

CASE NO.

7625

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APPLICATION,  
TRANSCRIPTS,  
SMALL EXHIBITS,  
ETC.



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STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION  
STATE LAND OFFICE BLDG.  
SANTA FE, NEW MEXICO  
21 July 1982

EXAMINER HEARING

IN THE MATTER OF:

Application of GMW Corp. for  
designation of a tight formation,  
Lea County, New Mexico.

CASE  
7625

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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I N D E X

I. B. STITT

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MR. NUTTER: We'll call next Case 7625.

MR. PEARCE: Case Number 7625 is in the matter of the application of GMW Corp. for designation of a tight formation, Lea County, New Mexico.

MR. KELLAHIN: If the Examiner please, I'm Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of the applicant, and I have one witness.

(Witness sworn.)

I. B. STITT

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. STITT:

Q Mr. Stitt, will you please state your name and occupation, please?

A I. B. Stitt, and I'm Production Manager for BMW Corporation in Midland.

Q How do you spell your last name?

A S-T-I-T-T.

Q Have you previously testified before the Oil Conservation Division?

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A. I don't believe I have.

Q. Would you summarize for Mr. Nutter when and where you obtained your degree?

A. I graduated from Texas A & M University in 1941 with a BS in petroleum engineering.

Q. Subsequent to graduation, Mr. Stitt, would you summarize what has been your employment experience as a petroleum engineer?

A. I spent twenty-seven years working for Mobil Oil in Oklahoma and West Texas, New Mexico, and I've spent the last four years with GMW Corporation, previously known as Gifford, Mitchell, and Wisenbaker, Midland, Texas.

Q. Mr. Stitt, have you familiarized yourself with the rules and regulations necessary for the filing of an application for the designation of a particular area for tight sand purposes under the Natural Gas Policy Act?

A. Yes, sir.

MR. KELLAHIN: We tender Mr. Stitt as an expert petroleum engineer.

MR. NUTTER: He is so qualified.

Q. If you please, Mr. Stitt, let's start with what we've marked as Exhibit Number One, which is your structure map, and have you first of all identify that exhibit for us.

1  
2 A. Exhibit One is a structure map on the top  
3 of the Strawn in the area of our well, the Pawnee Deep Unit  
4 No. 1. That's shown in the center of the map with a small  
5 triangle around it.

6 Q. And that's in Section 26, is that correct?

7 A. In 22.

8 Q. I'm sorry.

9 A. Township 26 South, Range 36 East, Lea  
10 County.

11 Q. What is indicated by the orange line out-  
12 lining certain of the sections, Mr. Stitt?

13 A. That line, in my opinion, is the probable  
14 boundary of the producing area surrounding our well and  
15 covering the Pawnee Strawn formation.

16 Q. What is the basis of your opinion that that  
17 is a reasonable boundary for the tight sand area as applied  
18 for in this case?

19 A. The way I picked those sections is to --  
20 is to determine in my own mind what I thought the loss of  
21 closure was as you go down structure, and a point midway be-  
22 tween the two contours, the one above the loss of closure and  
23 the other below that point.

24 That point, or that line, between those  
25 two contours would touch every one of these sections.



1  
2 MR. NUTTER: You're talking about a line  
3 that would be 10,250, approximately?

4 A. Yes, sir.

5 Q. What is the formation that you would pro-  
6 pose to be designated for the tight sands formation?

7 A. It's the Strawn formation as produced in  
8 this well of ours, a single well.

9 Q. Are there any other Strawn wells in this  
10 area, Mr. Stitt?

11 A. To my knowledge there are no other Strawn  
12 wells. In fact, there are no other deep wells except one to  
13 the north, the Sinclair Jal Southwest Unit No. 1 in Section  
14 4.

15 Q. Would you generally describe what that  
16 well is?

17 A. It's -- it's an Atoka well.

18 There's one other deeper well, GMW's  
19 Comanche, down on the south end of the -- or at the bottom of  
20 the map, which has a square around it. It's in Section 13,  
21 just across the New Mexico/Texas line.

22 MR. NUTTER: What formation is it completed  
23 in?

24 A. It's completed in the Morrow.

25 Q. What's the status of that well now?

1  
2 A. It's shut in right now; it's relatively  
3 depleted.

4 The other wells shown on the map, all the  
5 other black dots on there are dry holes, and in my opinion,  
6 or to the best of my knowledge, are relatively shallow wells,  
7 in the nature of 3 to 4000 feet deep.

8 Q In conjunction with Exhibit Number One,  
9 Mr. Stitt, have you prepared a written narrative summarizing  
10 the geology for this particular reservoir?

11 A Yes, sir, I have. That's -- that's titled  
12 Statement for Exhibit One and is included in the material sub-  
13 mitted to the Commission.

14 Q In reference to the Pawnee Deep Unit Well  
15 No. 1, Mr. Stitt, can you indicate for us at what depths  
16 that well encountered the Strawn sands?

17 A Our perforations in the well are from  
18 12,505 to 13,196 feet. There are something like eleven or  
19 twelve different porosity zones within that 600 foot interval  
20 that we have attempted to open up with perforation.

21 Q At this moment, Mr. Stitt, would you  
22 share with us the log for that well and demonstrate for Mr.  
23 Nutter on the log what you think are the vertical limits  
24 for the Strawn and show him where your perforations are?

25 A This is a copy of our compensated neutron

1  
2 formation density log that was run on the well. It was  
3 actually an 18,000 foot well but then we plugged it back to  
4 the Strawn.

5 Our uppermost perforation is here, 12,505,  
6 and the lowermost is this perforation here where my left hand  
7 is.

8 So it's a series of scattered porosity  
9 zones that are open in the well and they're producing now.

10 MR. NUTTER: And they run downward from  
11 12,505 to 13,196, is that correct?

12 A. Yes, sir. The zones marked yellow are the  
13 porous zones, or the zones that we believe to be porous in  
14 there, and we've tried to penetrate each one of those zones  
15 with a --

16 Q All right, sir, if you'll turn to Exhibit  
17 Number Two, and to the written summary of testimony with re-  
18 gards to Exhibits Two, Three, Four, and Five, let me ask you  
19 some questions to summarize some of that information, Mr.  
20 Stitt.

21 I think it would be helpful at this point  
22 if you could give us some of the history about the Pawnee  
23 Deep Well in terms of when it was spudded, what your initial  
24 production information was, whether the well was initially  
25 stimulated before any tests, and that sort of information.

1  
2 A. All right, I'll be getting this information  
3 from Exhibit Five, which is a copy of Form C-105, the well  
4 completion form submitted on the well.

5 It was spudded on November the 25th, 1979,  
6 completed April 18th, 1980; went to a total depth of 18,577  
7 and then was plugged back and was perforated in the zone that  
8 we've previously discussed.

9 It was an open flow potential. A 4-point  
10 was taken on the well and the open flow potential calculated  
11 13,423,000 cubic feet of gas a day.

12 Q. Were there any unstimulated production  
13 tests taken on this well, Mr. Stitt?

14 A. No, there weren't. We -- after perforating  
15 we went ahead and acidized the well with 5000 gallons of 15  
16 percent hydrochloric acid and we never took any untreated  
17 tests.

18 Q. Let me have you at this point summarize  
19 for us your reasons for your belief that this area, as en-  
20 countered by the subject well, ought to qualify for the tight  
21 sand designation.

22 A. I refer to Exhibit Four first, which is a  
23 letter from Tefteller, Incorporated, a reservoir engineering  
24 concern in Midland, who analyzed the pressure build-up survey  
25 on our well that we took after the 4-point was taken but be-

1  
2 fore we started selling gas to the pipeline company.

3 Q All right, let me ask you this. The well  
4 is spudded at a point in time which will qualify under the  
5 FERC guidelines.

6 A Yes, that's right.

7 Q All right, sir. With regards to the perme-  
8 ability encountered in the well, does that exceed the zero  
9 point millidarcy of permeability?

10 A There are two permeability calculations  
11 involved in this Tefteller letter that I referred to, in Ex-  
12 hibit Four. One of them is calculated a permeability of .43  
13 millidarcy near the wellbore, based on this subsurface pres-  
14 sure build-up.

15 Another -- another permeability was calcu-  
16 lated at a change of permeability determined from the plot of  
17 the bottom hole pressure build-up by the Tefteller group out  
18 at a distance of 129 feet from the wellbore, and this pe-  
19 rmeability is 0.075 millidarcy, which is below the one-tenth  
20 of one millidarcy which is the maximum required under the  
21 NGPA, tight reservoir status.

22 Q In your opinion, Mr. Stitt, is the calcu-  
23 lation of the permeability at 0.075 --

24 A 75.

25 Q -- is that the permeability you anticipate

1  
2 to be generally characteristic of the area to be designated  
3 as a tight sands area?

4 A. I believe so. As pointed out further in  
5 Tefteller's letter, they predict that the -- after the initial  
6 production of gas from the -- from the reservoir within this  
7 129-foot radius, the production of the reservoir will be con-  
8 trolled by that outer permeability of .075, and they have  
9 also calculated a rate of flow, a rate of production, that they  
10 think will apply when the reservoir is controlled by that  
11 outer permeability, and that rate of flow is -- is actually  
12 a little higher than the rate of flow that we have been able  
13 to maintain from this reservoir since the first few months  
14 of production, as indicated by Exhibit Two, the decline curve.

15 Q All right, sir, let's go to Exhibit Number  
16 Two, then, and have you specifically demonstrate what the  
17 actual production has been in relation to the build-up analy-  
18 sis done by the Tefteller group.

19 A. The Exhibit Two, the curves that I plotted  
20 are gas production, condensate production, tubing pressure,  
21 but the primary one, of course, is gas production and after  
22 about the first four months our production there has leveled  
23 off at something like 400 Mcf a day. It's only slightly less  
24 than the -- than the figure of 421 Mcf a day that Tefteller  
25 calculated as being the production rate that we would have

1  
2 to live with after the pressure was drawn down in that imme-  
3 diate 129 feet of the reservoir, of the wellbore.

4 One other point on that, the -- as far as  
5 the NGPA limits of tight reservoir are concerned, for the  
6 depth well, the upper production limit for this depth would  
7 be 1,000,432 feet a day -- 1.432 million feet a day. Our well  
8 only produced at that rate for a period of one month, for a  
9 portion of a period of one month, and that's indicated by the  
10 highest point on the gas production curve. The rest of the  
11 time it's been considerably below there.

12 Q In your opinion, then, the maximum stabi-  
13 lized unstimulated production rate for a well at this depth  
14 is going to be less than that indicated by the FERC guidelines.

15 A I would say considerably less, because  
16 ours, our entire curve, or entire production history there  
17 is based on what we've been able to do after acidizing with  
18 the 5000 gallons.

19 Q All right, sir, and what is Exhibit Three?

20 A Exhibit Three is just production data  
21 tabulated that was used to draw the curves on Exhibit Two.

22 Q All right, sir, what if any fluids are  
23 produced by this well?

24 A Yes, we produce something like 15 barrels  
25 of water a day, along with the -- with the 375 or 400 Mcf of

gas a day and 10 to 12 barrels of condensate a day.

Q What is the daily production of crude oil?

A We feel like we have no production of crude oil because our -- the gravity of this condensate that we produce is 47.7 degrees and the gas/oil ratio is better than 35,000-to-1.

So we feel like this is condensate rather than crude oil.

Q In your opinion, Mr. Stitt, is the incentive price applicable under the Section 107 pricing necessary in order to further develop this particular formation?

A I believe that it would be necessary. I can't say for sure in my own mind now that this well will pay out. I know it won't, since it was a deeper well and cost more than a well to the Strawn would, but even a well to the Strawn, it might be difficult to pay out without some -- without a better price.

One of the problems in completing a well such as this, with up to a dozen small producing zones, is the extra cost that would be involved by trying to stimulate each one of those zones in order to get a valid or a satisfactory recovery from these stringers.

Q In your opinion, Mr. Stiff, could you complete in the Strawn formation without stimulation? Complete



an economic well?

A. No.

Q. Would you generally describe the type of enhanced recovery or stimulation that will be necessary in order to get an economic well?

A. Well, I think in order to get an economic well you'd have to -- there are two, at this depth there are probably two primary means. One would be fracing and the other would be using acid. In each case I think it would be imperative to treat the zones separately; otherwise, you might treat one zone, whether it's with fracing or with acidizing, and one zone only, or maybe one or two or three, but not, probably not all of them.

I think fracing each individual zone would be certainly economically prohibitive. Acidizing would make it a lot more expensive but you might be able to tolerate the acidizing as far as extra expense and still have a better chance of making an economic well.

Q. All right, sir. Let's go back to Exhibit Four now that you've given us a general picture of what has occurred in the Strawn, and have you go through Exhibit Four, which is the reservoir calculations. Demonstrate to us what the parameters were, what pressure information was given to Tefteller, the general porosity that was used for the calcu-

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2 lation, and lead us in a more detailed way through the analy-  
3 sis of how the engineering firm came to its opinion of the  
4 low permeability in the Strawn.

5 A. As far as my experience is concerned with  
6 the work that Tefteller did in these calculations, they used  
7 the reservoir pressure of 8020 psig at 12,850 feet. They, I  
8 believe, used an 8-1/2 percent porosity figure, assuming an  
9 average for the summation of the different zones, and they  
10 used something like 50 -- I believe it was 56 feet of net pay  
11 in this entire 600-foot interval in going through their cal-  
12 culations.

13 They used --

14 MR. NUTTER: Well, now, wait a minute. On  
15 page two of their letter they said 52 feet, Mr. Stitt.

16 A. I'm sorry, I was -- my memory was not right.  
17 52 is the correct figure.

18 I might point out that their use of -- in  
19 the upper part, upper righthand corner of that same page two,  
20 they used a figure of 1200 feet for the interval and that's  
21 incorrect. It's 691 feet, perforated interval.

22 But they used several versions of VanPoolen's  
23 formulas and Horner's formulas to calculate the permeability  
24 under the two general slopes of the pressure build-up curve.  
25 One for that near the wellbore, within the 129-foot radius,

1  
2 and the other to calculate that 129-foot radius.

3 Q There is a Horner plot attached to the  
4 letter, is there not, Mr. Stitt?

5 A Just a plot of the pressure build-up and  
6 the -- yes, the Horner plot, and then also to calculate that  
7 final permeability outside the -- or at or outside the 129-  
8 foot radius. They used these same formulas, or variations of  
9 them, as I understand it, to calculate the rate of production  
10 that we could expect after our -- our reservoir was fairly  
11 well drained around the wellbore, within that 129 feet.

12 Q To what would you attribute the indication  
13 of a higher permeability within this radius immediately ad-  
14 jacent to the wellbore?

15 A I can't say, unless it's just a difference  
16 in sedimentation there within the wellbore.

17 Q Would the fact that this well had been  
18 acidized be an explanation for why the permeability would be  
19 different?

20 A That certainly could be, could be an ex-  
21 planation.

22 Q Is there anything else in the completion  
23 of this well that might explain the difference in the perme-  
24 ability in the two areas?

25 A I know of nothing else that would explain

1  
2 that difference.

3 Q All right, sir, then if you'll continue  
4 through the information from Tefteller.

5 A Well, I think really this is -- this is  
6 about it. There are four main points that they covered in  
7 their letter, the 129-foot radius, to determine where the  
8 permeability changed, the two different permeabilities, and  
9 then the fourth point would be the -- would be the predicted  
10 production rate when the well began producing from that outer  
11 area based on its lower permeability.

12 Q Would you turn now to Exhibit Number Six  
13 and identify that for us?

14 A Exhibit Six is a discussion of fresh water  
15 protection in the reservoir with the use of exotic means or  
16 enhanced recovery means, and I feel there that we're -- the  
17 fresh water is well protected primarily because the fresh  
18 water zones in this area are relatively shallow, and we're  
19 talking about production coming from 13,000 feet, 12 and 13,000  
20 feet.

21 Q In your opinion, then --

22 A Plus the fact that our casings are all --  
23 the program is well -- the well is -- wellbore is well cased  
24 and cemented, which will help protect the fresh water.

25 Q In your opinion, then, there is no potential

1  
2 impairment of fresh water aquifers for either domestic or  
3 agricultural use from enhanced recovery techniques in the  
4 Strawn formation?

5 A I don't believe there is that problem.

6 Q In your opinion, Mr. Stitt, is the Section  
7 107 price incentive necessary in order to provide an incentive  
8 for additional drilling in the area you've proposed?

9 A I believe that it is because of this ex-  
10 tremely low permeability, plus the fact that we've got multiple,  
11 small porosity segments, which requires, in my opinion, re-  
12 quires individual treatment to most beneficially try to drain  
13 all of those reservoirs. This adds up to more cost an addi-  
14 tional price would help us defray.

15 Q Is the engineering study done by Tefteller  
16 a method customarily used in the industry to establish perme-  
17 ability?

18 A I believe it's pretty generally a standard,  
19 more standard method, yes.

20 Q And in your opinion is the outline of the  
21 designated area reasonably contained within the structure as  
22 you've indicated on Exhibit Number One?

23 A I believe that is a fairly standard method,  
24 too. This is -- this is certainly not a -- not a guaranteed  
25 method with only one well in the reservoir, but I believe it

1  
2 will suffice for what we're doing here.

3 Q All right, sir. Were the Exhibits One  
4 through Six either prepared by you or compiled your direction  
5 and supervision?

6 A Yes, they were.

7 MR. KELLAHIN: That concludes our examina-  
8 tion of Mr. Stitt, Mr. Nutter. We move the introduction of  
9 Exhibits One through Six.

10 MR. NUTTER: Exhibits One through Six will  
11 be admitted in evidence.

12  
13 CROSS EXAMINATION

14 BY MR. NUTTER:

15 Q Mr. Stitt, referring to Tefteller's letter  
16 of April 30th, I notice down here at the bottom of the first  
17 page they say, "Although calculations are presented for a  
18 quantitative analysis of reservoir parameters, the wellbore  
19 conditions were present -- that were present induce a consid-  
20 erable margin for error in the calculated values."

21 Now how much error do you think is in all  
22 these calculations? They admit there must be some.

23 A Yes, sir, but they -- they go on, and I  
24 think they're referring to the same thing in the next para-  
25 graph following that. They're pointing out that -- that we

1  
2 are covering a large interval here and we have numerous re-  
3 servoirs within that interval, but they think that based on  
4 the appearance of the build-up curve that they're acting as  
5 probably one unit, and averaging up --

6 Q Yeah, I noticed that they feel that maybe  
7 it all acts as one reservoir.

8 A Yes, sir.

9 Q Although we've got a lot of different per-  
10 forated intervals.

11 A Well --

12 Q However, I'm just concerned with some of  
13 these predictions that they have made.

14 Now, they stated that they -- there's a  
15 change in permeability approximately 129 feet away from the  
16 wellbore, and they say that the well -- that this 129-foot  
17 radius with a 52-foot net zone thickness represents 51,782  
18 Mcf of gas, and after you reach from this higher permeability  
19 zone into the lower permeability zone your production rates  
20 will sustain only about 421-million feet.

21 A Yes, sir.

22 Q Or 421,000 cubic feet per day.

23 A That's right.

24 Q Now, in looking at your cumulative pro-  
25 duction graph, Mr. Stitt, 421,000 cubic feet per day would

1  
2 represent on a 30-day month about 12,600 --

3 A. Yes, sir.

4 Q. -- Mcf of gas per month.

5 A. Yes, sir.

6 Q. Well, now, you didn't get down to 12,600  
7 until you got down into May of 1981. That production rate  
8 was 13,300, and finally, in June, it dropped to 12,358 Mcf.

9 A. Yes, sir.

10 Q. But your cumulative recovery at that point  
11 was 239,000, which is far in excess of what they had predicted  
12 for the production from that high permeable zone of 51,782.

13 How do you explain that differential? From  
14 51,000 Mcf of gas to 239,000?

15 A. My only explanation for it would be that  
16 did more good, probably, with that acid job, the 5000 gallon  
17 acid job, at the completion of the well than they really knew  
18 we would.

19 Q. Well, weren't their tests taken after the  
20 well was acidized?

21 A. Yes, sir.

22 Q. So these conditions that they measured  
23 were under acidized conditions. You didn't re-acidize the  
24 well afterwards, did you?

25 A. No, sir, that was the only time we acidized



1  
2 it, that one time.

3 That's true. These -- this data comes  
4 from the period after the acidizing.

5 Q Yeah. Well, see they're off on the prediction  
6 of cumulative gas recovery for that small, high permeable zone  
7 by a factor of better than 4-to-1.

8 A Yes, sir. I don't know how to explain  
9 that.

10 Q Now, I guess pipeline pressures are no  
11 problem in here. I think I read someplace you're going into  
12 an El Paso casinghead system --

13 A The casinghead gas --

14 Q -- that's only 50 pounds.

15 A -- system about 50 pounds, yes.

16 Q So pipeline pressures are no problem.

17 A That's right.

18 Q Do you think you've just got a very limited  
19 reservoir here with limited reserves, or do you think it is  
20 a widespread reservoir that's extremely tight?

21 A I think it's a widespread -- well, fairly  
22 widespread reservoir, but it's just a tight reservoir. Our  
23 geologists have told me that they would expect wells higher  
24 on the structure to have a better porosity and, hopefully, a  
25 better permeability to go along with that higher porosity, but

1  
2 based on their opinion of what the structure of the reservoir  
3 was, we're -- our well is fairly high on that structure right  
4 now.

5 Q Well, I don't see how they could get much  
6 higher.

7 A There's not much room for improvement in  
8 that regard, so I would say then that the entire reservoir,  
9 maybe we can expect even worse permeability.

10 Q Have you tried to -- have you ever tried  
11 to draw any cross sections from the Atoka well on the north  
12 through this well and down to the Morrow Well in the south?

13 A I haven't myself, Mr. Nutter, but I imagine  
14 our geologist did.

15 Q Have you seen those?

16 A I don't believe have, no, sir.

17 I don't think the -- any strong porosity  
18 streaks of any significance were present in our Comanche Unit  
19 No. 1 Well down to the south, because we've debated what to  
20 do with that well now that it's fairly well depleted in the  
21 Morrow, but there's another zone, and I can't recall the name  
22 of that zone now. It's about 9000 feet deep in the well,  
23 which we may want to try to go back up to, but it's not the  
24 Strawn.

25 Q Well, I --

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A. In other words, the Strawn doesn't appear to be worthy of spending the money.

Q. Well, it seems to me I recall a hearing one time for Gifford, Mitchell, & Wisenbaker, where they had a deep well down here in southern New Mexico someplace. Was that the Horseback?

A. That, yes, sir, that was --

Q. Is that in this area or is that further east, or what?

A. That -- you're right, that is -- that is in -- that would be in Section 33, down south of this well. That was a deep -- a deep dry hole. Nothing was productive in the well until -- in fact it never did even make a well in anything.

Some other shallow wells have been drilled on that same lease into the Capitan Reef at about 3000 feet, but there was nothing productive in that Horseback No. 1.

Q. Where is it there?

A. It's in that half section, 33, down just north of the New Mexico line.

Q. Which well there would it be? Would it be that open circle there?

A. Probably so.

Q. And that was a dry hole.

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A. That was a dry hole.

Q. Well, now, in making recommendations to the FERC, Mr. Stitt, it's been our policy to advise them if they want this information, as to what the average depth of the formation is in the area that we're making a recommendation on. Now I don't know what the average depth of the formation is. I know that the Strawn at the well is a -9011, and I also know that the top of the perforations is at 12,505, but what is the average top of the Strawn in this area that you've suggested?

A. I'd just have to pick a midpoint in the -- oh, the average top of the Strawn?

Q. Yeah.

A. Oh --

Q. Because I can see it going anywhere from less than 10,000 feet down to almost 11,000 feet in your red lined area on Exhibit Number One.

A. Well, it would be difficult for me to answer that question without just -- just taking an estimated figure.

Q. Yeah, well, it would be difficult for me to make a recommendation to FERC, too.

Also, we would have to know the average thickness of the pay. Now, do you have any idea as to what the average thickness of the pay is?

1

2

A. No, sir, only from our one well that we have in the field.

3

4

Q. And you said you didn't seen any Strawn sands down here in this Morrow well in Texas.

5

6

A. Not in that well or that Horseback Well, as I recall, and we have other wells further south that are off of this map that were drilled deep that, as far as I know, did not have any Strawn in them. They've never been counted as being potential producing zones.

10

11

Q. Another thing we have to advise FERC of is the depth of the lowest fresh water zone in the area.

12

13

A. All right, sir.

14

Q. And you said it was shallow but I don't know --

15

16

A. I can --

17

Q. -- how shallow that is.

18

A. I can get that figure for you.

19

Q. Well, if you could get me these other figures and send them to me.

20

21

A. All right.

22

MR. NUTTER: Are there any other questions of Mr. Stitt?

23

24

MR. KELLAHIN: No, sir.

25

MR. NUTTER: He may be excused. Do you

1  
2 have anything further, Mr. Kellahin?

3 MR. KELLAHIN: Nothing further.

4 MR. NUTTER: Does anyone have anything  
5 they wish to offer in Case Number 7625?

6 MR. PEARCE: Mr. Stitt, I would just like  
7 to point out to you that since the Oil Conservation Division  
8 instituted its rules regarding these filings, the FERC has  
9 requested that in addition to copies of the exhibits, that it  
10 be provided with two copies of the Transcript of Hearing in  
11 all tight formation cases.

12 We'd appreciate it if you would -- probably  
13 the easiest thing is to arrange with the court reporter for  
14 those to be provided to us.

15 A. All right.

16 MR. PEARCE: And Mr. Kellahin has provided  
17 me with an envelope containing exhibits. Is there more than  
18 one set in here?

19 A. There are three. There are three sets.

20 MR. PEARCE: Wonderful; that's fine.  
21 Thank you.

22 MR. NUTTER: Does anyone have anything  
23 further for this case?

24 We'll take the case under advisement and  
25 the hearing is adjourned.

## C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing Before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 7625 heard by me on 7/21 1982.

[Signature], Examiner  
Oil Conservation Division

SALLY W. BOYD, C.S.R.

Box 193-B

Santa Fe, New Mexico 87501

Phone (505) 455-7409



STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

BRUCE KING  
GOVERNOR

December 29, 1982

POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87501  
(505) 827-2434

Mr. Gene Daniel  
Minerals Management Service/Bureau  
of Land Management  
U. S. Department of Interior  
505 Marquette, N.W.  
Room 815  
Albuquerque, New Mexico 87102

Re: Denial of Tight Formation  
Recommendation, Case No. 7625,  
Order No. R-7123

Dear Mr. Daniel:

Enclosed please find a copy of New Mexico Oil Conservation Division Order No. R-7123. This order is a denial of the application of GMW Corporation for recommendation of a tight formation designation in the Strawn formation in New Mexico.

This order is forwarded for your information since I do not believe any action on such denial is required.

Sincerely,

W. PERRY PEARCE  
General Counsel

WPP/dr  
enc.





STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
DIVISION FOR THE PURPOSE OF  
CONSIDERING:

CASE NO. 7625  
Order No. R-7123

APPLICATION OF GMW CORPORATION  
FOR DESIGNATION OF A TIGHT  
FORMATION, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on July 21, 1982, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 8th day of November, 1982, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That, pursuant to Section 107 of the Natural Gas Policy Act of 1978, and CFR Section 271.703, applicant GMW Corporation seeks the designation as a "tight formation" of the Strawn formation underlying the following described lands in Lea County, New Mexico:

TOWNSHIP 26 SOUTH, RANGE 36 EAST, NMPM  
Sections 9 AND 10: All  
Sections 14 through 16: All  
Sections 21 through 24: All  
Sections 26 and 27: All

containing 7,040 acres, more or less.

(3) That in the subject area, the Strawn formation is a basinal limestone with a large amount of fine clastics, overall being fairly thick and continuous, although the reservoirs contained therein appear to be limited in areal extent, porosity, and permeability.

-2-

Case No. 7625  
Order No. R-7123

(4) That said reservoirs appear to be the result of stratigraphic trapping mechanisms wherein zones of porosity and permeability develop in the otherwise tight formation.

(5) That only one well has been drilled in applicant's proposed tight formation area described in Finding No. (2) above, being applicant's Pawnee Deep Unit Well No. 1 (formerly known as the Gifford, Mitchell and Wisenbaker White Eagle Well No. 1) located in Unit F of Section 22, Township 26 South, Range 36 East, NMPM.

(6) That said well was completed producing from the Strawn formation through perforations from 12,505 feet to 13,196 feet on April 18, 1980.

(7) That on Division Form C-105 filed by Gifford, Mitchell and Wisenbaker on April 29, 1980, the aforesaid well was reported as producing on test 214.25 MCF of gas, 7.88 barrels of condensate and 0.87 barrels of water in one hour, for a calculated 24-hour producing rate of 5,142 MCF of gas, 189 barrels of condensate, and 21 barrels of water.

(8) That said well was connected to a pipeline and first delivery of gas made on May 27, 1980, and during the first full month of production in June, 1980, the well made 43,105 MCF of gas, 1393 barrels of condensate, and 750 barrels of water in 30 days, for an average daily rate of production of 1437 MCF of gas, 46 barrels of condensate, and 25 barrels of water with an average flowing tubing pressure of 2600 psi.

(9) That since June, 1980, production and flowing tubing pressure have rapidly declined, and the well in March of 1982 produced 12,249 MCF of gas, 405 barrels of condensate, and 550 barrels of water in 31 days, for an average daily rate of production of 395 MCF of gas, 13 barrels of condensate, and 18 barrels of water.

(10) That the depth to the top of the formation in applicant's Pawnee Deep Unit Well No. 1 is 12,505 feet, and to qualify for designation as a tight formation, CFR Section 271.703(c)(2)B prescribes for this depth a maximum stabilized production rate, against atmospheric pressure without stimulation of 1432 MCF of gas per day.

(11) That no tests were made of the subject well prior to stimulation and to presume a maximum stabilized production of 1432 MCF/day for the well under such conditions is speculative and unsupported by the evidence presently available.

77

-3-  
Case No. 7625  
Order No. R-7123

(12) That CFR Section 271.703(c)(2)A prescribes a maximum in situ gas permeability, throughout the pay section, of 0.1 millidarcy or less to qualify for designation as a tight formation.

(13) That no cores or other reliable data are available to calculate the in situ gas permeability of the reservoir in this case; that certain calculations were presented which indicate a present permeability of some 0.43 millidarcies at the wellbore and extending outward for some 129 feet into the reservoir, with a substantial discontinuity in permeability apparent at that point.

(14) That the calculated permeability beyond 129 feet (estimated at 0.075 millidarcies) is based on certain assumptions and cannot be relied upon as a definitive average in situ permeability for the reservoir.

(15) That CFR Section 271.703(c)(2)(C) prescribed a maximum rate of production, without stimulation, of five barrels of crude oil per day to qualify for designation as a tight formation.

(16) That applicant's Pawnee Deep Unit Well No. 1 apparently produces no crude oil, although its rate of production of condensate, after stimulation, was 46 barrels per day during June, 1980, its first full month of production (Finding No. (8) above).

(17) That considering all aspects of production characteristics, reservoir data, and other available evidence, it would appear that the Strawn reservoir underlying the lands described in Finding No. (2) above may not be so much a "tight formation" as defined by the Federal Energy Regulatory Commission guidelines as it is simply a small high pressure reservoir of limited extent and reserves.

(18) That based on the record in this case, no recommendation for designation of a tight formation for the Strawn formation underlying the lands described in Finding No. (2) above should be made to the Federal Energy Regulatory Commission.

IT IS THEREFORE ORDERED:

(1) That it is not recommended to the Federal Energy Regulatory Commission pursuant to Section 107 of the Natural Gas Policy Act of 1978 and 18 C.F.R. Section 271.703 that the Strawn formation underlying approximately 7,040 acres, more or less, as

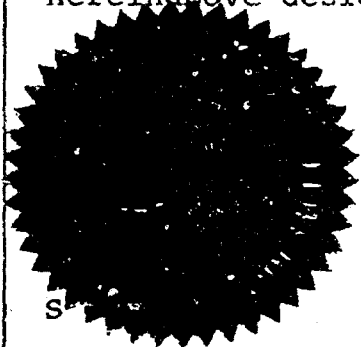
79  
-4-

Case No. 7625  
Order No. R-7123

described in Finding No. (2) of this order, be designated as a tight formation.

(2) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

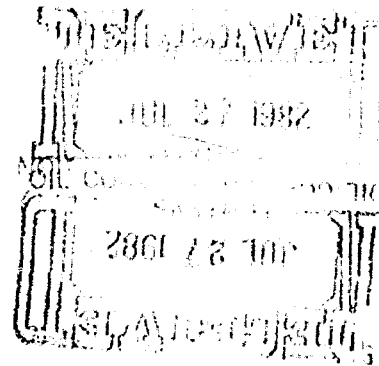
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.



STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

*Joe D. Ramey*  
JOE D. RAMEY,  
Director

GMW CORP.  
675 EMPIRE PLAZA  
MIDLAND, TEXAS 79701  
915-682-6282  
July 23, 1982



Mr. Dan Nutter  
Oil Conservation Division  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Case 7625, Examiner Hearing  
on July 21, 1982, Application  
of GMW Corp. for Tight Formation  
Designation, Pawnee Strawn  
Reservoir, Lea County,  
New Mexico

Dear Mr. Nutter:

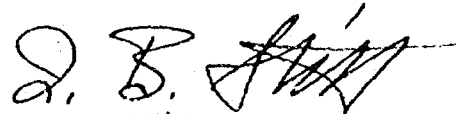
At the subject hearing last Wednesday several requests were made for additional information. That information is submitted below.

1. What is the thickness of the Strawn in this reservoir? The gross Strawn thickness is about 775 feet and the net Strawn productive zones total 52 feet thick in our one well.
2. What is the average Strawn top in this reservoir? We estimate the average Strawn top in the Pawnee Strawn Reservoir to be 13,010 feet in depth below the surface (10,100 feet subsea).
3. What is the depth of fresh water in the area? Fresh water zones occur at depths down to the maximum of 1500' subsurface.
4. The Tefteller, Inc. letter (Exhibit 3) indicated that when the gas volume within the 129 feet radius from the wellbore had been produced (51,782 MCF), then the outer permeability would only sustain a production rate of about 421 MCF per day. Yet some 214,000 MCF of gas had been actually produced before the well settled down to the predicted 421 MCF per day rate. Why this discrepancy? In my opinion, the apparent discrepancy between predicted and actual settled production rates and the production volume required to reach those rates is due to the relatively low production rates coming from the well in its early life. After production was initiated and pressure was brought down around the well bore, the outer portions of the reservoir started to feed in. These outer portions, beyond 129 feet, contributed considerably to the April 1, 1981, cumulative of 214,167 MCF. I imagine that if we had opened the choke wide initially and produced at as high a rate as possible, the 421 MCF per day rate would have been achieved much

Page 2  
Case 7625  
Examiner Hearing on July 21, 1982

earlier and the cumulative production at that point  
in time would have been appreciably less than  
214,167 MCF.

Yours very truly,

A handwritten signature in dark ink, appearing to read 'I. B. Stitt', with a long horizontal flourish extending to the right.

I. B. Stitt  
Production Manager

IBS/dm

**GMW CORP.**  
675 EMPIRE PLAZA  
MIDLAND, TEXAS 79701  
915-682-6282

May 19, 1982

Oil Conservation Division  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Attention: NGPA Section

Re: Application for Hearing  
to Consider Tight Formation  
Designation, Pawnee Strawn  
Reservoir, Lea County, New  
Mexico

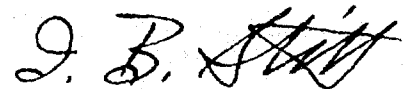
Gentlemen:

Attached are exhibits and supporting statements which we submit in our request that a hearing be called to consider our application for a tight formation designation for the subject reservoir.

Additional required copies of the exhibits and statements will be brought to the hearing.

I plan to testify at the hearing and since I will be incapacitated for the next few weeks by pending surgery, I request that this hearing be scheduled after July 1, 1982.

Yours very truly,



I. B. Stitt  
Production Manager

IBS/dee  
attachments  
cc: USGS at Roswell with  
exhibits & statements



GMW CORP.  
675 EMPIRE PLAZA  
MIDLAND, TEXAS 79701  
915 - 682-6282

Statement for Exhibit 1  
Tight Formation Designation  
Pawnee Strawn Reservoir  
Lea County, New Mexico

To keep the record straight, the Pawnee Deep Unit Well No. 1 was originally known as the White Eagle Well No. 1. When we drilled the White Eagle Well No. 1 our company name was Gifford, Mitchell and Wisenbaker. We are now GMW Corp.

The Pawnee Deep Unit Well No. 1 is in the southern portion of Lea County, New Mexico, about six miles southwest of Jal. The well is in the northwest quarter of Section 22, Township 26 South, Range 36 East, and was the discovery well in the Pawnee Strawn reservoir when completed in April, 1980.

This reservoir is on the eastern edge of the Delaware Basin just off the Central Basin Platform and our well produces from perforations at 12,505' - 13,196'. In this area, the Strawn is a basinal limestone with a large amount of fine clastics. Overall it is fairly thick and continuous, however the reservoirs are limited in areal extent, porosity, and permeability.

The trapping mechanism is stratigraphic. A zone of porosity develops in an otherwise impermeable formation. These zones are fairly small in size and low in porosity and permeability.

The GMW well is the only well completed in the Strawn reservoir. Two other relatively deep wells which are shown on the map have produced from the Atoka and the Morrow. All of the numerous other producing wells shown on Exhibit 1 have been drilled to shallow horizons, 3000' to 4000' in depth.

The area shown outlined in red on the map denotes the areal extent considered to be covered by the Pawnee Strawn Reservoir.

*ave depth of formation*  
*ave thickness of pay*  
*lowest*  
*ave depth of fresh water zone*

**GMW CORP.**  
675 EMPIRE PLAZA  
MIDLAND, TEXAS 79701  
915 - 682-6282

Geological and Engineering Data  
for Exhibits 2, 3, 4, and 5  
Tight Formation Designation  
Pawnee Strawn Reservoir  
Lea County, New Mexico

Exhibit 2 is a plot of the production history of the Pawnee Deep Unit Well No. 1, and Exhibit 3 is the record of production from which the curve data were taken. Exhibit 4 is a copy of a letter from Tefteller, Inc., a Midland, Texas, reservoir engineering firm. The Tefteller letter presents an analysis of bottom hole pressure build-up data obtained from our Pawnee Deep well shortly after the initial potential test was taken and before we started selling gas to the pipeline. The calculated permeability of 0.43 millidarcies near the wellbore and 0.075 millidarcies beyond 129 feet from the wellbore, as discussed in the Tefteller letter, are pertinent to the consideration of tight formation designation for this reservoir. It should be noted here that our well was acidized with 5,000 gallons of 15% HCl acid on original completion prior to the above mentioned pressure build-up ---in other words, the 0.43 millidarcies calculated for near the wellbore is an improved permeability from the original. It is interesting to note how closely the prediction in the Tefteller letter as to the production rate sustainable by the outer permeability compares with the actual production rate since the latter part of 1980, (See Exhibit 2). Because of the low permeability, low reserves, and expected rapid decrease in reservoir pressure, the only gas market we could associate with was the nearby low pressure (50 psi) casinghead gas line operated by El Paso Natural Gas Company. A measure of the fast decline of pressure in this formation is shown by the following comment. A 72 hour shut-in tubing pressure was taken on our well on April 28, 1980, before sales began, and was 5877 psig. On March 24, 1981, after the well was shut-in again for 72 hours, the tubing pressure was only 2526 psig. This amounts to a surface pressure decline of 3351 psig in approximately eleven months after producing only about 210 MMCF of gas.

This reservoir meets the NGPA tight formation guideline for gas production rate (see Exhibit 2). During only the first full month of the well's production history did it's rate equal the guideline limit and this was not on a sustained basis and was after acid treatment. During the remainder of the well's history its production rate has been far below the guideline rate and would have been far below the guideline rate even against only atmospheric pressure. The well produces condensate (47.7° API gravity, with a 30,000 to 1 gas/condensate ratio) and therefore is within the crude oil guidelines.

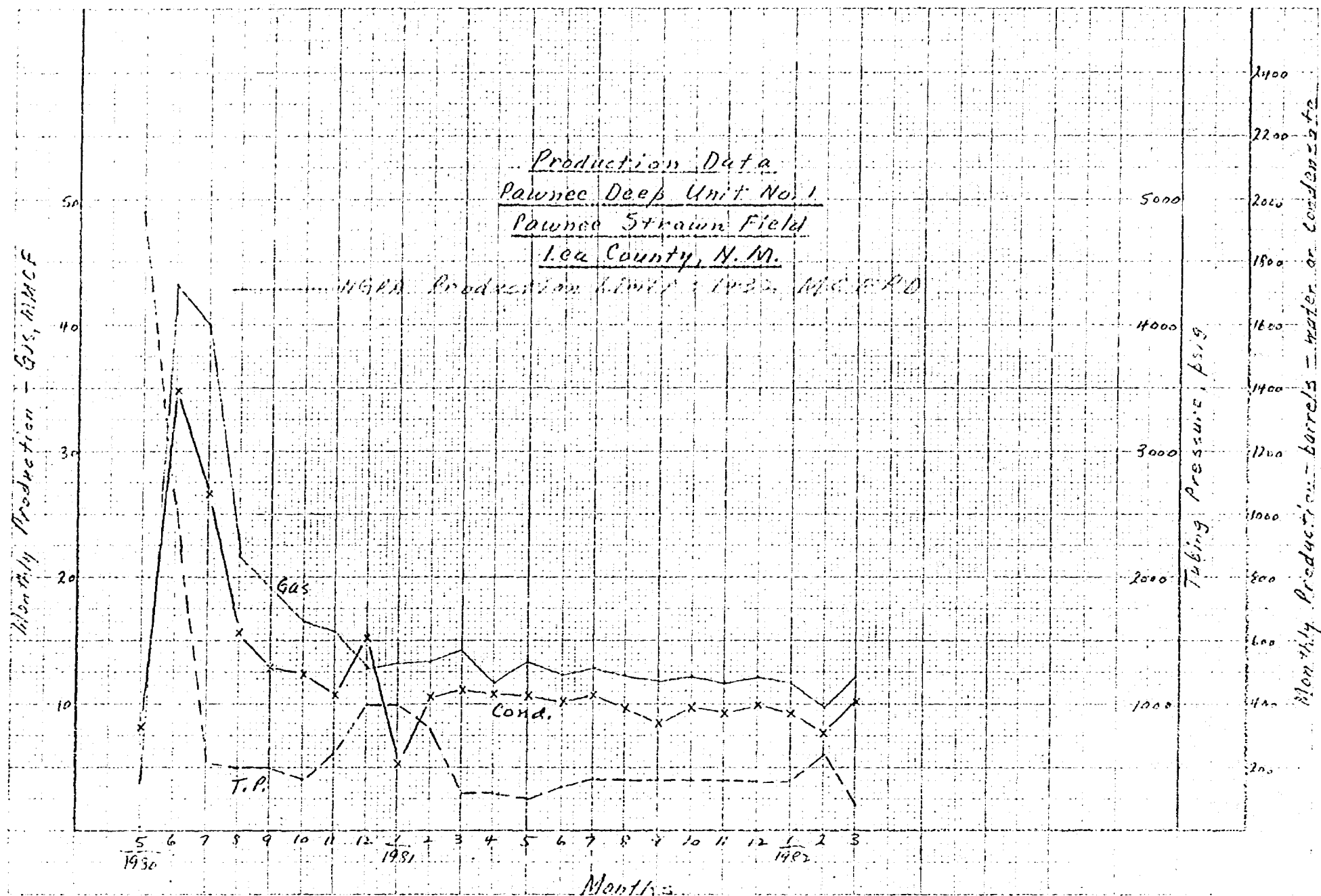
Page 2  
Geological and Engineering Data  
Tight Formation Designation  
Pawnee Strawn Reservoir

Although the calculated permeability at the wellbore appears to exceed the 0.1 millidarcy permeability guideline, there are two facts that lead us to believe that the average permeability in the reservoir is less than that guideline figure. One is that the calculated permeability at the wellbore (0.43 millidarcies) is based on a pressure build-up taken after the well was acidized with 5,000 gallons, and the virgin permeability could have been much nearer, even less than, the guideline figure.

The other fact is that the calculated permeability (0.075 millidarcy) at and beyond 129 feet from the wellbore should be much more representative of the drainage area of this well than the calculated permeability at the wellbore face since the outer permeability represents a greater volume of reservoir. The area of a circle with a 129 foot radius is only 1.2 acres.

Oil Conservation Commission Form C-105 is presented as Exhibit 5 in order to supply additional data about the completion of the Pawnee Deep Unit Well No. 1.

IBS/dee



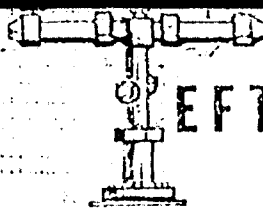
## EXHIBIT 3

Pawnee Deep Unit #1

## Monthly Production/Expense

Well: White Eagle #1

DATE	CONDENSATE Production Bbls.	WATER Production Bbls.	GAS Production MCF	Days On	EXPENSE <del>X</del> Mthly	lbq. press.	REMARKS cumulative gas, MCF	
1980								
JAN.								
FEB.								
MAR.								
APR.	0	0	0					
MAY	323	18	3862	5		4900	3862	DOFD to EPNB: 5/27/80
JUNE	1393	750	43105	30	1.437	2600	46973	6/3 - 12 <sup>th</sup> o.i. run
CUM.							x	
JULY	1063	2170	39924	31	1.287	550	86897	
AUG.	622	1050	21367	25	.874	500	108764	
SEPT.	515	1200	19166	30	.632	500	127930	
OCT.	496	1364	16519	31	.533	400	144449	
NOV.	427	750	15661	29	.540	600	160110	high line press.
DEC.	603	620	12817	31	.413	1000	172927	~ ~ ~
Total 1980	5442	8522	172927					
1981								
JAN.	212	372	13273	31	.428	1000	186200	hi line press.
FEB.	421	392	13868	28	.495	800	200068	~ ~ ~
MAR.	441	700	14097	22	.504	300	214167	
APR.	434	500	11701	30	.390	300	225268	
MAY	424	682	12304	31	.429	250	239172	
JUNE	405	525	12552	30	.412	250	251530	
CUM.								
JULY	429	543	12803	31	.413	400	264333	
AUG.	385	682	12253	31	.395	400	276582	
SEPT.	340	465	11827	30	.394	400	288415	
OCT.	392	511	12125	31	.371	403	300540	
NOV.	377	438	11708	30	.390	400	312248	
DEC.	399	515	12096	31	.390	401	324344	
Total 1981	4662	5877	151417					
1982								
JAN.	370	476	11624	31	.377	400	336022	
FEB.	305	157	9617	24	.401	604	345645	
MAR.	405	550	12249	31	.395	200	357294	
APR.								
MAY								
JUNE								
CUM.								
JULY								
AUG.								
SEPT.								
OCT.								
NOV.								
DEC.								
CUM.								



EFTELLER, INC.

reservoir engineering data

MIDLAND, TEXAS / FARMINGTON, NEW MEXICO

EXHIBIT 4

P. O. Box 5247

Midland, Texas 79701

BEFORE EXAMINER NUTTER  
OIL CONSERVATION DIVISION

GMW EXHIBIT NO. 4  
CASE NO. 7625

April 30, 1980

Gifford, Mitchell & Wisenbaker  
Suite 1280  
Midland National Bank Tower  
Midland, Texas 79701

Attn: Mr. Jim Salners

Subject: Build Up Analysis  
White Eagle No. 1  
Our File No. 3-10493-A

Gentlemen:

As you requested, we have reviewed the pressures that were obtained on the above captioned well. From these pressure data and information supplied by you, the following calculations and comments are offered.

- |  |               |
|--|---------------|
| 1) Reservoir Pressure ( $P^*$ ), P.S.I.G.    | 8020 @ 12850' |
| 2) Pressure Gradient ( $PG_p$ ), P.S.I./FT.  | 0.6241        |
| 3) Transmissibility ( $Kh/u$ ), MD.-FT./cps. | 702.69        |
| 4) Productive Capacity ( $Kh$ ), MD.-FT.     | 22.49         |
| 5) Permeability ( $K$ ), MDS.                | 0.43          |
| 6) Damage Ratio (DR), dim.                   | 0.75 (NONE)   |
| 7) Radius of Anomaly ( $r_{iat_1}$ )         | 129           |

8.5% poro  
Cased  
52' net pay

The first build up, prior to the potential test, was not of adequate time to provide quantitative analysis of reservoir parameters. Also, the absence of the first nine hours of the build up prevents a qualitative analysis.

The second build up, following the potential test, was of adequate time to provide at least a qualitative analysis. Although calculations are presented for a quantitative analysis, the wellbore conditions that were present induce a considerable margin for error in the calculated values.

*Serving the Permian Basin & Rocky Mountain Area*

Specifically, the condition referred to above is the large interval (1200') with a number of separate zones open to the wellbore. This type of wellbore heterogeneity has a tendency to mask the true pressure behavior of the formation(s). At best, the recorded wellbore pressures reflect an average of the parameters of the zones

To deal with this problem, and for the purpose of this analysis, we have to assume that all of the zones are virtually equal in dimension. Since the build up curve does not reflect a dominate zone, this assumption may be close to being true.

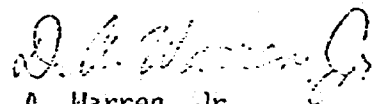
The character of the build up curve indicates a substantial discontinuity in permeability at a radius of 129 feet from the wellbore. Again, we have to assume that this anomaly is not the result of wellbore conditions. This discontinuity in permeability would indicate that the productivity of the well will diminish in relation to this permeability change. The 129 foot radius, 52 foot net zone thickness, represents 51,782 MSCF of gas. Once this volume has been produced the permeability beyond this radius will be controlling the productivity. This outer permeability (.075 MDS.) will sustain only about 421 MSCF/DAY, based on the production that occurred during the potential test.

Volumetrically, at 8020 P.S.I., the reservoir will contain 830 MSCF per acre-foot. Even at the lower permeability, if we assume the well will drain 40 acres, this would be 1,726 MM SCF. For a realistic calculation of reserves it is recommended that another build up be obtained after the well has produced approximately 50 MM SCF. To prevent an exaggerated pressure drawdown in the better permeability area, it is also recommended that the production rate not exceed 1.5 MM SCF/DAY, prior to this build up.

If there are any questions concerning the above, please call at any time.

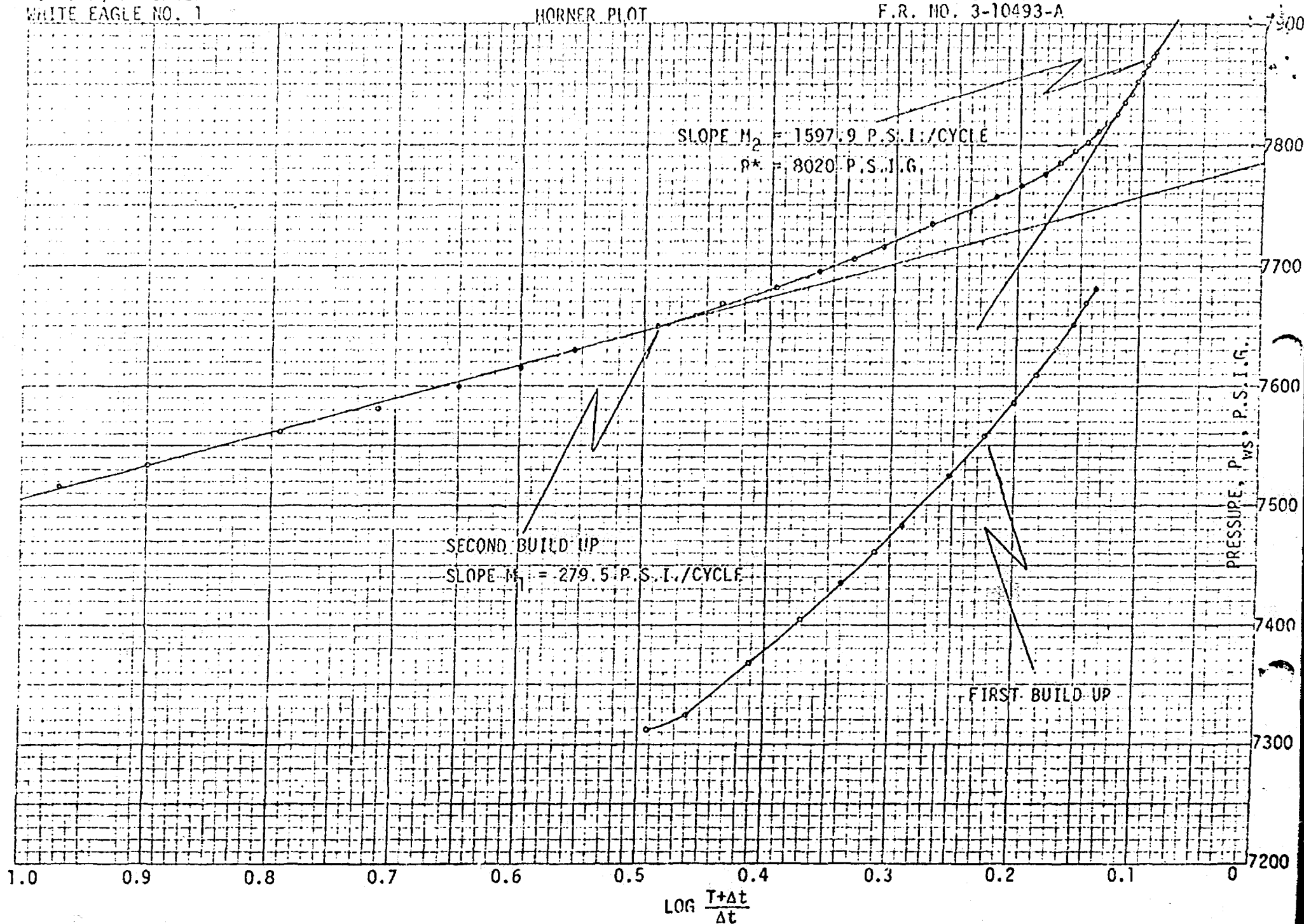
Respectfully submitted,

TEFTELLER, INC.



D. A. Warren, Jr.  
Operations Manager

42' 30"  
12630  
DAWjr/lw  
encls. Orig. pressure chart





## EXHIBIT 5

Form G-105  
Revised 11-84NEW MEXICO OIL CONSERVATION COMMISSION  
WELL COMPLETION OR RECOMPLETION REPORT AND LOG

4. Indicate Type of Lease	State <input checked="" type="checkbox"/> For <input type="checkbox"/>
5. State Oil & Gas Lease No.	IG - 3340
7. Unit Agreement Name	GMM - Pawnee Deep
8. Name of Lessee (Name)	White Eagle
9. Well No.	1
10. Field and Pool, or Similar	Wildcat

## 10. TYPE OF WELL

OIL WELL ☐ GAS WELL ☒ GWT ☐ OTHER ☐  
 NEW WELL ☒ VIOGA OVEN ☐ DEEPEN ☐ PLUG BACK ☐ OFF. RESER. ☐ OTHER ☐

## 1. Name of Operator

Gifford, Mitchell &amp; Wisenbaker

## 2. Address of Operator

1280 Midland National Bank Tower Midland, Texas 79701

## 3. Location of Well

UNIT LETTER F LOCATED 1650 FEET FROM THE North LINE AND 2310 FEET FROMTHE West LINE OF SEC. 22 TWP. 26-S RGE. 36-E NEPAI

## 12. County

Lea

15. Date Spudded 11/25/79 16. Date T.D. Reached 3/28/80 17. Date Compl. (Ready to Prod.) 4/18/80 18. Elevation (DF, NAL, RT, GR, etc.) GR 2910 19. Elev. Casinghead 2908

20. Total Depth 18,377 21. Plug Back T.D. 15,180 22. If Multiple Compl., How Many 1 23. Intervals Drilled by Rotary Tools All Cable Tools None

## 24. Producing Interval(s), of this completion - Top, bottom, Name

12,505' - 13,196' (Strawn)25. Was Directional Survey Made  
yes (dipmeter)

## 26. Type Electric and Other Logs Run

Dual Laterolog &amp; Comp. Neutron Density

27. Was Well Cased  
No

## 28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FY.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
20"	94	925'	26"	1700 SX	
13 3/8"	61 & 68	4950'	17-1/2"	3800 SX	
9 5/8"	47	11854'	12-1/4"	2425 SX	

## 29. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN	SIZE	DEPTH SET	PACKER SET
7-3/4"	11,561	16,504	875		3-1/2"	12,300	12,300

## 30. TUBING RECORD

## 31. Perforation Record (Interval, size and number)

21 holes (0.29") from 12,505 to 13,196

## 32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
12,505 - 13,196	5000 gals. of 15% HCL acid

## 33. PRODUCTION

Date First Production <u>4/18/80</u>	Production Method (Flowing, gas lift, pumping - Size and type pump) <u>Flowing</u>	Well Status (Prod. or Shut-in) <u>shut-in (WO pipeline)</u>
Date of Test <u>4/21/80</u>	Hours Tested <u>1</u>	Choke Size <u>15/64</u>
Flow Test Interval <u>4790</u>	Pressure (Flowing) <u>pk.</u>	Prod. Per Test Period <u>189</u>
	Oil - Bbl. <u>7.88</u>	Gas - MCF <u>214.25</u>
	Water - Bbl. <u>0.87</u>	Gas - Oil Ratio <u>27.9 MCF/bbl.</u>
	Oil - Bbl. <u>189</u>	Gas - MCF <u>5142</u>
	Water - Bbl. <u>21</u>	Oil Gravity - API (Corr.) <u>47.7</u>

## 34. Disposition of Gas (Sold, used for fuel, vented, etc.)

well shut in - waiting on pipeline connection

## Test Witnessed by

Delton Shirley

## 35. List of Attachments

One copy of each elec. log and deviation survey

I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief.

SIGNED

D. B. Shirley

TITLE

Production Engineer

DATE

4/29/80

GMW CORP.  
675 EMPIRE PLAZA  
MIDLAND, TEXAS 79701  
915-682-6182

Exhibit 6  
Fresh Water Protection  
Pawnee Strawn Reservoir  
Lea County, New Mexico

In regard to protection of fresh water reservoirs within the area of the Pawnee Strawn Reservoir, it is believed that there is no chance of fresh water damage occurring here for two reasons. One is the depth of the tight reservoir - fresh waters are much nearer the surface - and the other is that the pertinent regulations, whether State of New Mexico or Federal, are thoroughly planned to protect fresh water through good casing, tubular, and cementing practice requirements.

BEFORE EXAMINER NUTTER  
OIL CONSERVATION DIVISION

GMW EXHIBIT NO. 6  
CASE NO. 7625

Dockets Nos. 25-82 and 26-82 are tentatively set for August 4 and August 18, 1982. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - JULY 21, 1982

9 A.M. - MORGAN HALL, OIL CONSERVATION DIVISION,  
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO.

The following cases will be heard before Daniel S. Mutter, Examiner, or Richard L. Stamets, Alternate Examiner.

- ALLOWABLE: (1) Consideration of the allowable production of gas for August, 1982, from fifteen prorated pools in Lea, Eddy, and Chaves Counties, New Mexico.
- (2) Consideration of the allowable production of gas for August, 1982, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.

CASE 7560: (Continued from July 7, 1982, Examiner Hearing)

In the matter of the hearing called by the Oil Conservation Division on its own motion to permit Charles H. Heisen, Fidelity and Deposit Company of Maryland, Surety, and all other interested parties to appear and show cause why the Crownpoint Well No. 1, located in Unit F, Section 18, Township 18 North, Range 13 West, McKinley County, should not be plugged and abandoned in accordance with a Division-approved plugging program.

CASE 7599: (Continued from June 9, 1982, Examiner Hearing)

Application of Barber Oil Inc. for an Exception to Rule 705-A Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to the provisions of Rule 705-A of the Division Rules and Regulations to permit 37 temporarily abandoned injection wells in its Russell Pool waterflood project to remain inactive for a period of up to three years without the required cement or bridge plugs being installed therein to isolate the injection zone.

CASE 7622: Application of El Ran, Inc. for a waterflood project, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Chaveroo-San Andres Pool by the injection of water into the perforated interval from 4169 feet to 4276 feet in its U. S. Well No. 1, located in Unit N of Section 34, Township 7 South, Range 32 East.

CASE 7516: (Continued from May 12, 1982, Examiner Hearing)

Application of Benson-Montin-Greer for a unit agreement, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the North Canada Ojitos Unit Area, comprising 12,361 acres, more or less, of Jicarilla Apache Indian lands in Township 27 North, Range 1 West.

CASE 7623: Application of C & K Petroleum, Inc. for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Abo formation underlying the SE/4 SE/4 of Section 28, Township 16 South, Range 37 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of the applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7620: (Continued from July 7, 1982, Examiner Hearing)

Application of Mesa Petroleum Company for compulsory pooling, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in all formations from the surface through the base of the Abo formation underlying the SW/4 of Section 8, Township 5 South, Range 25 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 7624: Application of John Yurorka for an unorthodox gas well location and compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Jalmat Gas Pool underlying the SW/4 of Section 31, Township 22 South, Range 37 East, to form a non-standard gas proration unit to be dedicated to a well to be drilled at an unorthodox location 990 feet from the South line and 330 feet from the West line of said Section 31. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7618: (Readvertised)

Application of Doyle Hartman for an unorthodox gas well location and simultaneous dedication, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a gas well to be drilled 1450 feet from the South line and 1980 feet from the East line of Section 20, Township 20 South, Range 37 East, Eumont Gas Pool, the SE/4 of said Section 20 to be simultaneously dedicated to said well and to the State A-20 Well No. 1 located in Unit I of said Section 20.

CASE 7625: Application of GNV Corp. for designation of a tight formation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the designation of the Pawnee Strawn Reservoir underlying Sections 9 and 10, 14 thru 16, 21 thru 24, and 26 and 27, Township 26 South, Range 36 East, containing 7,040 acres, more or less, as a tight formation pursuant to Section 107 of the Natural Gas Policy Act and 18 CFR Section 271. 701-705.

CASE 7626: In the matter of the hearing called by the Oil Conservation Division on its own motion for an order creating, contracting, and extending certain pools in Rio Arriba, San Juan, McKinley, and Sandoval Counties, New Mexico.

- (a) That the Otero-Gallup Oil Pool in Rio Arriba County, New Mexico, as heretofore classified, defined and described, is hereby contracted by excluding:

TOWNSHIP 25 NORTH, RANGE 5 WEST, NMPM  
Section 35: W/2 SW/4

- (b) That a new pool in Rio Arriba County, New Mexico, classified as a Chacra Pool for gas production, is hereby created and designated the Adobe-Chacra Pool, comprising the following described area:

TOWNSHIP 24 NORTH, RANGE 4 WEST, NMPM  
Section 13: S/2  
24: E/2

- (c) That a new pool in San Juan County, New Mexico, classified as a Gallup Pool for oil production, is hereby created and designated the Armenta-Gallup Oil Pool, comprising the following described area:

TOWNSHIP 29 NORTH, RANGE 10 WEST, NMPM  
Sections 26: SW/4  
27: S/2  
28: E/2 SW/4 and SE/4  
33: E/2 NW/4 and NE/4  
34: N/2  
35: N/2 and N/2 SE/4

- (d) That a new pool in San Juan County, New Mexico, classified as a gas pool for Fruitland production, is hereby created and designated the Glades-Fruitland Pool, comprising the following described area:

TOWNSHIP 12 NORTH, RANGE 11 WEST, NMPM  
Section 31: NW/4

TOWNSHIP 32 NORTH, RANGE 12 WEST, NMPM  
Sections 35: N/2 and SE/4  
36: N/2 and SW/4

- (e) That a new pool in Sandoval County, New Mexico, classified as a Mancos pool for oil production, is hereby created and designated the San Ysidro-Mancos Oil Pool, comprising the following described area:

TOWNSHIP 21 NORTH, RANGE 3 WEST, NMPM  
Section 29: S/2 SW/4  
30: E/2 E/2 and SW/4 SE/4

- (f) That the Albino-Pictured Cliffs Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 32 NORTH, RANGE 8 WEST, NMPM  
Sections 11: S/2  
13: W/2 and NE/4  
14: E/2 and SW/4  
26: NE/4

TOWNSHIP 32 NORTH, RANGE 7 WEST, NMPM  
Section 18: NW/4

- (g) That the Angel Peak-Gallup Associated Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 27 NORTH, RANGE 10 WEST, NMPM  
Sections 22: All  
27: W/2

- (h) That the Aztec-Fruitland Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 23 NORTH, RANGE 10 WEST, NMPM  
Section 9: SE/4

TOWNSHIP 29 NORTH, RANGE 11 WEST, NMPM  
Sections 25: SE/4  
33: N/2

- (i) That the Aztec-Pictured Cliffs Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 31 NORTH, RANGE 12 WEST, NMPM  
Sections 14: SE/4  
35: NE/4

- (j) That the B S Mesa Gallup Pool in Rio Arriba County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 26 NORTH, RANGE 4 WEST, NMPM  
Section 9: W/2 and SE/4

- (k) That the Ballard-Pictured Cliffs Pool in Rio Arriba, Sandoval, and San Juan Counties, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 23 NORTH, RANGE 3 WEST, NMPM  
Sections 25: All  
36: N/2

TOWNSHIP 24 NORTH, RANGE 5 WEST, NMPM  
Sections 6: NW/4  
16: SE/4

TOWNSHIP 25 NORTH, RANGE 6 WEST, NMPM  
Sections 27: SW/4  
34: N/2  
35: NW/4

TOWNSHIP 26 NORTH, RANGE 7 WEST, NMPM  
Section 19: N/2 and SE/4

TOWNSHIP 26 NORTH, RANGE 8 WEST, NMPM  
Sections 9: SE/4  
10: All  
15: NE/4

- (l) That the Bisti-Farmington Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 25 NORTH, RANGE 12 WEST, NMPM  
Section 3: SW/4

TOWNSHIP 26 NORTH, RANGE 12 WEST, NMPM  
Sections 31: E/2  
32: All

- (m) That the Bisti-Lower Gallup Oil Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 24 NORTH, RANGE 10 WEST, NMPM  
Section 9: N/2 NW/4

- (n) That the Blanco Mesaverde Pool in Rio Arriba and San Juan Counties, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 25 NORTH, RANGE 3 WEST, NMPM  
Sections 8: E/2  
16: All  
17: All  
20: N/2  
21: W/2

TOWNSHIP 25 NORTH, RANGE 5 WEST, NMPM  
Sections 1: All  
2: All

TOWNSHIP 26 NORTH, RANGE 5 WEST, NMPM  
Sections 17: W/2  
18: E/2  
20: W/2  
27: S/2

TOWNSHIP 26 NORTH, RANGE 6 WEST, NMFM  
Sections 23: All  
24: W/2

TOWNSHIP 27 NORTH, RANGE 9 WEST, NMFM  
Section 6: E/2

TOWNSHIP 29 NORTH, RANGE 10 WEST, NMFM  
Sections 7: All  
15: N/2  
18: All  
19: All  
30: All

TOWNSHIP 29 NORTH, RANGE 11 WEST, NMFM  
Sections 1, 12, 13, 24, 25: All

TOWNSHIP 30 NORTH, RANGE 11 WEST, NMFM  
Sections 8: All  
9: All

TOWNSHIP 31 NORTH, RANGE 5 WEST, NMFM  
Sections 7: All  
8: W/2

TOWNSHIP 31 NORTH, RANGE 12 WEST, NMFM  
Section 31: All

- (o) That the Blanco-Pictured Cliffs Pool in Rio Arriba, San Juan, and Sandoval Counties, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 28 NORTH, RANGE 7 WEST, NMFM  
Section 8: All

TOWNSHIP 29 NORTH, RANGE 7 WEST, NMFM  
Section 31: SE/4

TOWNSHIP 30 NORTH, RANGE 8 WEST, NMFM  
Section 20: S/2

TOWNSHIP 31 NORTH, RANGE 10 WEST, NMFM  
Section 25: NW/4

TOWNSHIP 32 NORTH, RANGE 10 WEST, NMFM  
Section 29: NE/4

TOWNSHIP 32 NORTH, RANGE 11 WEST, NMFM  
Section 10: W/2

TOWNSHIP 32 NORTH, RANGE 12 WEST, NMFM  
Sections 15: S/2  
35: NW/4

- (p) That the East Blanco-Pictured Cliffs Pool in Rio Arriba County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 30 NORTH, RANGE 4 WEST, NMFM  
Sections 11: SE/4  
14: E/2  
26: W/2  
35: NW/4

- (q) That the South Blanco-Pictured Cliffs Pool in Rio Arriba, Sandoval, and San Juan Counties, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 24 NORTH, RANGE 1 WEST, NMFM  
Sections 17: SW/4  
18: W/2

TOWNSHIP 26 NORTH, RANGE 7 WEST, NMFM  
Section 17: SE/4

TOWNSHIP 26 NORTH, RANGE 8 WEST, NMFM  
Sections 3: S/2 and NW/4  
4: SE/4

TOWNSHIP 28 NORTH, RANGE 7 WEST, NMFM  
Sections 10: All  
11: All  
15: NW/4

- (r) That the Bloomfield-Chacra Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 29 NORTH, RANGE 10 WEST, NMPM  
Section 30: N/2

TOWNSHIP 29 NORTH, RANGE 11 WEST, NMPM  
Sections 20: W/2  
25: SE/4  
28: S/2  
29: All  
30: NE/4  
31: N/2  
32: N/2  
33: N/2 and SE/4

- (s) That the Bloomfield-Farmington Oil Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 29 NORTH, RANGE 11 WEST, NMPM  
Sections 25: SW/4  
26: SE/4 SE/4

- (t) That the Cha Cha-Gallup Oil Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 28 NORTH, RANGE 13 WEST, NMPM  
Section 22: W/2 SW/4

TOWNSHIP 29 NORTH, RANGE 14 WEST, NMPM  
Sections 7: S/2 SW/4  
18: N/2

TOWNSHIP 29 NORTH, RANGE 15 WEST, NMPM  
Sections 1: S/2 SW/4  
13: NW/4

- (u) That the Chacon-Lakota Associated Pool in Rio Arriba and San Juan Counties, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 22 NORTH, RANGE 2 WEST, NMPM  
Section 7: SW/4

TOWNSHIP 22 NORTH, RANGE 3 WEST, NMPM  
Sections 1: E/2  
3: NW/4  
10: E/2  
11: All  
12: All

TOWNSHIP 23 NORTH, RANGE 3 WEST, NMPM  
Sections 2: W/2  
11: NE/4  
36: SW/4

TOWNSHIP 24 NORTH, RANGE 3 WEST, NMPM  
Sections 15: SW/4  
16: E/2 and NW/4  
22: NW/4  
26: NW/4  
27: NE/4

- (v) That the Choza Mesa-Pictured Cliffs Pool in Rio Arriba County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 29 NORTH, RANGE 3 WEST, NMPM  
Section 29: SW/4

- (w) That the Crouch Mesa-Mesaverte Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 29 NORTH, RANGE 11 WEST, NMPM  
Section 6: SE/4

- (x) That the Cuervo-Gallup Oil Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 24 NORTH, RANGE 8 WEST, NMPM  
Section 20: SW/4 SW/4

- (y) That the Dufers Point Gallup-Dakota Oil Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 24 NORTH, RANGE 8 WEST, NMPM  
Sections 3: S/2 SW/4  
4: S/2 SE/4

- (z) That the Farmer-Fruitland Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 30 NORTH, RANGE 11 WEST, NMPM  
Sections 8: All  
9: W/2

- (aa) That the Flora Vista-Fruitland Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 31 NORTH, RANGE 12 WEST, NMPM  
Section 34: SE/4

TOWNSHIP 30 NORTH, RANGE 12 WEST, NMPM  
Section 15: NW/4

- (bb) That the Flora Vista-Gallup Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 30 NORTH, RANGE 12 WEST, NMPM  
Sections 5: N/2  
6: NE/4  
11: NW/4

- (cc) That the Fulcher Kutz-Pictured Cliffs Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 27 NORTH, RANGE 11 WEST, NMPM  
Sections 1: W/2  
12: W/2

TOWNSHIP 28 NORTH, RANGE 11 WEST, NMPM  
Section 36: W/2

- (dd) That the South Gallegos Fruitland-Pictured Cliffs Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 26 NORTH, RANGE 11 WEST, NMPM  
Section 18: NE/4

- (ee) That the Gallegos-Gallup Oil Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 26 NORTH, RANGE 11 WEST, NMPM  
Section 12: SW/4

- (ff) That the Gobernador-Pictured Cliffs Pool in Rio Arriba County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 29 NORTH, RANGE 5 WEST, NMPM  
Sections 4: SW/4  
9: NE/4  
15: NE/4  
25: NE/4  
26: NE/4

TOWNSHIP 30 NORTH, RANGE 5 WEST, NMPM  
Section 34: SW/4

- (gg) That the Gonzales-Mesaverde Pool in Rio Arriba County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 25 NORTH, RANGE 5 WEST, NMPM  
Sections 4: E/2 and NW/4  
9: NE/4  
10: All

TOWNSHIP 26 NORTH, RANGE 5 WEST, NMPM  
Sections 31: NW/4  
32: SE/4  
33: W/2

- (hh) That the Harris Mesa-Chacra Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 27 NORTH, RANGE 9 WEST, NMPM  
Sections 5: NW/4  
6: NE/4

TOWNSHIP 28 NORTH, RANGE 9 WEST, NMPM  
Sections 19: SE/4  
29: NW/4  
30: NE/4



- (ii) That the Horseshoe-Gallup Oil Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 30 NORTH, RANGE 15 WEST, NMPM  
Section 19: N/2 SW/4

- (jj) That the Hoshah-Dakota Oil Pool in McKinley County, New Mexico, as heretofore, classified, defined and described, is hereby extended to include:

TOWNSHIP 17 NORTH, RANGE 8 WEST, NMPM  
Section 5: SW/4 SE/4

- (kt) That the East Kutz-Pictured Cliffs Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 26 NORTH, RANGE 11 WEST, NMPM  
Section 3: NW/4

TOWNSHIP 27 NORTH, RANGE 11 WEST, NMPM  
Sections 11: W/2  
29: W/2  
30: All  
31: All  
32: NW/4  
33: All  
34: W/2

TOWNSHIP 28 NORTH, RANGE 11 WEST, NMPM  
Sections 34: NE/4  
35: All

- (ll) That the Largo-Chacra Pool in Rio Arriba and San Juan Counties, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 27 NORTH, RANGE 7 WEST, NMPM  
Section 22: NE/4

TOWNSHIP 27 NORTH, RANGE 8 WEST, NMPM  
Sections 2: SW/4  
9: NW/4

- (mm) That the South Lindrith Gallup-Dakota Oil Pool in Rio Arriba County, New Mexico, as heretofore classified, defined, and described, is hereby extended to include:

TOWNSHIP 23 NORTH, RANGE 4 WEST, NMPM  
Section 3: NW/4 NE/4

TOWNSHIP 24 NORTH, RANGE 4 WEST, NMPM  
Sections 27: S/2 S/2  
28: SE/4  
33: E/2  
34: All

- (nn) That the West Lindrith Gallup-Dakota Oil Pool in Rio Arriba County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 24 NORTH, RANGE 3 WEST, NMPM  
Section 6: N/2

TOWNSHIP 24 NORTH, RANGE 4 WEST, NMPM  
Sections 10: SW/4  
14: SE/4  
36: NE/4

TOWNSHIP 25 NORTH, RANGE 4 WEST, NMPM  
Sections 14: SE/4  
15: NE/4  
35: E/2

TOWNSHIP 25 NORTH, RANGE 5 WEST, NMPM  
Section 35: SW/4

- (oo) That the North Los Pinos-Fruitland Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 32 NORTH, RANGE 8 WEST, NMPM  
Section 23: N/2

- (pp) That the South Los Pinos Fruitland-Pictured Cliffs Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 31 NORTH, RANGE 7 WEST, NMPM  
Sections 7: SE/4  
10: SW/4  
12: W/2

TOWNSHIP 32 NORTH, RANGE 7 WEST, NMPM  
Sections 26: SW/4  
27: SE/4  
34: NE/4  
36: NW/4

- (qq) That the Lybrook-Gallup Oil Pool in Rio Arriba and Sandoval Counties, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 23 NORTH, RANGE 6 WEST, NMPM  
Section 29: E/2 NW/4

TOWNSHIP 23 NORTH, RANGE 7 WEST, NMPM  
Sections 2: W/2 NW/4  
6: NE/4 SE/4  
9: N/2 SW/4

TOWNSHIP 24 NORTH, RANGE 8 WEST, NMPM  
Sections 22: SE/4 SE/4  
25: SE/4 NW/4, SW/4 NE/4, and NW/4 SE/4  
26: NW/4, W/2 NE/4, and NE/4 SE/4  
27: N/2, N/2 SW/4, and NW/4 SE/4

- (rr) That the Marcelina-Dakota Oil Pool in McKinley County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 16 NORTH, RANGE 10 WEST, NMPM  
Section 13: S/2 SE/4

- (ss) That the Meadows-Gallup Oil Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 29 NORTH, RANGE 15 WEST, NMPM  
Sections 2: SW/4 SW/4  
3: NW/4, NE/4 SW/4, N/2 SE/4 and SE/4 SE/4  
4: NE/4 and NW/4 SE/4  
10: NE/4 NE/4

TOWNSHIP 30 NORTH, RANGE 15 WEST, NMPM  
Sections 28: SW/4 SW/4  
29: SE/4 SE/4  
33: N/2 NW/4 and SE/4 NW/4

- (tt) That the Miguel Creek-Gallup Oil Pool in McKinley County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 16 NORTH, RANGE 6 WEST, NMPM  
Sections 20: S/2 NE/4  
21: W/2 SW/4 and NE/4 SW/4  
28: SW/4 NW/4

- (uu) That the Mt. Nebo-Fruitland Pool in San Juan County, New Mexico, as heretofore classified, defined, and described, is hereby extended to include:

TOWNSHIP 32 NORTH, RANGE 10 WEST, NMPM  
Sections: 28: NW/4  
29: E/2  
32: NE/4

- (vv) That the Ojito Gallup-Dakota Oil Pool in Rio Arriba County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 25 NORTH, RANGE 3 WEST NMPM  
Sections 7: W/2  
18: W/2 and NE/4  
20: N/2  
21: W/2 NW/4

- (ww) That the Otero-Chacra Pool in Rio Arriba County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 25 NORTH, RANGE 5 WEST NMPM  
Sections 13: SW/4  
14: SE/4  
23: NE/4  
34: S/2  
35: SW/4  
36: SE/4

TOWNSHIP 25 NORTH, RANGE 6 WEST, NMPM  
Sections 23: SW/4  
26: NW/4

TOWNSHIP 26 NORTH, RANGE 6 WEST, NMPM  
Sections 24: SW/4  
25: NW/4

TOWNSHIP 26 NORTH, RANGE 7 WEST, NMPM  
Sections 2: W/2  
16: NE/4

TOWNSHIP 27 NORTH, RANGE 7 WEST, NMPM  
Sections 34: S/2  
35: W/2

- (xx) That the Otero-Gallup Oil Pool in Rio Arriba County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 24 NORTH, RANGE 5 WEST, NMPM  
Section 3: N/2 NE/4

- (yy) That the North Pinon-Fruitland Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 28 NORTH, RANGE 12 WEST, NMPM  
Sections 9: All  
16: NE/4

- (zz) That the Pinon-Gallup Oil Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 28 NORTH, RANGE 12 WEST, NMPM  
Section 13: W/2 NW/4

- (aaa) That the Potwin-Pictured Cliffs Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 24 NORTH, RANGE 8 WEST, NMPM  
Section 8: NE/4

- (bbb) That the Ute Dome-Dakota Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 32 NORTH, RANGE 13 WEST, NMPM  
Section 31: N/2

- (ccc) That the Ute Dome-Paradox Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 32 NORTH, RANGE 13 WEST, NMPM  
Section 19: All

- (ddd) That the WAW Fruitland-Pictured Cliffs Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 25 NORTH, RANGE 12 WEST, NMPM  
Section 5: NE/4

TOWNSHIP 26 NORTH, RANGE 12 WEST, NMPM  
Section 9: S/2

TOWNSHIP 26 NORTH, RANGE 13 WEST, NMPM  
Section 25: NE/4

- (eee) That the Whitewash Mancos-Dakota Oil Pool in San Juan County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 24 NORTH, RANGE 9 WEST, NMPM

Sections 10: SE/4 SE/4

11: W/2 SW/4

- (fff) That the Wildhorse-Gallup Pool in Rio Arriba County, New Mexico, as heretofore classified, defined and described, is hereby extended to include:

TOWNSHIP 26 NORTH, RANGE 3 WEST, NMPM

Section 18: NE/4

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
DIVISION FOR THE PURPOSE OF  
CONSIDERING:

CASE NO. 7625

Order No. R-7/23

APPLICATION OF GMW CORPORATION  
FOR DESIGNATION OF A TIGHT  
FORMATION, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on July 21, 1982,  
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this \_\_\_\_\_ day of November, 1982, the Division  
Director, having considered the testimony, the record, and the  
recommendations of the Examiner, and being fully advised in the  
premises,

FINDS:

(1) That due public notice having been given as required  
by law, the Division has jurisdiction of this cause and the  
subject matter thereof.

(2) That, pursuant to Section 107 of the Natural Gas Policy Act of 1978, and CFR Section 271.703, applicant GMW Corporation seeks the designation as a "tight formation" of the Strawn formation underlying the following described lands in Lea County, New Mexico:

TOWNSHIP 26 SOUTH, RANGE 36 EAST, NMPM

Sections 9 AND 10: All

Sections 14 through 16: All

Sections 21 through 24: All

Sections 26 and 27: All

containing 7,040 acres, more or less.

(3) That in the subject area, the Strawn formation is a basinal limestone with a large amount of fine clastics, overall being fairly thick and continuous, although the reservoirs contained therein appear to be limited in areal extent, porosity, and permeability.

(4) That said reservoirs appear to be the result of stratigraphic trapping mechanisms wherein zones of porosity and permeability develop in the otherwise tight formation.

(5) That only one well has been drilled in applicant's proposed tight formation area described in Finding No. (2) above, being applicant's Pawnee Deep Unit Well No. 1 (formerly known as the Gifford, Mitchell and Wisenbaker White Eagle Well No. 1) located in Unit F of Section 22, Township 26 South, Range 36 East, NMPM.

(6) That said well was completed producing from the Strawn formation through perforations from 12,505 feet to 13,196 feet on April 18, 1980.

(7) That on Division Form C-105 filed by Gifford, Mitchell and Wisenbaker on April 29, 1980, the aforesaid well was reported as producing on test 214.25 MCF of gas, 7.88 barrels of condensate and 0.87 barrels of water in one hour, for a calculated 24-hour producing rate of 5,142 MCF of gas, 189 barrels of condensate, and 21 barrels of water.

(8) That said well was connected to a pipeline and first delivery of gas made on May 27, 1980, and during the first full month of production in June, 1980, the well made 43,105 MCF of gas, 1393 barrels of condensate, and 750 barrels of water in 30 days, for an average daily rate of production of 1437 MCF of gas, 46 barrels of condensate, and 25 barrels of water with an average flowing tubing pressure of 2600 psi.

(9) That since June, 1980, production and flowing tubing pressure have rapidly declined, and the well in March of 1982 produced 12,249 MCF of gas, 405 barrels of condensate, and 550 barrels of water in 31 days, for an average daily rate of production of 395 MCF of gas, 13 barrels of condensate, and 18 barrels of water.

(10) That the depth to the top of the formation in applicant's Pawnee Deep Unit Well No. 1 is 12,505 feet, and to qualify for designation as a tight formation, CFR Section 271.703(c)(2)B prescribes for this depth a maximum stabilized production rate, against atmospheric pressure without stimulation of 1432 MCF of gas per day.

(11) That no tests were made of the subject well prior to stimulation and to presume a maximum stabilized production of 1432 MCF/day for the well under such conditions is speculative and unsupported by the evidence presently available.

(12) That CFR Section 271.703(c)(2)A prescribes a maximum in situ gas permeability, throughout the pay section, of 0.1 millidarcy or less to qualify for designation as a tight formation.

(13) That no cores or other reliable data are available to calculate the in situ gas permeability of the reservoir in this case; that certain calculations were presented which indicate a present permeability of some 0.43 millidarcies at the wellbore and extending outward for some 129 feet into the reservoir, with a substantial discontinuity in permeability apparent at that point.

(14) That the calculated permeability beyond 129 feet (estimated at 0.075 millidarcies) is based on certain assumptions and cannot be relied upon as a definitive average in situ permeability for the reservoir.

(15) That CFR Section 271.703(c)(2)(C) prescribed a maximum rate of production, without stimulation, of five barrels of crude oil per day to qualify for designation as a tight formation.

(16) That applicant's Pawnee Deep Unit Well No. 1 apparently produces no crude oil, although its rate of production of condensate, after stimulation, was 46 barrels per day during June, 1980, its first full month of production (Finding No. (8) above).

(17) That considering all aspects of production characteristics, reservoir data, and other available evidence, it would appear that the Strawn reservoir underlying the lands described in Finding No. (2) above may not be so much a "tight formation" as defined by the Federal Energy Regulatory