STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

CASE 9883

EXAMINER HEARING

IN THE MATTER OF:

Application of BTA Oil Producers for an Unorthodox Oil Well Location, Eddy County, New Mexico

TRANSCRIPT OF PROCEEDINGS

BEFORE: DAVID R. CATANACH, EXAMINER

STATE LAND OFFICE BUILDING

SANTA FE, NEW MEXICO

March 7, 1990

ORIGINAL

CUMBRE COURT REPORTING
(505) 984-2244

A P P E A R A N C E S

FOR THE DIVISION:	ROBERT G. STOVALL Attorney at Law Legal Counsel to the Divison State Land Office Building Santa Fe, New Mexico
FOR THE APPLICANT:	WILLIAM F. CARR, ESQ. Campbell & Black, P.A. Post Office Box 2208 Santa Fe, New Mexico 87504
FOR BIRD CREEK RESOURCES:	CANDACE CALLAHAN, ESQ. Kellahin, Kellahin & Aubrey Post Office Box 2265 Santa Fe, New Mexico 87504

I N D E X

E X H I B I T S

APPLICANT'S EXHIBITS:

BIRD CREEK EXHIBITS:

EXAMINER CATANACH: Call the hearing back to order. At this time we'll call Case 9883.

MR. STOVALL: Application of BTA Oil Producers for an unorthodox oil well location, Eddy County, New Mexico.

EXAMINER CATANACH: Appearances in this case?

MR. CARR: May it please the Examiner, my name is William F. Carr with the law firm Campbell & Black, P.A., of Santa Fe. I represent BTA Oil Producers and I have two witnesses.

EXAMINER CATANACH: Any other appearances?

MS. CALLAHAN: My name is Candace Callahan with Kellahin, Kellahin and Aubrey. I'm here representing Bird Creek Resources in opposition to BTA's application.

EXAMINER CATANACH: Can I get the witnesses to stand up and be sworn in.

(Thereupon, the witnesses were sworn.)

EXAMINER CATANACH: You may proceed, Mr. Carr.

GREGORY L. HAIR

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

EXAMINATION

BY MR. CARR:

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

A. Gregory L. Hair.

Q. Will you spell your last name.

A. H A I R.

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

A. BTA Oil Producers, Midland Texas, as a geologist.

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

A. Yes, I have.

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

A. Yes, I am.

Q. Have you made a study of the subject area?

A. Yes.

Q. Are you familiar with the proposed well?

A. Yes.

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

EXAMINER CATANACH: They are.

Q. Mr. Hair, would you briefly state what you

seek with this application?

A. We seek to drill a Delaware oil well in Section 11 of Township 23 South, Range 28 East, at a nonstandard location.

Q. Are you familiar with the rules that govern development of oil wells in this area?

A. Yes, I am.

Q. Are there any special spacing requirements?

A. I don't believe there are any special spacing requirements.

Q. What are the standard requirements for development of this particular oil pool, in terms of spacing and well location?

A. 40-acre spacing.

Q. What is the standard setback on the 40-acre tract?

A. 330 feet.

Q. What is the primary pool that we're going to be discussing in this proceeding, or primary formation?

A. Delaware.

Q. Have you prepared certain exhibits for presentation in this case?

A. Yes, I have.

Q. Would you refer to what has been marked as

BTA Exhibit 1, identify this for Mr. Catanach and review the information contained thereon?

A. Yes. This is basically a land plat or a plat showing offset operators, BTA acreage, and all wells that are currently drilling or have been drilled and are producing. Just to set you straight, the red outline is BTA-controlled acreage. It's a 320-acre tract. On the yellow outline, these are proposed proration units for 40-acre Delaware wells. The two wells that are shown there, one is a TD C-2, which is in the southwest of the southwest, and B-1, which is in the northeast of the southwest.

Q. What is the status of the B-1, do you know?

A. The B-1 has been perf'd and tested and currently is still testing.

Q. What about the C-1?

A. The C-1 is at TD and awaiting completion.

Q. The C-2?

A. The C-2, I'm sorry. The C-1 is our proposed location. I'm sorry.

Q. South of this is a tract that is operated by Bird Creek Resources. Are those all existing Delaware producing wells?

A. The wells highlighted in green are existing Delaware producers.

Q. Do you know approximately when those wells were drilled?

A. In 1989 and 90.

Q. Would you now refer to BTA Exhibit 2 and identify that?

A. This is a porosity isopach in the Delaware. It is the main main pay in the area and it's based on porosities greater than 10 percent. What this exhibit is intended to show is that the sand exists over the entire acreage block. There is no lack of sand anywhere. Everyone has this reservoir. There is no stratigraphic trap that we're aware of that separates the reservoir from anyone else.

MR. STOVALL: Mr. Carr, are we on Exhibit 2 or 3?

MR. CARR: We're on Exhibit 2.

A. I'm sorry. I got mine out of order. I'm on the wrong one. I had mine out of order. Can we go to 3? Is that okay?

Q. We'll go on to 3 and we'll come back to 2.

A. I'm sorry. All right. In any event, the other thing this is supposed to show is that the C-1 location, as we have proposed it, really gives us really no advantage in terms of pay thickness over what a standard location would be, which is just

slightly to the northeast of where the red circle is. We will have basically the same sand thickness based upon our studies.

Q. Let's go back now to Exhibit 2, the structure map, and I would ask you just to identify this now and review what this particular exhibit shows.

A. This is a structure map on top of the Delaware pay. The contour interval here is 10 feet. Again, the essence of this exhibit is to show that we obtain no real structural advantage by drilling this location. We're moving pretty much along strike as near as we can tell, and there is no advantage to be gained by this location.

Q. From a structural point of view?

A. From a structural point of view, yes.

Q. Would you now go to Exhibit No. 4 and identify and review that, please?

A. Exhibit No. 4 is a cross-section, generally north/south. It runs through three of the wells in Section 14, and one of the BTA B #1 and also a BTA Atoka producer, that you see there marked with a gas symbol, and that's the Pardue #1.

What this shows is the stratigraphic interval that we're exploring for here. The green

marks on these density neutron logs are the porosities where these wells are perforated in, and really shows how flat the structure is out here also.

Q. Could you describe the basic nature of the Delaware formation in this area?

A. The Delaware in this area is a fine grain sandstone that is very tight and is more or less a blanket deposit.

Q. Basically the conclusion you've reached from your geologic study is that in terms of structure or thickness of the formation by moving to the proposed location, you've gained no advantage?

A. That's correct.

Q. Has notice of this application been provided to offsetting owners as required by the rules of the Oil Conservation Division?

A. Yes, it has.

Q. Would you identify for the Examiner what has been marked as Exhibit No. 5 and then Exhibit No. 6?

A. Exhibit No. 5 is notification of the unorthodox location and requests for administrative approval of that location. Also, copies of the green cards that were sent out showing that the people received those notifications.

Q. Will BTA also call an engineering witness to testify concerning the risk involved in drilling this well?

A. Yes, they will.

Q. Do you have anything further to add to your testimony?

A. I've got one more.

Q. I'm sorry. If you would, review Exhibit No. 6, please.

A. Number 6 is the hearing notice and all the green cards showing that the people were notified.

Q. Do you have anything further to add to your testimony?

A. No, I do not.

Q. Were Exhibits 1 through 6 either prepared by you or compiled under your direction and supervision?

A. Yes, they were.

MR. CARR: At this time we move the admission of BTA Exhibits 1 through 6.

MR. STOVALL: Just a minute, Mr. Carr.

(Discussion off the record.)

EXAMINER CATANACH: Exhibits 1 through 6 will be admitted as evidence in this case.

MR. CARR: That concludes my direct

examination of Mr. Hair.

EXAMINER CATANACH: Ms. Callahan.

EXAMINATION

BY MS. CALLAHAN:

Q. Mr. Hair, help me out, if you would. Can you tell me, if you gain no structural advantage and no advantage in terms of thickness, why are you trying to locate here rather than somewhere else?

A. If I can, I would rather defer that. Our engineering witness is going to cover why the nonstandard location is being drilled where it is. It has nothing to do with geology, is what we're saying.

Q. Okay. It has to do with engineering?

A. It has to do with topography.

Q. Topography?

A. Yes.

Q. And that's the sole--

A. That's the sole purpose.

Q. Will your engineer also be able to tell me whether or not you considered directional drilling?

A. Yes, he'll discuss all that.

Q. I would like to ask you, if you don't mind, about the B-1 well. Can you tell me, do you know now what the producing rate of this well is?

A. I do not recall it. I think the next

witness will know, but I don't recall, to be honest with you. I believe it's somewhere in the neighborhood of 200 barrels, but that is not accurate.

Q. It is producing out of the same formation as the Teledyne?

A. Yes.

Q. And what you propose for the Pardue?

A. Yes.

Q. Do you have a potential on the B-1?

A. No, I don't believe it's been potentialed.

Q. Do you know what the net pay feet is?

A. Yes, 73.

Q. This is drilled at a standard location?

A. Yes, it was.

Q. Do you propose drilling this other 40 acres?

A. We're evaluating that right now. The Atoka producer that is there is marginal, and it's possible that that well will be recompleted into the Delaware.

MS. CALLAHAN: Could I have a minute, please? (Pause) I have no further questions.

MR. STOVALL: Ms. Callahan, let's get one thing clear on the record. When your last question referred to the 40 acres, is that the--

MS. CALLAHAN: I'm sorry. I was referring

to the northwest/northwest of this 160, which would be--let's see--

THE WITNESS: Northwest of the southwest. It's where the Atoka procedure is marked and where the gas well symbol is. That's the well we were talking about we could possibly recomplete.

EXAMINER CATANACH: No further questions?

MR. CARR: No further questions.

EXAMINER CATANACH: The witness may be excused.

MR. CARR: At this time we would call Keith Logan.

KEITH E. LOGAN

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

EXAMINATION

BY MR. CARR:

Q. Would you state your name and place of residence.

A. Keith E. Logan. I live in Midland, Texas.

Q. Mr. Logan, by whom are you employed?

A. I'm employed with BTA Oil Producers as a reservoir engineer.

Q. Have you previously testified before the Oil Conservation Division?

A. Yes, I have.

Q. At the time of that testimony, were you credentials as a petroleum engineer accepted and made a matter of record?

A. Yes, they were.

Q. Are you familiar with the application that has been filed in this case on behalf of BTA?

A. Yes, I am.

Q. Have you studied the area?

A. Yes, I have.

Q. Are you familiar with the proposed well?

A. Yes, I am.

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

EXAMINER CATANACH: They are.

Q. Mr. Logan, I would like to direct your attention to Exhibit No. 7, and if you would, I would like you to first identify this for the Examiner, and then using this exhibit, explain how it was that you selected the particular proposed location.

A. Okay. Well, to start out, I realize that this may be a little confusing, but what it is, it's an expanded copy of a topographic map. To give you a basis, if you look up towards the top, oh, where the number 11 is, that is the center of Section 11. The

large red outline is all of Section 11. And what I've outlined in a smaller red area is the proration unit for the Pardue "C" No. 1.

Now, as you can see, there are significant topographical problems out here. In fact, our original location I've shown as a triangle No. 1. We attempted to stake that location, but it was in a canal coming off the Pecos River.

Q. Is that a standard location?

A. That is a standard location.

Q. What is indicated by the triangle with a "2" beside it?

A. We attempted to move east, but all of this area shaded in green is in a flood plain area. In fact, this off to the west that you see in green, I have enhanced it to show the flood plain area.

Q. We also have an area shaded in green to the west. Is that an additional flood plain?

A. Yes, it is. And there are several other topographic problems. You've got a railroad that runs through here; you, of course have the Pecos River.

Q. Where is the Pecos River?

A. Okay. Well, up to the north, this, running down here by the number 11--

Q. The hashed area?

A. --is the Pecos River. This is a dam right here and then the main course of the river comes down through here.

Q. So right below the "11" there's a dark line, and that's the location of the dam?

A. That's right.

Q. And coming down across the 40 acres in question is the river bed?

A. Right.

Q. The railroad is indicated how on this exhibit?

A. It's the line that's got the perpendicular hash marks going across it.

Q. Going east/west across the upper part?

A. Going east/west, right.

Q. Would you also identify the location of pipelines across this 40 acres?

A. The pipeline is the dashed line, and I did add some additional pipeline in here going from the south up through the little square below the proposed location, which is a dehydrator station for this pipeline. It continues on and ties into this pipeline up to the north.

Q. So it goes across the western portion of the spacing or proration unit, and then there's a

pipeline that cuts across just the very northeast corner of the 40 acres? It ties into that line?

A. Right.

Q. Why couldn't you have moved the proposed location indicated by the red circle due north?

A. If you go due north, you really--you're falling off into this flood plain. It's a very severe drop off right here. We didn't have room to put the equipment in there to drill the well.

Q. Based on all of these topographical conditions, pipelines, railroads, the Pecos River, flood plains, bluffs, was there any other location other than the proposed location from which you could drill a well on this 40-acre tract?

A. No, there was not.

Q. Did you consider directionally drilling from this location?

A. Yes, we did consider directionally drilling and moving to the northeast to a standard location. The problems that we see is increased drilling costs, we also see, yes, initially these wells will flow, but eventually they will need to be artificially pumped. In doing that, you increase your operating costs due to excessive rod wear, potential tubing leaks, which lead to premature abandonment and loss of reserves.

Q. What additional costs do you estimate would be incurred in directionally drilling from this surface location to a standard bottom hole location?

A. I've been told by our drilling people that it would cost around $70,000.

Q. What is the initial cost of drilling a well?

A. $450,000.

Q. Other than directional drilling, was there any other option available to BTA that would enable you to develop the reserves under this 40-acre tract from a location thereon?

A. No, there wasn't.

Q. You've drilled two other Delaware wells immediately offsetting this well, as shown on the exhibits presented by Mr. Hair, is that correct?

A. Correct.

Q. Based on the performance of these and other Delaware wells you're familiar with in the area, could you describe how these wells typically perform?

A. The Delaware typically, in this area of Eddy County, some have come on pretty strong but ultimate recoveries have not been that great on an average. We are seeing high rates in this area initially.

Q. What is the well that you're currently testing? What is it able to produce at this time?

A. The last rate I've got on that is 235 barrels a day.

Q. Does an initial performance on the Delaware well, in your opinion, give you a real indication of what that well could ultimately produce?

A. No, it does not.

Q. How would you characterize the well that you are now testing and the wells that Bird Creek operates south of you? How would you characterize these in relationship to other Delaware wells?

A. Oh, they're definitely better than average.

Q. What kind of long-term performance data do you have on any of the wells in this pool?

A. Well, all I've done is, I've looked at fields in the area. I found one that had reserves of a significant amount, but an average Delaware well is marginal, at best.

Q. How much production history do you have on any of these wells in this immediate area?

A. Very little.

Q. When you're drilling and completing a Delaware well in this area, can you produce the well prior to stimulation?

A. Not in commercial quantities.

Q. What do you have to do to make a commercial well?

A. It requires a fracture stimulation.

Q. Why is that?

A. It's a very tight, low permeability reservoir.

Q. Based on your understanding of the Delaware, do you have an opinion as to how large an area one well in this pool is likely to drain?

A. I've got very limited data here, but the fact that they do have to be fracture stimulated to become commercial indicates that permeability is so low that the drainage area should be low, also.

Q. If you're drilling your third well, why is it that you have limited data?

A. Well, because of the marginal characteristic of the prospects themselves, because if you base it on an average Delaware well, BTA would not drill them.

Q. If you had an average Delaware well without a penalty, based on your understanding of the Delaware, would you expect that to be an economic venture for BTA?

A. No, I would not.

Q. In your opinion should a penalty be imposed on this well due to its unorthodox location?

A. No, it should not.

Q. You indicated that a well would cost approximately 450,000. What sort of producing rates are you obtaining or do you anticipate from these wells?

A. Well, all you're allowed to produce is the depth bracket allowable of 142 barrels a day.

Q. When you're looking at one of these wells, how do you go about evaluating the economic risk that's involved in making a successful well or deciding to drill a well in the area?

A. Well, here the only way I could, with the limited production history determine reserves, was volumetrically. And volumetrically I did assign 150,000 barrels. If you look at any Delaware field, your average well is going to be well below that point.

We feel like, yes, the risk is low that we will find some Delaware production, but with lack of production history we just don't know what kind of reserves we will find.

Q. There's really no risk that you're going to hit the Delaware?

A. Right, there's just risk, risk in the reserves you're going to find.

Q. You used 150,000 barrels. Is that what BTA needs to meet its economic limits?

A. Yes.

Q. What would be the effect of imposing a production penalty on this well?

A. Well, it could keep us from drilling the prospect.

Q. When you drill a prospect in a pool like this and are attempting to recover your costs, what sort of a production pattern are you looking for to best recover your costs? Are you trying to get your production, most of it up front, or--

A. Well, certainly.

Q. What is the effect of a penalty on recovering your costs?

A. It will lengthen your payout and ultimately reduce your return on investment.

Q. Is there any doubt in your mind at all that there are Delaware reserves under your tract?

A. No.

Q. If a substantial penalty is placed on this well, could BTA produce those reserves?

A. No, they could not.

Q. In your opinion, would those reserves ultimately be left in the ground?

A. Yes.

Q. And would that result in waste?

A. Yes, it would.

Q. What would be the impact on BTA's correlative rights of imposing a substantial penalty on this well?

A. Well, it denies us the opportunity to share in the reserves.

Q. What do you think the impact would be on the offsetting operator of permitting you to drill at this location without a penalty?

A. I don't believe they'll be impacted.

Q. Why is that?

A. I just think with the low permeability, I don't feel that we're going to drain them.

Q. In your opinion, will granting your application for this proposed unorthodox well location without penalty be in the best interest of conservation, the prevention of waste and the protection of correlative rights?

A. Yes, I do.

Q. Will it results in the recovery of oil that would otherwise would not be recovered?

A. No.

Q. Would granting the application result in the recovery of oil that otherwise would not be recovered?

A. Yes, it will.

Q. Was Exhibit No. 7 prepared by you?

A. Yes, it was.

MR. CARR: At this time I would move the admission of Exhibit No. 7.

EXAMINER CATANACH: Exhibit 7 will be admitted as evidence.

MR. CARR: That concludes my direct.

EXAMINATION

BY MS. CALLAHAN:

Q. Mr. Logan, did you say that you considered ultimate recovery on these wells to be 150 barrels of oil?

A. 150,000.

Q. 150,000, I'm sorry. Did I also hear you say that you consider that a marginal--

A. No. What I said was, with the lack of production history here, if we were to find an average Delaware field, it would be a marginal deal, you know. And we feel like we're taking quite a bit of risk, yes, I assigned 150,000 barrels, but we feel

there's a lot of risk in that number.

Q. This 150,000 barrels was assigned to your more recent well? Is that this one, the B-1?

A. Right. And we feel like there is quite a bit of risk in that due to the lack of production history and what I've seen in Delaware fields out in here. I don't know exactly what the average would be, but if I had to guess, it would be 50,000 barrels and we would not even consider doing it for that.

Q. Did you run calculations on estimated recovery for these other wells that are producing out of the same formation?

A. Well, they just haven't been on very long.

Q. Even the Section 23 well?

A. Well, we couldn't have more than four, five months of production. I just think the data is limited.

Q. What do you estimate payout to be on your B-1?

A. On our B-1?

Q. Yes.

A. I think it's too early to determine at this time. I mean, we have just recently completed that well. We haven't actually potentialed it yet. It's shut in now waiting to build a tank battery. We've

got probably three days of production, still have some load from a frac to recover.

Q. But you say it has a current producing rate of 235 barrels of oil per day?

A. Right.

Q. If you projected out the maximum you're able to produce, I believe it's 142 barrels of oil per day?

A. Right.

Q. If you used those figures, what would you estimate your payout to be? Can you do that?

A. Oh, I could do it. I'm thinking in the neighborhood of seven months, eight months.

Q. To pay out for the B-1?

A. Right.

Q. Would you consider that a good well, then, if it pays out in seven to eight months?

A. That's not the only economic criteria we use. We also like to get a certain return on investment. And, yes, they come out here and have a short payout but don't last for a length of time, all I've got to base it on is Delaware fields in the area. I can think of some which made very good in reserves and yes, of course, that's what we're hoping for. But, with the limited data I can't say any more

beyond that.

Q. Do you have experience with other Delaware wells in other areas?

A. I have studied them, yes.

Q. How long do they normally produce?

A. Oh, they can produce a long time and those are the ones, of course, that will have great reserves. But I see you'll have fields that may make 300,000 barrels in one well but the average--there will be so many wells that make 20 to 30, that you can't justify the risk.

Q. Can you tell me how many acres you think one of these wells will drain?

A. Well, there again, I have limited information. I would say I don't think it will drain more than 20 itself, but I have nothing to base that on.

Q. What would be your basis for estimating 20 acres?

A. There is no basis for it.

Q. Can you give me the choke size for the B-1 in your flowing tubing pressure?

A. Flowing tubing pressure, I think, is a thousand. The last rate I had was 230 barrels a day, 53 barrels of load water, 12/64-inch choke. Tubing

pressure was a thousand.

Q. Can you tell me how wide this railroad right-of-way is?

A. Right in the areas we thought we could go you need to be 200 feet away from it.

Q. Is that because that's what the railroad allows or what do you base that on?

A. I'm basing that on their requirements.

Q. On the railroad's requirements?

A. Right.

Q. Under 200 feet, is that right?

A. Right.

MS. CALLAHAN: May I have a minute?

Q. Is the 200 feet that you said you needed for the railroad right-of-way, is that 200 either side of the railroad or is that--

A. Let me get that out. Now, if you see here, across the majority of this proration unit they are crossing the Pecos River. This is the proration unit. And, as you can see from the center, you go 200 feet here and 200 feet here and all you've got left is right here and you're on a bluff and in a flood plain right here. It's this whole area that they're crossing the river, there's 200 feet out here just for the railroad in either direction.

MR. STOVALL: Mr. Logan, I might point out that the Examiner is part of this hearing process and he would like to see what's going on, too.

MS. CALLAHAN: May we have this as an exhibit?

MR. CARR: You bet. Mr. Examiner, what we have is a plat that shows the spacing unit, and in the green hash lines a right-of-way for the railroad is indicated on this, crossing the Pecos River. There's a small portion to the northwest that is narrower, hashed in pink, a narrower right-of-way marked in pink, and I'll mark this as Exhibit No. 9, and I will move its admission.

MS. CALLAHAN: Thank you.

EXAMINER CATANACH: Exhibit No. 9 will be admitted as evidence:

MS. CALLAHAN: Would you like to look at it before I look at it?

EXAMINER CATANACH: Go ahead.

Q. (BY MS. CALLAHAN) Let me ask you another question. Can you tell me why you didn't propose drilling somewhere in here?

A. Well, for one thing, if you look at the scale of--

Q. Excuse me. I'm referring to the

northeast/northeast corner--

MR. STOVALL: I didn't hear the question.

MR. CARR: The northwest/northwest of the spacing unit.

MR. STOVALL: Would you repeat the question so we could hear it, please.

MS. CALLAHAN: I asked him why he hadn't attempted to locate the well in this part of the spacing unit--

MR. STOVALL: From the northwest of the northwest?

MS. CALLAHAN: Northwest, just north of the railroad right-of-way.

A. Well, for one thing, you've gone down and you've come back up right here at the edge of the proration--

MR. CARR: What are you referring to, Mr. Logan?

THE WITNESS: The railroad.

MR. CARR: What exhibit are you referring to?

THE WITNESS: I'm referring to the topo map, Exhibit 7.

MR. CARR: You're in the northwest of the northwest corner?

THE WITNESS: Right. And in here we've got a problem not only with the railroad, but we've got a problem with the pipeline. We attempted to move this a little bit farther north, but we couldn't get what we needed in here to drill the well. And, as you can see, that isn't much greater of an area than we had here.

MR. CARR: The Examiner can't follow what you're saying. When you say "here" and "this," the Examiner can't follow that.

THE WITNESS: What I'm talking about is down--well, up in the northwest of the northwest, you're from the flood plain, the green on the western edge of the proration unit. Then you come up to the railroad and you're going back down, and you've got the pipeline here. I went out and looked at all these potential locations, I must say that, and we felt like this was the only one we could get everything in there we needed to drill, and get all of our equipment in there.

Q. (BY MS. CALLAHAN) How much acreage do you need for a location?

A. Approximately 150 by 150.

Q. I don't know what--

A. I mean, to get everything in there. But

again, over in here, you've got problems with the pipeline. They didn't like us getting close to them down here, either, because we were trying to move, from the proposed location, move northwest.

Q. Can you guesstimate for me what acreage is needed in terms of--I don't know how to work the scale on this map. Can you give me an idea of how much surface acreage is needed for the well?

A. One inch is equal to 500 feet, and we're talking about an area something like that.

MR. CARR: Mr. Logan, you'll have to speak up for the reporter and also for the Examiner. You've drawn a square in the northwest corner of the unit, and that's indicative of the amount of surface acreage you think you would need to put all equipment in place to drill a well?

THE WITNESS: Right.

MR. STOVALL: Approximately how big is that square, Mr. Logan? What are your dimensions on that, would you estimate?

THE WITNESS: It would be about three-eighths of an inch, I guess.

MR. STOVALL: No, I mean, go ahead and put it in footage.

THE WITNESS: 150 by 150.

Q. (BY MS. CALLAHAN) If you're going to drain 20 acres by one of these wells and you estimate 150,000 barrels of oil as your reserves, what's your recovery factor?

A. I used a 20-percent recovery factor.

Q. Do you consider a 20-percent recovery factor normal for a tight sand?

A. No. I would say it's probably somewhat optimistic.

MS. CALLAHAN: I have no further questions.

EXAMINER CATANACH: Anything else?

MR. CARR: One question.

FURTHER EXAMINATION

BY MR. CARR:

Q. Mr. Logan, do you believe there's a satisfactory surface location in the northwest corner of this proration unit from which you could drill a well?

A. No, I do not.

MR. CARR: That's all I have.

MR. STOVALL: I have a question, Mr. Examiner, just on this Exhibit 7.

EXAMINATION

BY MR. STOVALL:

Q. The orange lines that seem to be wandering all over the map, I assume they're contour lines?

A. Yes, that's correct.

Q. What is the contour interval?

A. In here I believe it's 10 feet. There are some pretty severe changes going on out here, I must mention that. There are a lot of low places and then bluffs where locations were impossible.

Q. The reason I'm asking, I simply don't see the footage, the elevation markings on the contour lines in this area, and when you go from that smaller flood plain on the west side of the proration unit towards the railroad track, sort of paralleling the river and then up towards the pipeline, what is the direction of slope? What is the contour of the surface in that area? Is it up? down? both?

A. You'll be going up there.

Q. Consistently up as you're going north?

A. Yes, that's correct.

MS. CALLAHAN: May I ask one more question in relation to the contour line?

EXAMINER CATANACH: Sure.

FURTHER EXAMINATION

BY MS. CALLAHAN:

Q. If these are 10-feet intervals, does that mean this flood plain is 20 feet lower than your proposed location?

A. That would be correct, yes.

Q. Then does this flood plain also extend all through this area?

A. That's the way it appears.

Q. Excuse me. Let me show the Examiner. I am asking him if the flood plain then extends all the way here. I didn't have a way of describing it other than just following the railroad to the southwest, and I think he answered in the affirmative, is that right?

A. Right. I did not follow it out that far, and I did enhance this so I could show you what I was talking about.

MS. CALLAHAN: All right. I have no further questions.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Logan, is this federal land or fee land or state?

A. This is all fee land.

Q. What are the requirements for not drilling

anywhere in the flood plain? Is that just--

A. Well, the location we attempted to stake at #2, we were contacted by the Corps of Engineers and they said we would not be able to get that location permitted.

Q. Did they, in fact, tell you you could not permit a well anywhere in the flood plain?

A. We had him come out there and look around. We had several authority people come out there and look at the area, trying to get a satisfactory location out in this area.

Q. And with all these folks out there, this is the only location in this quarter-quarter section that is feasible?

A. Yes, it is.

Q. Is this a new field?

A. It's relatively new, yes. There have been some wells drilled even south of Bird Creek's wells, their wells in 14. There were some East Loving Delaware wells down in Section 23, also.

Q. There at the north end of the field?

A. Right.

Q. And which well did you say you have about four or five month's production history on?

A. I would say the RGA #1. They completed the

Carrasco #1 first, but it was completed as a shut-in gas well.

Q. Where are those wells located?

A. They're down to the south of our proposed location. To tell you the order they were drilled in, the Carrasco well was drilled first but completed as a shut-in gas well. They came south and drilled the RGA #1, the RGA #2 and then recently the Teledyne well in the north part of the section.

Q. Now, you testified that it's hard to tell whether a Delaware well is going to be good or bad from the initial production?

A. Right.

Q. What dictates whether a Delaware well is going to be good or bad? What factors come into this?

A. Well, I'm looking at it historically only, because that's all I've got is history in the area. I would say, you know, if it's a blanket sand it's got some extent to it, but a typical Delaware well, BTA would not drilled. We feel like what we've seen, we've got some wells to the south that are potential for over 200 barrels a day which says, well, this may be better than average, but limited production history keeps us from saying exactly what they'll make.

Q. Within this field, what you're saying is

you're probably looking at some pretty good Delaware wells as a whole?

A. We're hoping to.

Q. You have no real evidence to support the statement that these wells will probably drain 20 acres?

A. No, I don't. We don't have any pressure information due to what we feel, them being potentially marginal. We have not run any additional tests, so I don't have a real number for permeability; which, without that, I can't calculate that.

Q. Has your company ruled out directional drilling at this point?

A. Yes, we have.

Q. As uneconomical?

A. Uneconomical.

Q. Without knowing what the reserves might be?

A. Well, you've got the increased costs of drilling, you've got potentially severe production problems in the future, high operating costs. It has been considered.

Q. Have you had personal experience with a well that's been directionally drilled and the type of problems that you're talking about?

A. I have not.

EXAMINER CATANACH: I believe that's all I have of the witness at this time.

MR. CARR: That concludes our direct case.

EXAMINER CATANACH: The witness may be excused.

BILL M. BURKS

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

EXAMINATION

BY MS. CALLAHAN:

Q. Would you please state your name and occupation for the record.

A. It's Bill M. Burks, and I'm co-owner of an Oklahoma partnership doing business as PK Energy.

Q. And your educational Background?

A. I received a BS degree in petroleum engineering from the University of Oklahoma in 1961.

Q. Would you summarize briefly your employment experience?

A. Yes. I worked for Amoco for three years right after graduation in 61. Then I went to Reading & Bates. I was made president of Reading & Bates Petroleum Company in 1982 and served in that position until retiring in May of last year.

Q. Would you tell us your relationship with

Bird Creek Resources?

A. I'm representing Bird Creek as a consultant in this matter.

Q. Why are you appearing here today?

A. I'm appearing to oppose the proposed location in Section 11.

Q. Have you made a study, engineering and geological study that, in your opinion, applies to this hearing?

A. Yes, I have.

Q. Have you previously testified before the Oil Conservation Division?

A. No, I have not.

MS. CALLAHAN: Mr. Examiner, I tender Mr. Burks as an expert petroleum engineer.

EXAMINER CATANACH: He is so qualified.

Q. Based upon your studies, Mr. Burks, can you tell me what conclusions you drew?

A. Yes, I can. We feel that the BTA well drilled in the proposed location will certainly drain 40 acres. We also feel that it will affect drainage underneath Section 14. Let me, then, go to--

Q. Why don't you just go through your conclusions.

A. That would be fine. Oh, before I refer to

the exhibits?

Q. Yes.

A. Mr. Examiner, we think that well will drain oil from underneath Section 14, which Bird Creek has leased. We think that the drainage will amount to and we certainly agree with the 150,000 barrel estimate of oil reserves that the engineer has presented here, but we think if that well is drilled in that location, about 32,800 of those barrels will come from underneath Section 14.

I feel that for these tight sands, for a sandstone with a gas solution drive to have any more than 20 percent is very, very unusual. They normally range from 9 to 21 percent, and we have considerable published literature which I think bears that out.

I feel that for these wells, 15 percent recovery factor is about the maximum that you can look for. If I take those kinds of reserves and a 15 percent recovery factor, it certainly spreads them out over a 40-acre tract.

Q. Did you have any other conclusions?

A. You mean relative to location of the well?

Q. Yes.

A. Yes, I do. I still cannot understand why the well cannot be located in the northwest-northwest

or somewhere along the west half of the southeast-southwest of Section 11. If I may, let me refer to this exhibit which is No. 7, BTA's Exhibit No. 7.

I have no problem in recognizing this area right here as a flood plain. That's down in the river bottom. I have considerable difficulty understanding that that is a flood plain. That contour, as you can see, extends all the way over across the highway into the next section, and I know of no flood plain--I've been on the ground there enough to say that there is not a flood plain coming through that area and across that highway. I've been there when it's rained, which is not that often, but I've just never seen water in those low areas.

Consequently, I feel that the well could be located somewhere in the west half of the northwest of the southeast of the southwest. And at a location in there the only leases other than this 40-acre tract, which is the southeast-southwest, that would be affected by drainage would be BTA leases and not Bird Creek leases.

I further feel that one of these wells to this Delaware pay--first let me say that this Delaware is not performing as other Delaware fields have in

southeastern New Mexico. I think we have an exceptional field here relative to all of those others. There are a very few wells that I can find, at least in Eddy and Lea County, that produce from this basil Delaware sand. Most are shallower, higher up in the Delaware formation.

Q. Could I interrupt you so we can establish a better basis for what we're going to say. Do you feel more comfortable referring to their exhibit?

A. Sure, it's a larger scale, so I have no problem in using that. Do you want to go back to it?

Q. Then we will not enter our Exhibit 1.

A. They have a larger scale there and it's easier to read.

Q. Okay.

A. I assume this is USGS topo map. It appears to be the same as the one we have.

Q. Mr. Burks, you said that you believe, based on your studies, that there was a better standard location for this well. Can you tell me upon what you base this conclusion? And I would offer Exhibit 2 and ask you to identify it and tell me what it is and how it was prepared?

A. Okay. My Exhibit 2 varies somewhat from the isopach map, and what I have here is an isopach

that I prepared. I have used net pay from these wells, not just total porosity above 10 percent. Consequently, any time that water saturation exceeds 60 percent, I do not count that as pay. If I don't have sufficient separation on the lateral log, I do not use that on pay.

So I think the difference to be shown is, in the Teledyne #1, I feel we have 62 feet of pay, and if my memory doesn't fail me the other map showed 80 feet. So all I'm saying is those are the reasons for this isopach being somewhat lower in numbers than the one that was previously presented.

I will say that in referring to my isopach map, the lower most well there that shows 56 feet in Section 14 is our Carrasco 14-1. You'll note it has 56 feet, and you come to the north and our Teledyne #1 has 62 feet. That's six feet difference. If I come on up to the proposed location which is the southwestern most of the three locations in the southeast-southwest of Section 11, if I come to that point and using my map, somewhere around 58 feet of pay. So, I don't think that a well drilled in that location will perform from a productivity standpoint any differently than the Teledyne--okay?--because I think it will have slightly more net pay than our

Carrasco down there to the south.

Now may be a good time to tell you about that Carrasco. That Carrasco has produced for a little over six months and has made 25,000 barrels of oil. It is still flowing 150 barrels on 10/64 with 1,000 pounds tubing pressure. I have very little difficulty in extrapolating that out to 150,000 barrels reserves. And while we're on that subject, can I go on south?

Q. Yes.

A. I don't show it on an exhibit, but it's been referred to earlier in testimony. There is a--no, it's not on anything, but there is a well in Section 23. It's in the northeast of the southwest of Section 23. Now, that well is the oldest well in this field that we have. It has been on production for two years as of this past month, or March 1st. It came on March 1, 1988, so almost two years.

It has produced 60,000 barrels of oil, has established a very good decline rate. If we extrapolate those out, we come up with 130,000 barrels for that well. If we do a volumetric calculation on that and back into a recovery factor, it's a 15 percent. So, taking it from there, then, up to this area, because as far as log quality these wells don't

look that much different than that SCB 1-23 down in Section 23.

Those are the only two wells that have sufficient production history, although the RGA #1--by the way, the Carrasco 14-1 of ours shown on that isopach map was not a shut-in gas well. It was a twin to an old Morrow well. It was shut in waiting on a gas/pipeline connection, just to clear that point up. Then the well that's not shown on my isopach that's just to the south of that Carrasco 14-1 that's showing 56 feet there, the well just south of there is the RGA #1 and it looks very much like the Carrasco. It has now produced a little over 18,000 barrels of oil and it came on about a month after the Carrasco did.

Q. Are you satisfied that you have adequate well control to prepare this map?

A. Absolutely. In addition to the well down in 23, RB Operating has drilled another well which is the offset to the SCB 1-23. Then, the west offset to that is an Amoco well, so we now have those three wells down there, we have our four wells here, and then, of course, the BTA well on farther north in Section 11. So I think we have very good control, and we have numerous wells in the area. It's a great area to work in. We have numerous wells that are producing

from zones deeper than the Delaware, so you have good log control, good well log control in the area.

Q. Did you prepare anything else that was the basis of your conclusion?

A. Oh, I've prepared a structure map which is Exhibit 3.

Q. Would you tell me what that is and how it was prepared?

A. It's a structure map on the top of that Delaware pay that produces in the Teledyne #1, and as I've learned today produces in the BTA well that was just completed in Section 11.

I think the thing that this shows is that structure doesn't really matter in this case. I agree with earlier testimony. We've got wells in here, if you'll look back again down there in Section 14, at that Carrasco 14-1, showing 3,065 subsea elevation, it's lower than the Teledyne by what, 10 feet? 9 feet? something like that. And there's no difference in those two wells. They produce, maybe, two barrels of water a day. Even the Carrasco, the lowest well on this map, is still only producing about two barrels a day after having produced 25,000 barrels.

Q. Mr. Burks, you concluded from your studies that BTA will gain an unfair advantage by drilling

their well in the proposed unorthodox location. Do you have something that you can show us supporting this conclusion?

A. Yes, I do, and it's Exhibit No. 4.

Q. Would you tell us what this is and how it was prepared?

A. It's just a simple circle map. Each of those circles that you see there represents a 40-acre area, radius of 745 feet.

With that well drilled in the proposed location, you can see the overlap there between the Teledyne #1 and the proposed well. I think that the drainage represents, as I said earlier, 32,800 barrels of oil or about 22 percent of their total reserves of 150,000 barrels, and I think that will come from underneath the Bird Creek leases in Section 14.

Q. Let's go over what you've defined as the drainage area by the BTA proposed well. Would you clarify for us the fact that this extends over into another proration unit, the 40 acres?

A. Well, yes, it does, but they're still Bird Creek leases.

Q. Okay. I wanted to clarify that. Would you, based on BTA's proposed location here, do something differently in terms of how you would locate

a well in this section or in this proration unit that you wouldn't do otherwise?

A. You're talking about the northwest-northwest of Section 14?

Q. Yes, I am.

A. There are several options available. One, we could move that from the center of that 40-acre tract and could move to the northeast to offset some of that drainage that we think we will experience as a result of the proposed BTA well. But at that point, then, we are also going to--we won't be preventing waste, we will also leave some oil down in the southwest corner and over on the west side of the northwest-northwest.

That goes on and on forever, as you move west. We're very hesitant to do that. We've attempted in every case to get these wells in the center of the 40-acre tract because we believe that they are going to drain each 40-acre tract.

Q. Mr. Burks, do you have a recommendation for a penalty?

A. Yes, but aren't we going to talk about directional drilling before we do that?

Q. Yes, we'll do that.

A. Okay. You want me to talk about a

penalty. It's my understanding, and not having appeared before this Commission before, it's my understanding that a common penalty is based on distance of the well from the 330 location and applies only while the well is producing its allowable.

What we feel here is that if that well only makes its allowable for, say, six months, if the proposed well only made its allowable for six months, the penalty would apply during that period. We would not have offset the 32,800 barrel drainage down in Section 14. I think that that well would have to produce--have to be capable of producing allowable for 16 months for that to occur to be balanced out.

Consequently, it would be my proposal that that well not only would be penalized during the allowable, during the period that it was capable of making allowable, it should be penalized afterwards based on its capacity to produce, until such time as that penalty equaled 32,800 barrels.

Q. Did you have a percentage in mind for the penalty?

A. It's my understanding that the percentage penalty, based on just distance, would be 46 percent. And I have no problem in applying a 46-percent penalty to the capacity of that well to produce after it no

longer will make its allowable.

Q. And that would tie into the producing rate as well as the allowable?

A. I haven't calculated what period of time that would take. I'm just saying that penalty would only be in effect until the cumulative penalty equaled the 32,800 barrels of drainage from Section 14.

Q. Did you have in mind a way that something like that could be policed?

A. I realize any time we talk about something like this, the mechanics of doing it are not always as easy as we think. I would feel that anyone in the situation BTA would be in, assuming that penalty was assessed in that manner, that they could limit the well themselves. I do think there should be some checks and balances, perhaps every six months a well test witnessed by the offset operator, to determine that, yes, they were abiding by that penalty throughout. And that's not meant to offend anyone, I just know how those records get lost in a well file over a period of time.

Q. Mr. Burks, you stated that you had come to the conclusion, based on your study, that a standard location could be achieved by means other than as proposed by BTA or, I guess, by other means than BTA

says they cannot achieve it. Can you tell us how that is? And I offer Exhibit 5, and ask you to tell us what that is?

A. Well, there are AFEs to go with this. Did we get the AFEs?

Q. Yes, Exhibit 6. Why don't you go ahead and identify those and tell us how they were prepared.

A. All right. My estimate to directionally drill from the proposed location of this well back to the center of the southeast-southwest, the incremental cost of doing that is $30,000. You have two AFEs that are part of Exhibit 6.

If I could refer you to the first one, where it says "well" it just says Delaware well. We differ quite a bit in our drilling and completion costs down here. I don't know why we drilled and completed four of these wells. The maximum cost we've had on any one was $354,000, and that was due to some problems in cementing the pipe. We're knocking out our wells now for about $330,000 each, that's drilled and completed.

So if I look at just drilling a vertical well and this is simply one of our AFEs that we're using, getting ready to drill another well, I have a total drilled and completed cost of $330,000. If you

look at the next page, I have another AFE there which assumes the directional drilling of this well from the proposed location to the center of that 40-acre tract. Quite frankly, the only difference in here is that the directional drilling service itself is about a 17--and it's listed down here as directional drilling service, it's about two-thirds of the way down the page--it's a $17,200 item. However, we have to go on day rate with a drilling contractor, which will run $6,000 a day rather than a footage rate, so that drives our drilling costs up from about $80,000 $90,000.

Consequently, the incremental cost of directionally drilling that well, we feel, is the difference between $360,000 and $330,000. With the wells I've just told you about, the Carrasco 14-1 paid out in about four months. It was our most expensive well.

Moving to Section 5, here's how we feel the economics look, Exhibit 5. Here's what we think the economics look like for a vertical well versus a directional well. And, as you can see, there's very negligible effect. You increase payout of the well by about two weeks. These numbers are, by the way, based on 150,000 barrels for a well, drilling cost of

$330,000 for the vertical and $360,000 for the directional. As you run down the line, you cut the directional versus the vertical, you're cutting that cash flow over the life of the well from 1.86 to 1.83. Your 10 percent present value of cash flow drops from 1.42 to 1.39 million. Payout went from five to five and a half months for the directional well. Internal rate of return in both cases is over 100 percent. Finding cost, $2.54 in the vertical case and $2.77. Those are very acceptable finding costs, particularly in this date and time.

Q. Do you have any other comments on these exhibits?

A. I don't think so.

Q. Did you have a comment about BTA's Exhibit No. 4?

A. Is that the cross-section?

Q. Yes.

A. Oh, just a clarification. This Carrasco 1-14 is an old Morrow well that was drilled and completed in 79. Our well is a twin to this well, so this was not a recompletion. We only ran a case hole log, and I guess I can't visit with this fellow. We ran a case hole log only on our well, and I can understand why that was done. That was just as a

matter of clarification.

Q. May I clarify something to be sure we have it on the record regarding the topography? Is it my understanding that your conclusion from this and on-site inspection, is that your experience with this area leads you to believe that there is another surface location that could be drilled within this proration unit?

A. That is correct.

MS. CALLAHAN: All right. Thank you. I pass the witness.

EXAMINER CATANACH: Mr. Carr.

EXAMINATION

BY MR. CARR:

Q. Mr. Burks, if I understand your testimony, you're drilling some Delaware wells that are performing substantially better than what we could call normal Delaware wells in New Mexico, is that fair?

A. That is fair.

Q. As you review their production performance, especially the one well south of, I think, our exhibits that's been on for some period of time. Are you encountering a fairly predictable performance pattern, i.e., a regular decline, or is it an erratic

pattern?

A. No, it's not erratic. I have that and we can introduce it as an exhibit, if you want.

Q. I really don't think we need to do that. But you are experiencing a regular predictable decline in these wells?

A. Absolutely. It's just like so.

Q. When we look at the geology in your initial exhibits, the structure map and the isopach, basically by BTA moving to the proposed location from the standard location, they're not gaining a structural position or a thickness, they're just moving towards your tract? Isn't that your concern?

A. Yes.

Q. So you don't disagree with Mr. Hair that geology really isn't a major factor?

A. I do not.

Q. I guess we also have other things we don't disagree on. There isn't much risk in finding the Delaware out here? You'll find it? There's Delaware production under virtually all of the tracts that we've been talking about here?

A. Yes, I think so.

Q. You have been producing these wells, and I realize some of them have been on production a

relatively short period of time, are you seeing any evidence of communication between the wells?

A. No, we have not. No, we have not. All four wells have sat there and produced their allowable. They all have a thousand pounds flowing tubing pressure on 10/64 chokes. We've not seen any weak decline in flowing tubing pressure from about 1,100 down to 1,000 pounds on those.

Q. You mean the four wells on 14?

A. On each of the four wells, that is correct.

Q. Now, the well that has produced for about two years, what was that location? Is that in 14?

A. That's down in 23, just south of 14.

Q. Just south of 14. Is it at an immediate offsetting location or is it farther south?

A. No, it's farther south. It would be in the northeast of the southwest.

Q. Is it offset on a 40-acre pattern by other Delaware wells?

A. It has been to the west.

Q. Is there any evidence of pressure communication between these wells?

A. I do not know. That well to the west has only been on a couple of months.

Q. I would like to ask you about your penalty

exhibit, Exhibit No. 4.

A. Yes.

Q. If I try and understand this, what we have, we've put a circle around the Teledyne #1 that includes a 40-acre drainage area?

A. That's correct.

Q. We have moved and placed a 40-acre drainage circle with the center of that circle, the proposed unorthodox well location?

A. That's correct.

Q. And then we have a figure, and I just didn't understand where you get the 32,800 barrel of oil figure. Explain it to the Examiner, because he likes to be involved, I guess.

A. Do you mind my marking your exhibit here?

Q. No. Go to it.

A. Okay. That entire circle represents 150,000 barrels. The little pie shape that's not heavily outlined, represents 32,800 barrels. That's 22 percent of that circle, is what that amounts to.

Q. Let me ask you about that. Why have you excluded the acreage within the circle below the line that runs sort of northeast-southwest and below that line you've written "19,200." Why did you exclude that?

A. Where those two curves intersect, I feel that these wells producing at the same rates, which they should--

Q. Have a no-flow barrier?

A. Have a no-flow barrier, right there where the two intersect.

Q. So the amount of reserves off of the Bird Creek operated tract that the well at the proposed location could recover, would be 32,800 barrels? It's the pie-shaped piece, it is south of the section line, north of the line that has 9220 above it, and within the circle?

A. That's correct.

Q. All right. Now, if we moved the BTA well back to a standard location 330 from the boundary--

A. Yes.

Q. --that would tend to, I assume, move the no-flow boundary to the north?

A. Yes, it would.

Q. And, consequently, it would move the entire circle that's around the BTA well also to the north?

A. Yes, sir.

Q. The problem I'm having with this, isn't it true that a well at a standard location would also be draining reserves from this pie-shaped area?

A. Certainly.

Q. So you're asking for a penalty equal to all the reserves on your tract, correct? that would be drained by the well at the unorthodox location?

A. That's correct.

Q. When at a standard location, with no penalty being appropriate, you agree with me there, don't you?

A. Sure.

Q. From a standard location a substantial portion of these reserves would also be drained, wouldn't they?

A. Let me clarify that. I don't know how hard and fast the rule is for 330 acres from the lease line, but in the case of these wells and this particular Delaware formation, that should be farther.

Q. Assume there is a hard and fast rule, and if that is the rule, a well 330 from that lease line would drain a substantial portion of those 32,800 barrels?

A. It would still drain, I think the number is, about 20,000 barrels.

Q. So 20,000 barrels of that 32,000--

A. Versus 32,000.

Q. --would be drained even from a standard

location?

A. That's correct.

Q. You're using 40 acres. Why did you do that?

A. For what?

Q. You're using 40-acre drainage areas?

A. Because I think that's what these wells will drain. I tried to back into that using the well to the south.

Q. With your volumetric well?

A. Uh-huh. The well in Section 23 that had already produced 60,000 barrels and had established a good define/decline curve, from that you can back into a--using 40 acres, you can back into a 15 percent, and I think 15 percent is a reasonable recovery--

Q. Reasonable recovery factor, so that would tend to support your call on 40 acres being drained?

A. Yes. And not only that, the well in 23 will produce, we think right now from decline, 130,000. From production pressure history on our Carrasco 14-1, I feel that it will certainly make 160,000 or 170,000, and I made those points to show that I didn't think 150,000 was out of line for that proposed well.

Q. Within this 40-acre circle, what were the

total reserves, total barrels? 150,000?

A. 150,000.

Q. Who prepared these AFEs?

A. I did.

Q. These are based on your experience in the area?

A. Yes.

Q. And your cost comparison was also prepared by you?

A. Yes.

Q. And these figures show the impact of directional drilling, correct?

A. Yes.

Q. They don't show the impact of directional drilling plus a penalty?

A. No, they do not.

MR. CARR: That's all I have.

THE WITNESS: I have another point I need to make.

FURTHER EXAMINATION

BY MS. CALLAHAN:

Q. I'll ask you about Exhibit 4, if you have something further to add.

A. I have a particular point I would like to make, if that's permissible.

EXAMINER CATANACH: Yes, sir, go ahead.

A. Regardless of the 330 rule and the difference in the drainage down here, it certainly seems to me that a well drilled in the center, and I think the BTA isopach and structure maps and my isopach and structure map bear this out, that a well in the center of that 40-acre tract of the southeast-southwest, that a well in the center of that would result in maximizing income to BTA, the royalty interest owners, and to the State of New Mexico because there will not be any interference down here and there would be, as with the well where it is or even in the 330. There's going to be oil left up here, because you certainly can't come in from the east because of that river and get there unless you're going to directionally drill one. That's all I have.

Q. I would like to clarify something on Exhibit 4. In your discussion with Mr. Carr, did you attempt to set a specific figure on the volume, that if BTA drilled a well here, it would be drained from Bird Creek property that--I'm having trouble describing this.

If you were to draw the circle here, as Mr. Carr suggested, and I'm indicating at an orthodox location but not the middle of the proration unit, did

you attempt to give Mr. Carr a specific estimate of what would be comparable to your pie shape amount here?

A. Yes. I don't have an exhibit to that effect, but I've calculated it and I would say within five percent, plus or minus the 20,000 barrels, that would be a good number.

Q. 20,000 that would be drained?

A. That would be drained, versus that 32,800. Does that clarify that?

Q. Yes, thank you. And, further, that locating the well at their proposed unorthodox location, they're going to leave all the oil outside of this circle but within their proration unit, is that correct?

A. Well, it would be outside that next circle, okay? The circle would be moved up just a little but they would leave oil in here.

Q. I'm asking at the unorthodox location.

A. At the proposed location?

Q. At the proposed location, they're going to be leaving what looks to me to be almost half of the oil underneath their proration unit?

A. Almost half, just judging from the area right in there. It's getting pretty close to half.

Q. So you would conclude that an approval of BTA's application for this unorthodox location is going to promote waste while encroaching on the correlative rights of Bird Creek Resources?

A. That is correct. Absolutely.

MS. CALLAHAN: I have nothing further.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Burks, have you, in fact, been out to the proposed location or made a visual inspection of the area?

A. I have been to the proposed location. I have made an inspection of the--just a moment, let me find an exhibit--of the south half, south half of the southeast-southwest, and that's that area right along the highway. I have not investigated the northwest quarter.

For my statements, I relied solely on the topo map, but I certainly agree they have a problem down in the south corner. I saw where the first stake fell and it fell in the river bottom. My only point was, I don't think they have a problem to the north of the proposed location.

Q. That's based on your examination of the site? That's your opinion based on an examination of

the site?

A. Based on the topo map to the north, because I have not been on that area up there that he's showing as another flood plain, but I have difficulty believing that's a flood plain if it's only 20 feet lower than where the proposed location is situated. I really think if that's a flood plain, the Town of Loving is a flood plain, because I think that contour carries through to the Town of Loving which is about another two miles away. I'm just basing that on the topo map.

EXAMINATION

BY MR. STOVALL:

Q. Have you reviewed any Corps of Engineer information on that, whether that's a flood plain or not?

A. No, I have not.

Q. Would you come to a different conclusion if you reviewed Corps of Engineer data and it did in fact show this to be a flood plain?

A. Showed that as a flood plain? Certainly. Like I say, they'll have to prove to me that the Town of Loving is in a flood plain.

Q. That may very well be. We have a few of those in this state, too, I think.

A. All I'm questioning is the 20 feet difference in elevation. I can build pad to make up some of that.

FURTHER EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Burks, I want you to clarify this. On my Exhibit No. 4, to make sure I have everything correct in what you've drawn out--sometimes it's hard reviewing these things after the case--you're saying that this wedge shape represents 32,800 barrels?

A. May I draw?

Q. Yes, sir.

MR. STOVALL: You've drawn that in blue, is that correct?

THE WITNESS: Yes, I have, I've noted that in blue on Exhibit 4.

Q. That's assuming 150,000 barrels distributed evenly over that 40-acre circle?

A. That's correct.

Q. Okay.

A. May I say one more thing about the topo map?

Q. Yes, sir.

A. There still seems to be, if you will look at the topo map, there is a teardrop up here in the

very northwest corner. Can you see the one I'm looking at?

Q. Yes.

A. There appears to be, from this topo map, sufficient space there to build a pad 150 by 150. There, again, that area right there is at the same elevation as this flood plain shown over here. If that is a flood plain, I don't know why that's not a flood plain.

FURTHER EXAMINATION

BY MR. STOVALL:

Q. Mr. Burks, have you been involved in your experience in the oil and gas exploration and development industry in picking locations over your years of experience?

A. Certainly.

Q. You pick them based upon topographical maps?

A. Absolutely not.

Q. You're doing it based upon field inspection of the area?

A. Field inspection, that is correct.

MR. STOVALL: I have no further questions.

THE WITNESS: The only other thing I can add here is that flood plain is 40 feet, according to

that topo map, it's 40 feet above that river bed down there.

FURTHER EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Burks, have you had any experience in producing wells that are directionally drilled?

A. No, I have not.

Q. You've got two years of production history on the well in Section 23, is that right?

A. That's correct.

Q. Have you done a decline curve on that well compared to volumetric analysis to make a determination of what these wells might be draining?

A. Yes, I have.

Q. What is your opinion on that, sir?

A. Volumetric reserves on that SCB 1-23 in Section 23 are 836,000 barrels of oil. Now, that's if I use 40-acre spacing. I have to back into one or the other, which I'm sure you recognize, I have to back either into the recovery factor or into the 40 acres. When I do that and use 40 acres, I get 836,000 barrels, the well should make 128,000 barrels of oil from decline curve extrapolation. And if you divide 128 by the 836, you've got 15.3, I think it is.

I could do the same thing and assign it a

15-percent recovery factor and back in the acreage, and I would have 40 acres. I don't know where you're going on that, but there's something that I didn't bring out in the testimony.

On the Carrasco 14-1 of ours, to further substantiate the reserves for these wells, the initial bottom-hole pressure on that well was taken before we produced anything. We took another one the first day of March, and we've had a 358 pound decline in bottom-hole pressure with a production of 25,000 barrels. With all of that, I have very little problem imagining that these wells are going to drain the 40 acres.

FURTHER EXAMINATION

BY MR. STOVALL:

Q. One more question, I think. Would your AFE for directionally drilling to a 330/330 legal location be different? I assume your AFE you propose was going to the center at 660/660, is that correct?

A. That is correct.

Q. How much different would it affect the cost if you went to 330/330, do you have any idea?

A. Yes, I do. The directional cost drops from about $17,000 to $13,000. I can't imagine knocking any more than maybe a day or two off the drilling

costs, so you're still going to have an additional 15. I would think $20,000, without putting pencil to it, but I think that would be very close. And to me, the additional $10,000 to get it to the center to recover more reserves is a far better deal.

Q. What about the affect on--again, you've testified that you've not dealt with producing directionally drilled wells?

A. I know what it costs to equip one. I'll say this, over the life of these wells and our estimates, the total operating expense amounts to about two percent of the income from the well. I can't imagine that the additional cost would be prohibitive and would seriously effect the economics of the well.

MR. STOVALL: I have nothing further of this witness.

EXAMINER CATANACH: That's all I have of the witness. He may be excused. If we may get Mr. Logan back up?

KEITH E. LOGAN

the witness herein, having been previously duly sworn, testified further as follows:

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Logan, there seems to be quite a bit of question on whether or not that western portion of that proration unit is, in fact, a flood plain. Have you assured yourself or talked to the Corps of Engineers and have they assured you that in fact it is?

A. I have not talked to the Corps of Engineers on that, but I went out with the surveyor who attempted the staking of the locations out there. It is definitely a low area, and then you've got the pipeline running right through the middle of it. As far as his question concerning this little teardrop area up in there--

MR. CARR: Up in the northwest?

A. Up in the northwest quarter of that 40-acre tract, that railroad, if you refer to the exhibit that has been put in there, there's 200 feet on either side that has to be left there for crossing that river. As you see from that, it extends, I believe, out into that tic mark. I don't have that exhibit in front of me.

MR. STOVALL: Let's make sure we get that, too, before you leave.

MR. CARR: I will.

EXAMINATION

BY MR. STOVALL:

Q. Let's move back down to the southwest of your proration unit. I think we're satisfied, apparently, that the east side is not available. Nobody seems to argue that. On that what appears to be kind of a bluff or high area surrounded by the heavy contour line, is that what that is?

A. Yes, it is.

Q. Is it possible to reorient your pen and go to perhaps what I might call a nonconventional placing of drilling equipment and pits, et cetera, to move your location a little further north and get a little less unorthodox and stay on that high area?

A. We did attempt to go northwest with that. The problem was getting into that pipeline.

Q. I'm talking about going straight north. You're still going to be unorthodox, but less so.

A. We attempted a location farther north and we had both our drilling superintendent and drilling foreman go out there and visualize that, and this was the farthest north that we could get the location.

EXAMINER CATANACH: Why is that?

THE WITNESS: They felt like there was no

room to get the equipment in they needed.

EXAMINER CATANACH: That's all we have of the witness.

Ms. Callahan, you may proceed with a closing statement if you want at this time.

MS. CALLAHAN: All right. Thank you. Mr. Examiner, I may be new at this and I may not know a whole lot about geology and engineering, but I do know about the Continental Oil case, and my reading of that case tells me that to allow BTA to take 32,800 barrels of oil from beneath the lands of my client is not fair. My engineer tells me that that's exactly what will happen if BTA is granted this application.

I know that you agree with me because in a recent case, Santa Fe Energy, Case No. 9796, Order No. R-9121, you denied Santa Fe's application for an unorthodox location under the very same circumstances as exist here. Santa Fe Energy, just like BTA, had alternatives. Here BTA has the alternative of other surface locations, and they also have the alternative of directionally drilling, both of which will enable them to produce more oil from underneath their lands while protecting correlative rights of Santa Fe energy.

The best solution to this case is the

simplest, and that is to simply deny the application. However, if you don't see things the way I do, we ask that you extract a penalty from BTA that's meaningful, and we see that as a penalty that will be tied not only to the top allowable but also to the producing rate for the well. In any event, surface constraints should never be used to justify an inappropriate bottom hole location. That concludes my statement.

EXAMINER CATANACH: Thank you Ms. Callahan, Mr. Carr.

MR. CARR: May it please the Examiner, BTA is before you today seeking authority to drill a well at what we submit is the only viable location on a 40-acre Delaware tract. We can sit here today and try and pick a location from the topographic map, but I think if you take a look at the topographic map you're going to see that in 40 acres we have low areas, we have water, we have flood plains, we have two pipelines, we have a number of bluffs, we have rivers, we have canals, we have railroads, we have 200-foot wide railroad right-of-ways, and instead of second guessing it here, we have come in and although everyone is speculating where we might put the well, we've come in, having been on the side, having taking the drilling contractor and drilling foreman out, and

we're standing before you with the one viable option to produce the reserves that are under this tract.

There is no dispute that there are reserves under this tract. If this location is denied, they're not going to be produced by the party who owns them, BTA, and when that happens, your denial will deny us our correlative rights. This isn't like the Santa Fe Energy denial. That case involved an unorthodox location that was purportedly necessary to bottom the well in a particular stringer, and it wasn't supported by the geology, when you took a close look at it. It isn't like that and denial is not an appropriate remedy. We have reserves. We're here attempting to produce them.

We've come before you seeking no penalty. We seek no penalty because we submit the reservoir is so tight that there will be little or no impact on the offsetting tracts. Mr. Burk's testimony was that none of the wells in the area had experienced any kind of pressure communication, not even the wells south of the wells depicted on our plats. It is the only well that has some substantial production history. There's no communication, and we submit to you that no penalty is appropriate.

If, however, you're going to penalize

production from this well, you unfortunately have a problem confronting you which may be a gift from the attorneys in this room, and that is, you're supposed to base a penalty in your decision on the record made in this case. As I look at the record in this case, we get back, as we do with most penalty questions, to a fundamental problem, and that is we're putting rounds pegs in square holes, rounds drainage areas under leases that are basically square in shape.

And so as we look at that, I think it's important to recognize that even standard locations, one operator is authorized and permitted, under the rule, to drain reserves from the offsetting tract, and it's assumed that the offset will locate his wells so that he can offset that drainage. We have a record before you where basically there are only two ways to go. One, somehow penalize us equal to 32,800 barrels, that's what they would like you to do, or come up with some sort of a penalty factor.

I'll tell you what's wrong with 32,800 barrels. Mr. Burks admitted that at a standard location we could produce 20,000 of those. We shouldn't be penalized an additional 20, 20 that we can recover and would recover from a standard bottom-hole location offsetting this lease. Either

you're going to have to come in and pop us for 32,800 barrels, or you're going to have to take this record and devise a theory, and I'll tell you how I think you should do it.

Mr. Burks says that they're anticipating 150,000 barrels of oil to be recovered in this circle, and the pie-shaped piece he outlined on Exhibit No. 4 contained 32,800, and he admitted that we would produce 20,000 of those for the well at a standard location. I suggest on this record you should take the 32,800 barrels, subtract the 20,000 that we can get from a standard location, recognize that we are gaining an advantage of 12,800 barrels, divide that into 150,000 barrels, what Mr. Burks says is available under the tract, and you'll come up with a penalty of 8.5 percent and go ahead apply that towards our depth bracket allowable and you'll be penalizing this well and you will be penalizing it based on the additional recovery that it can gain off the offsetting tract because of the unorthodox location.

I submit to you that based on this record that is the only thing that you can do. If you're going to permit us to develop our reserves, denial will not do that. If you're not going to enter an order that will leave reserves in the ground, denial

or a 32,000 penalty will do that.

If you're going to follow the Continental decision which reminds you, I suggest, that you have two bases for your jurisdiction, waste as well as correlative rights, if you're going to follow Continental and protect our correlative rights, you're going to come up with a meaningful penalty. And when you do that based on this record, you're going to come up with a 8.5 percent penalty applied to a depth bracket allowable. And I believe on this record, unfortunately, that's about all you can do if you're also going to meet your statutory challenge and prevent waste and protect correlative rights.

EXAMINER CATANACH: Thank you Mr. Carr. Anything further in this case? If not, Case 9883 will be taken under advisement.

CERTIFICATE OF REPORTER

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

I, Carla Diane Rodriguez, Certified Shorthand Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I caused my notes to be transcribed under my personal supervision; and that the foregoing is a true and accurate record of the proceedings.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL March 18, 1990.

Carla Diane Rodriguez
CARLA DIANE RODRIGUEZ
CSR No. 91

My commission expires: May 25, 1991

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9843, heard by me on March 7 1990.

David R. Catanach, Examiner
Oil Conservation Division

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