing pool, is that just a secondary producer, producing zone in those --

A. In the --

Q. -- wells?

A. In the Kutz-Gallup --

Q. Yes.

A. -- Pool? They're commingled.

MR. OWEN: They're commingled? Okay.

That's all I have of this witness.

EXAMINER CATANACH: Okay.

MR. OWEN: And I call Mr. Allen Merrill.

ALLEN MERRILL,

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

DIRECT EXAMINATION

BY MR. OWEN:

Q. Please tell us your name for the record.

A. Allen Merrill.

Q. And where do you live?

A. I live in Denver, Colorado.

Q. Who do you work for?

A. Bonneville Fuels Corporation.

Q. What do you do for Bonneville?

A. I'm a petroleum engineer.

Q. How long have you been with Bonneville?

A. Approximately two years.

Q. What did you do before that?

A. I worked for Garrity Oil and Gas Corporation in Denver for approximately three years.

Q. What did you do for them?

A. I was a production/operations engineer.

Q. Where did you go to school?

A. University of Wyoming in Laramie.

Q. What was your degree in?

A. I've got a bachelor's of petroleum engineering and a master's in petroleum engineering.

Q. What have you -- Other than the jobs you just mentioned, what other positions have you had in petroleum engineering?

A. I've worked as an oil and gas research engineer for Western Research Institute for approximately two years, from 1990 to 1992.

Q. Okay. Are you familiar with the Application filed in this case on behalf of Bonneville?

A. Yes, I am.

Q. Are you familiar -- Well, have you made an engineering study of the subject area?

A. Yes, I have.

Q. Are you prepared to share the results of that study with the Examiner?

A. Yes, I am.

MR. OWEN: Mr. Examiner, I'd tender Mr. Merrill as an expert in petroleum engineering.

EXAMINER CATANACH: Mr. Merrill is so qualified.

Q. (By Mr. Owen) Mr. Merrill, have you prepared exhibits for presentation in this hearing?

A. Yes, I have.

Q. Let's take a look at your first exhibit. The exhibit sticker is on the back, Bonneville Exhibit Number 9. Please review the -- that exhibit for the Examiner.

A. Okay, I've compiled a list of all the wells that

are -- that produced out of the Gallup and Kutz-Gallup Pool, and I've listed the GORS, cumulative oil and gas production and the current well status.

And I've also listed the two closest wells in the Angel Peak-Gallup Pool to our new proposed pool.

And one thing that I've noticed about this is that there's a striking difference between the Kutz-Gallup Pool and our new wells, the Fullerton 9 and the Fullerton 11, in terms of the GOR, where with the Fullerton 11 we have a GOR of approximately 89,000, the Fullerton 9 has a GOR of approximately 16,000.

Also, there's a historical well in Section 14, next to our Fullerton 11, which had a GOR of 39,000. And this well produced from the Gallup only.

And I feel that this is one distinguishing feature of our new proposed pool from the old Kutz-Gallup Pool.

Q. Now, the two wells, the 9 and the 11, have a small asterisk to the left; is that right?

A. Yes.

Q. Are the -- You've got two Angel Peak Pools referenced at the bottom.

A. Uh-huh.

Q. What is the significance of those two wells, as compared to the Number 9 and the Number 11 Fullerton wells?

A. Well, I just wanted to show that they were more comparable to our new proposed pool, they had a higher GOR -- you had a higher GOR going to the southeast and -- when you're in that upper pay sand only, versus when you're in the lower pay sand and the upper pay sand both in the Kutz-Gallup Pool.

Q. Are the Number 9 and the Number 11 roughly similar to the produced -- Is the production from the Number 9 and the Number 11 roughly similar to the production in the Angel Peak, or is it different from that production as well?

A. It's -- I would say it's fairly similar. The reservoir quality appears to be lower in the area of our proposed pool than at Angel Peak Pool. Generally, on average, the permeability is higher, and the reservoir thickness is better in a large portion of Angel Peak Pool.

Q. Do you know what the spacing requirements are in the Angel Peak Pool?

A. From memory, I would say 320 acres for gas, and it's either 40 acres or 80 acres for oil, I don't remember which, and I believe there's a 30,000 GOR cutoff between the two.

Q. Okay. Now, the wells that are in the existing Kutz-Gallup Pool that are referenced here, some of those wells are -- have commingled production, "commingled"

meaning they're producing from both the lower pay sand and the upper pay sand within the lower Gallup; is that right?

A. In the Kutz-Gallup Pool?

Q. In the Kutz-Gallup Pool.

A. Yes, that's correct. Most of them are producing from both upper pay and the lower pay with their present wellbore.

Q. How does the GOR from those commingled wells compare to the GOR in the Number 9 and the Number 11 Fullerton wells?

A. As a general rule, it's much lower.

Q. Okay.

A. It generally ranges from zero to 5000 standard cubic feet per barrel.

Q. Okay. And then moving even further to the southeast, how does that GOR compare to the Angel Peak producers?

A. The two -- Compared to the two Angel Peak producers I have listed there, it's somewhat comparable. Throughout Angel Peak field as a whole, the GORs vary widely.

Q. Okay. Let's take a look at your Exhibit Number 10. Can you please review that for the Examiner?

A. When we originally completed the Gallup --

Q. What is this exhibit first? Can you identify it,

please?

A. Yes, this exhibit is a plot of a pressure buildup test on the Fullerton Federal 11, located in Section 14.

Q. Okay.

A. And when we originally completed the Gallup, we ran a pressure buildup test after frac'ing the well and determined that the permeability of the matrix is approximately 1 to 2 millidarcies, and I wanted to present this exhibit to demonstrate that the reservoir -- we believe the reservoir quality in the area of our proposed pool to be lower than both the Kutz-Gallup Pool and the Angel Peak Pool.

Q. Let's take that one piece at a time. How does the permeability in the proposed new pool compare to the permeability in the existing Kutz-Gallup Pool?

A. It's generally lower.

Q. How much lower?

A. I would say one or two orders of magnitude. From published data in Kutz-Gallup, the average is 50 millidarcies, and Angel Peak the average would be 75 millidarcies.

Q. The Angel Peak, it would be --

A. 75 millidarcies.

Q. 75 millidarcies?

A. Average.

Q. And what is it in the -- What is the average in the proposed new pool?

A. About 1 to 2 millidarcies.

Q. Okay. How much acreage do you expect the wells in the new pool, the proposed new pool, to drain?

A. Well, to go on to the next exhibit, Number 11 --

Q. Okay.

A. -- what we did is, after approximately one year we took another pressure survey and -- to determine how far the pressure dropped after a certain amount of production, and we made a -- what's called a P/Z versus cumulative production plot to determine the reserves that were in place, original gas in place. And as shown on the Exhibit 11, there was 675 million cubic feet in place, estimate.

And you back-calculate that using a reservoir height of 15 feet, porosity of 11 percent, you can calculate a drainage area of 115 acres for our Fullerton 11 well.

So I would propose that 40-acre spacing is not adequate for this area. Somewhere between and maybe less than 160.

Q. If you're restricted to the current 40-acre spacing requirements, what will be the effect, given the permeability in this area?

A. Well, one problem we have is, we're currently

restricted to 160 MCF, and we have wells capable of producing more than that, and we're curtailing production. It would limit additional drilling. It would -- If you limited it to 40 acres, that would be the primary drawback of restricting the 40 acres of restricted production --

Q. Would that result in --

A. -- and --

Q. -- the waste of some gas in the reservoir?

A. Yes, because it would restrict development of the field --

Q. Okay.

A. -- and you wouldn't...

Q. All right. Do you think that this is -- this area is capable of draining 160 acres?

A. Do I believe it's --

Q. -- capable of draining as much as 160?

A. From the evidence I've seen, I would say not necessarily, the reservoir.

Q. Okay. Now, have you also prepared a chart relating to the Federal -- Fullerton Federal Number 9?

A. Yes, we re-entered a dryhole and completed it in the Gallup, and after frac'ing the Gallup we have a pressure buildup test presented as Exhibit Number 12. And I calculated permeabilities to be between .5 and 1 millidarcy in this well, which would further back up our

data in the Fullerton 11, demonstrating that the permeability in this area of the reservoir is of much lower quality.

Q. Okay. As a general rule, as you move from the existing Kutz-Gallup Pool through the proposed new pool down to the Angel Peak Pool, as a general rule is there a higher GOR as you move to the southeast?

A. It tends to vary throughout the field. As you notice from Mr. Kozarek's structure map, there was a lot of noses and faulting and fracturing in there, and I've found -- well, we -- I thought that would be the case. We drilled the Fullerton Number 9 and found a lower GOR between our 11 and the Angel Peak.

So I would say as a general trend that's what you might expect, but we did not find that to be the case.

Q. Is there a different -- Is the production in the proposed new pool different from that in the existing Kutz-Gallup Pool?

A. Yes, I would -- It's generally characterized by lower GOR, lower permeability.

Q. With the production from the existing pool?

A. From Kutz Gallup Pool into the proposed pool?

Q. Right.

A. Yes.

Q. How is the production different from the existing

pool and the proposed new pool?

A. Primarily higher GOR.

Q. There's a higher GOR in the proposed new pool?

A. Right.

Q. Okay. And how is the production from the proposed new pool different from that in the Angel Peak?

A. Primarily reservoir quality, thickness and/or permeability.

Q. There's lower permeability in the existing -- in the proposed new pool?

A. Yes. Yeah, you're really on the fringes of Angel Peak and --

Q. Okay.

A. -- you don't have the thick reservoir in our new proposed pool that Angel Peak has.

Q. Will wells in the proposed new pool adequately drain more than 40 acres?

A. I believe so, yes.

Q. Will approval of Bonneville's request for contraction of the Kutz-Gallup Pool, creation of the new proposed Kutz-Gallup South Pool and the adoption of special pool rules for this new pool, including provisions for 80-acre spacing, be in the best interests of conservation, the prevention of waste, and the protection of correlative rights?

A. Yes.

Q. Were Bonneville's Exhibits 9 through 12 prepared by you or under your direction?

A. Yes.

MR. OWEN: That's all I have for this witness at this time.

EXAMINER CATANACH: Admit your exhibits.

MR. OWEN: I tender Exhibits 9 through 12.

EXAMINER CATANACH: Okay, Exhibits 9 through 12 will be admitted as evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Merrill, what is the -- what's going to be the further development of this pool? Are you going to drill more wells?

A. Yeah, we have plans to -- if the spacing's increased, we have plans to drill a well in the south half of 11. And we may -- After we obtain results with that, we may have further drilling in the south half of 11 or 15.

Q. What is the actual current producing rate of the Number 9 and Number 11 wells?

A. The Number 9 is approximately 5 barrels of oil, 5 barrels of water, about 100 MCF per day of gas.

The Fullerton 11 is restricted to 190 MCF per day, 160 from the Gallup and 30 MCF from the Dakota.

Q. Is that well producing any oil?

A. The 11?

Q. (Nods)

A. Yeah, it produces anywhere from zero to 8 barrels of oil per day, and right now it's producing very little oil.

Q. The Number 11 well was originally a Dakota completion?

A. That's correct.

Q. And you recompleted to the Gallup?

A. That's correct.

Q. So did you have a pretty good handle on Dakota production prior to the commingling?

A. Yes, we did.

Q. It was --

A. It approximately 50 MCF a day and one-third of a barrel per day.

Q. And a pretty steady decline?

A. Pretty steady decline, yes.

Q. So you're pretty confident that that's split pretty well between those two zones?

A. Yeah.

Q. And is the 9 -- The 9 is commingled also?

A. The 9 is commingled also.

Q. And was that also first a Dakota completion?

A. Yes.

Q. Recompleted to the Gallup?

A. Right.

Q. What was Dakota production prior to commingling on that well?

A. It was -- I can give you rough numbers. I'd say around 200 MCF per day and about 10 barrels of oil per day.

Q. Do you know what the current split on that production is in the 9?

A. I would primarily -- I would say that it's probably about half and half. Most of the water coming out of the Dakota, all the water coming out of the Dakota.

Q. Your cumulative gas-oil ratio for the 9 and the 11, is that just Dakota -- I mean, is that just Gallup, or is that commingled?

A. That's just Gallup. These numbers out of the table were taken out of *Dwight's*, and we allocated before -- between the Dakota and Gallup before we reported to the State. And the State -- *Dwight's* gets their production numbers from the State, so I believe those were Gallup-only numbers.

Q. What type of reservoir drive do you think is at work in this sand?

A. I would say just a depletion drive, solution gas drive.

Q. Solution gas drive, you don't --

A. Solution gas drive, if it's a well. If -- it's just a -- If it's more of a gas reservoir, it's just a volumetric completion, so...

Q. You don't think there's a gas cap present in that sand?

A. I can't say that for certain, and I don't know if it's that important, given the reservoir quality we have in this area.

Q. Mr. Merrill, your Exhibit Number 11, that was just done with Gallup production, right?

A. That is correct.

Q. So you're saying the original gas in place in that upper Gallup sand is 675 million?

A. That's correct.

Q. Okay. Did you do a similar curve for the Number 9 well on this?

A. I only have one pressure point on the 9, so I did not do it for that.

Q. What is the -- The Number 11, is it capable of more than 190 MCF per day?

A. It's probably capable of about 550 MCF per day, 450 to 550.

Q. So you're restricted by what? Is it a 2000 GOR on the Kutz?

A. Yeah, the -- for 40 acres, you have an 80-barrel oil allowable, and you're allowed two times that at 160, so... Yeah.

Q. Your wells are currently classified as being in the Kutz, right?

A. Kutz-Gallup Pool, yes.

Q. And your drainage area, according to the calculations you did on the Number 11 well, approximately 115 acres?

A. Yes, I took 675 million and divided it by the height of the reservoir of 15 feet, divided by a porosity of 11 percent and a gas-volume factor of probably -- I used a gas-volume factor of 81.58 standard cubic feet per reservoir foot, cubic foot.

Q. Did you use a recovery factor in that calculation?

A. No, I did not.

Q. And the permeability you used in that calculation was what?

A. For the reservoir volume? I did not -- It doesn't require a permeability.

Q. Can you submit, maybe after the hearing here, your calculations on the drainage area?

A. Yes, I can submit them right now if you'd like.

Q. Looking at the producing characteristics of the

Number 9, is it -- can you say at this point, just looking at the production, whether or not that's going to drain an area similar to the Number 11?

A. I think it's going to drain less.

Q. But you can't make an estimate on that at this point?

A. No, it appears to be very low drainage -- very small drainage area, though.

Q. Would -- Are you requesting temporary or permanent rules, or have you even thought about that?

A. I haven't really thought about that.

Q. Usually, we do temporary rules and have you come back in 18 months or two years and report, once you've gathered some additional data to support the continuation.

A. Right.

Q. Do you think that would be -- In that period of time, do you think additional information could be gathered to --

A. Yeah, it's expensive to gather it. I mean, to get another pressure point on the Gallup only requires setting a bridge plug in between the Gallup and Dakota.

Q. Well, do you think some of the data from your -- the wells that you may drill may be beneficial?

A. Yeah, they -- It's possible, yes.

EXAMINER CATANACH: I think that's all the

questions I have of this witness, Mr. Owen. Do you have anything further?

MR. OWEN: No, that's all that I have in this case, Mr. Examiner.

EXAMINER CATANACH: All right, here being nothing further, Case Number 12,027 will be taken under advisement.

Let's take a 10-, 15-minute break here.

(Thereupon, these proceedings were concluded at 10:30 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 12027, heard by me on August 20, 1998.

David R. Catanach, Examiner
Oil Conservation Division

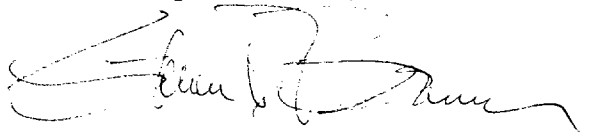
CERTIFICATE OF REPORTER

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 August 31st, 1998.



STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998