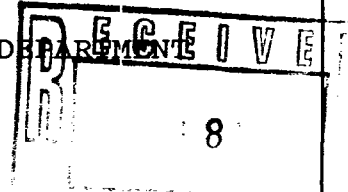


STATE OF NEW MEXICO  
 ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
 OIL CONSERVATION DIVISION



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

CASE NO. 11,605

APPLICATION OF AMOCO PRODUCTION COMPANY )  
 FOR AN UNORTHODOX GAS WELL LOCATION AND )  
 SIMULTANEOUS DEDICATION, SAN JUAN )  
 COUNTY, NEW MEXICO )

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

September 5th, 1996

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MICHAEL E. STOGNER, Hearing Examiner, on Thursday, September 5th, 1996, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

\* \* \*

## I N D E X

September 5th, 1996  
 Examiner Hearing  
 CASE NO. 11,605

PAGE

## APPLICANT'S WITNESS:

PAMELA W. STALEY (Engineer)

Direct Examination by Ms. Trujillo

3

Examination by Examiner Stogner

12

## REPORTER'S CERTIFICATE

23

\* \* \*

## E X H I B I T

Applicant's

Identified

Admitted

Exhibit 1

5

12

\* \* \*

## A P P E A R A N C E S

## FOR THE DIVISION:

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

## FOR THE APPLICANT:

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

\* \* \*

1 WHEREUPON, the following proceedings were had at  
2 8:33 a.m.:

3 EXAMINER STOGNER: I'll call Case Number 11,605.

4 MR. CARROLL: Application of Amoco Production  
5 Company for an unorthodox gas well location and  
6 simultaneous dedication, San Juan County, New Mexico.

7 EXAMINER STOGNER: At this time I'll call for  
8 appearances.

9 MS. TRUJILLO: Mr. Examiner, I am Tanya Trujillo  
10 from Campbell, Carr, Berge and Sheridan, here today on  
11 behalf of the Applicant.

12 I have one witness to present.

13 EXAMINER STOGNER: Ms. Trujillo?

14 MS. TRUJILLO: Thank you.

15 MR. CARROLL: Swear the witness?

16 EXAMINER STOGNER: Oh, yes, will the witness  
17 please stand to be sworn?

18 (Thereupon, the witness was sworn.)

19 PAMELA W. STALEY,

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

22 DIRECT EXAMINATION

23 BY MS. TRUJILLO:

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

25 A. My name is Pamela Staley.

1 Q. And where do you reside?

2 A. I reside in Denver, Colorado.

3 Q. And by whom are you employed?

4 A. By Amoco Production Company.

5 Q. And what is your position with Amoco?

6 A. I'm a regulatory affairs engineer, trained as a  
7 petroleum engineer.

8 Q. Have you previously testified before this  
9 Division or one of its Examiners and had your  
10 qualifications as a petroleum engineer accepted and made a  
11 matter of the record?

12 A. Yes, I have.

13 Q. Are you familiar with the Application filed in  
14 this case?

15 A. Yes, I am.

16 Q. And are you familiar with the subject area of  
17 this case?

18 A. Yes, I am.

19 MS. TRUJILLO: Mr. Examiner, are Ms. Staley's  
20 qualifications acceptable?

21 EXAMINER STOGNER: They are.

22 Q. (By Ms. Trujillo) Ms. Staley, could you briefly  
23 state what Amoco seeks with this Application?

24 A. Yes, Amoco seeks an exception to Division Rule  
25 104.C.3 and 104.D.3 to simultaneously dedicate the

1 following wells to a 160-acre spacing and proration unit,  
2 comprised of Lot 2, or the northeast equivalent of Section  
3 1, Township 31 North, 14 West, of the New Mexico Principal  
4 Meridian, San Juan County, New Mexico, and also to drill  
5 the Ute Indian A Well Number 26 at an unorthodox location.

6 Amoco's proposed Ute Indian A Well Number 26 is  
7 to be drilled at an unorthodox location of 625 feet from  
8 the north line and 2620 feet from the east line of the said  
9 Section 1, and Amoco's existing Ute Mountain Gas Com C  
10 Number 1, located at 1481 feet from the north line and 1960  
11 feet from the east line of said Section Number 1, those two  
12 wells will comprise the simultaneous dedication. This is  
13 an oversize section.

14 Amoco proposes to continuously and concurrently  
15 produce the Ute Dome-Dakota Pool from these two wells.

16 Q. Ms. Staley, have you prepared exhibits for  
17 introduction in this case?

18 A. Yes, I have.

19 Q. And this is the exhibit book marked Exhibit 1,  
20 right?

21 A. Yes.

22 Q. Okay. Could you turn to what -- the first  
23 document in Exhibit 1?

24 A. Yes, the first document is the Application made  
25 to the NMOCD. It was also sent to the Colorado BLM and the

1 Ute Mountain Ute Tribe.

2 Q. And the Application indicates your application  
3 for simultaneous dedication and the drilling of the 26  
4 well, right?

5 A. That is correct.

6 Q. What is the primary objective of the proposed  
7 well?

8 A. It would be the Dakota formation.

9 Q. Could you move to what is the second document in  
10 the booklet, please, and identify that for the Examiner?

11 A. Yes, Mr. Examiner, this is the offset operator  
12 plat. The spacing unit in question is colored in black.  
13 The yellow-colored spacing unit surrounding that are an  
14 Amoco lease, of which Amoco operates the wells on. The  
15 wells to the east, colored in red, or the spacing units to  
16 the east, are operated by Benson-Montin-Greer Drilling  
17 Corporation.

18 Q. And was notice of this Application provided to  
19 Benson?

20 A. Yes, it was. If you'll look at the following  
21 page, that's the letter where we sent the copy of the  
22 referenced Application to them, as well as the following  
23 page, which is a copy of the return receipt card,  
24 indicating that they received -- the date that they  
25 received the Application.

1 Q. Has Amoco met with -- Excuse me, could you  
2 identify what the next page is in the booklet?

3 A. Yes, the next page is a topographic map. It  
4 indicates by outline the 3-D seismic area, and we've shot a  
5 great deal of 3-D seismic up here to further delineate this  
6 field.

7 It also shows the well locations on that, all of  
8 which on this map are operated by Amoco. The well in  
9 question that we are wanting to drill, the A26, is  
10 identified by an arrow to the right side of the topographic  
11 map.

12 The red dots in the area are all wells that Amoco  
13 is preparing to drill.

14 The yellow areas are forested areas on this map,  
15 and that will be -- is important from the standpoint of  
16 some conversations that we have had with the Ute Mountain  
17 Ute Indians.

18 Q. Has Amoco met with the BLM, then, and the Ute  
19 Mountain Utes concerning the proposed location for the 26  
20 well?

21 A. Yes, we have. We have met with the Ute Mountain  
22 Ute Tribe, as well as the Colorado BLM, to discuss drilling  
23 locations, based on this new seismic information in the Ute  
24 Dome area.

25 The Utes have specifically requested that we try

1 to avoid timbered areas if possible, which causes us to be  
2 in an unorthodox location and is part of the reason for the  
3 Application.

4 Additionally, if you look to the west of that  
5 well, there is an intermittent stream bed, and they've also  
6 asked us to try to avoid those sorts of areas if possible  
7 in our drilling program.

8 Q. And again, you have provided notice of this  
9 Application to the BLM and the Utes; is that correct?

10 A. Yes, we have.

11 Q. And you have received no objection from them?

12 A. No, there has been no objection.

13 Q. Could you move to the next page in the booklet,  
14 please, and describe that for the Examiner?

15 A. Yes, Mr. Examiner, the next page is the C-102,  
16 which shows the survey location for the Ute Indian A Well  
17 Number 26. Note again that this is an oversize section,  
18 which causes the well to appear to be more extreme in its  
19 unorthodox location than it is.

20 I think that's all.

21 Q. Okay. Could you identify the next document in  
22 the booklet, please?

23 A. Yes, this gives -- sets up the locations in the  
24 quarter section of these two wells. It shows both of the  
25 wells on that proration unit. As you can see, the wells



1 are about 1081 feet apart, and it shows the referenced  
2 footages for each of the wells. The red well is the Ute  
3 Indian A Number 26, which we're proposing to drill.

4 Q. Okay, Ms. Staley, on the next page could you  
5 describe that for the Examiner?

6 A. Yes, this is an Amoco seismic map. It's  
7 equivalent to basically a structural map. If you would,  
8 look at it as the red areas being the high areas on the  
9 structure of the dome, the green areas being the low areas  
10 on the structure of the dome. Also bring to your attention  
11 the arrow showing the location of the A Number 26 well,  
12 proposed well.

13 In addition, this map is based on the base of the  
14 Dakota, so we're seeing the Dakota structure referenced  
15 here.

16 The 3-D seismic shows the Dakota to be much more  
17 broken up than we originally had thought. The bright  
18 lines, the red line and the dark green line there, were  
19 original faults that we knew were there. When we shot our  
20 3-D seismic, we began to see these other brown faults which  
21 are smaller throw faults that were only detectible on the  
22 3-D seismic, and that sets up some of the reason that we  
23 need -- more wells are needed to produce in this pool.

24 As you can see, looking at the indicated  
25 location, reference to the C1 well to the southeast of

1 that, there is a fault between those, and there is the --  
2 that is what sets up the fault separation and the need for  
3 additional wells in that quarter section.

4 Q. And so it's your belief that more wells are  
5 needed to produce the reserves in this pool; is that  
6 correct?

7 A. That's correct, and that's why we want to  
8 simultaneously dedicate those wells to the 160 spacing  
9 unit.

10 Q. Now, as part of this Application, you are seeking  
11 approval of an unorthodox location; is that correct?

12 A. That's correct.

13 Q. Could you explain specifically the reasons why  
14 this location was -- the unorthodox location was chosen?

15 A. Yes, in addition to the two reasons that we  
16 indicated earlier relative to the Ute Mountain Utes, you'll  
17 notice that we're trying to stay structurally high or in  
18 the more red-colored areas of that area that's indicated by  
19 the fault zone.

20 So between those faults, in order to be  
21 comfortable that we're not going to cross a fault boundary,  
22 we also need to stay pretty much centered between those  
23 two.

24 So those were really the four things that guided  
25 the location of this particular unorthodox well.

1 Q. Now, this exhibit also indicates a transect, does  
2 it not?

3 A. Yes, it does. The black line going from the  
4 northwest side of the map down to the southeast is the  
5 seismic cross-section that I'll be showing on the next  
6 page.

7 Q. Okay, could we turn to that, please, and show the  
8 Examiner what it indicates?

9 A. Yes, this is a seismic transect, as I mentioned.  
10 It goes clear across the structure, so it gives you an  
11 indication of the cresting of the structure and then the  
12 rapid fall-off of the structure over in the area that we're  
13 on, on the right side of the seismic transect.

14 If you'll note, the pink dot saying "26" on it is  
15 our proposed well location. The blue line running through  
16 the seismic is the basal Dakota indicator. And if you'll  
17 notice, between that pink dot and the C1 location, also  
18 indicated at the top, there is a fault indicated between  
19 those two.

20 Those two wells being fault-separated, we  
21 believe, is confirmed by the seismic and sets up the reason  
22 for us to simultaneously dedicate these two wells.

23 Q. So in your opinion, is the proposed Well 26  
24 necessary to effectively drain the reserves under this 160-  
25 acre spacing unit?

1           A.    Yes, we believe this is a sealing fault.  We do  
2   not believe that we would get these reserves without  
3   drilling this well.

4           Q.    Will approval of this Application and the  
5   simultaneous dedication of these wells be in the best  
6   interests of conservation and the prevention of waste and  
7   the protection of correlative rights?

8           A.    Yes.

9           Q.    Was Amoco's Exhibit Number 1 prepared by you, and  
10   can you testify to its accuracy?

11          A.    Yes, I can testify to its accuracy, it was  
12   prepared under my direction.

13               MS. TRUJILLO:  Thank you.

14               Mr. Examiner.  I offer the Amoco Exhibit Number 1  
15   booklet, and I have no further questions for the witness.

16               EXAMINER STOGNER:  Exhibit Number 1 will be  
17   admitted into evidence.

18                               EXAMINATION

19   BY EXAMINER STOGNER:

20           Q.    Ms. Staley, in looking at the last page, which is  
21   the seismic cross-section again, you have your proposed  
22   well with the solid pink dot, the Number 26, involved, and  
23   then of course the existing well.

24               The blue line, you mentioned, denotes the basal  
25   Dakota?

1           A.    That's correct.

2           Q.    From that line, the blue line, is the production  
3 going to be above it or below it, and at what interval  
4 along this diagram do you expect to see production?

5           A.    The production would be at that blue line,  
6 roughly. There's about -- Your shot points are  
7 approximately 150-foot apart, separation.

8                    So to give you an exact interval on this would be  
9 difficult, but that's why we've indicated the base of the  
10 Dakota. It would be just right at that location that we  
11 would be drilling the well for production.

12           Q.    There appears to be, between the two productive  
13 intervals, or proposed productive interval with the  
14 existing productive interval, quite a bit of a vertical  
15 separation.

16                    What are you in reality expecting to see as far  
17 as vertical separation between the two wells?

18           A.    We're expecting probably not more than about 25  
19 feet fault seal, and the interval that we will be  
20 perforating is about 15 feet.

21           Q.    You mentioned this as being a sealing fault?

22           A.    Yes.

23           Q.    Do you want to explain that?

24           A.    A sealing fault from the fact that we believe  
25 that it is differentially separated enough to seal one

1 formation against a shale zone, therefore not allowing  
2 movement of the productive fluids from the Dakota in the  
3 one fault block to the other fault block.

4 Q. So when you say "sealing", you're -- it's spelled  
5 s-e-a-l-i-n-g?

6 A. Yes, sir, as a seal, a fault seal.

7 Q. Okay. Now, the seal, as you're indicating, of  
8 the fault between the two wells, would that also be a  
9 sealing fault to the -- any other direction, back to the  
10 west?

11 A. To the west. Yes, that is also a sealing --  
12 There's actually an -- two -- an echelon faults there, one  
13 fault that penetrates clear down into the Paradox  
14 formation, as well as the shallower fault. That fault that  
15 penetrates into the Paradox doesn't come up to the Dakota  
16 level, but you kind of see a wide line there.

17 But yes, we believe that is a sealing fault also,  
18 to the next fault block.

19 Q. Now, in referring to the -- let's see, the  
20 colored map preceding this particular -- I'm sorry, which  
21 is before the seismic survey --

22 A. -- the seismic survey --

23 Q. -- that shows the transect line and then the dome  
24 in pink --

25 A. Yes.

1 Q. -- and then the green areas.

2 Back to the west of the proposed well, you have  
3 two wellbore indications, a 214 and a PR1?

4 A. Yes.

5 Q. Are these Dakota producers?

6 A. They are not.

7 Q. They are not?

8 A. This field was originally developed on the  
9 Paradox formation. So most of the wells that are out here  
10 -- one is a replacement well there, and one is a well that  
11 we have not plugged, but it is not producing right now from  
12 the Paradox.

13 Q. So are there other -- Of the wellbores shown on  
14 this particular page, how many of them are Dakota  
15 producers?

16 A. On this particular page?

17 Q. Yes.

18 A. Generally the wells with the "A" designation in  
19 front of them, which is most of the wells out here. For  
20 instance, the A17 and A7 in the southwest area of the map,  
21 the A5 in the northwest and the A4 in the northwest and the  
22 A3.

23 So almost every other well in here, with the  
24 exception of -- and I'm sorry, I should also mention the J1  
25 and the J4 in the southern part of the section.

1 Q. They're also Dakotas?

2 A. They're also Dakota wells, yes.

3 Q. Now, the two wells that we talked about, the 214  
4 and the PR1 --

5 A. Yes.

6 Q. -- they did penetrate the Dakota?

7 A. Yes, they did.

8 Q. So you were able to get geological information  
9 off the well logs?

10 A. That's correct. However, as you can see, it's  
11 very difficult, as shattered as it is out here, to see the  
12 fault sometimes in the actual wellbores. We don't  
13 penetrate those. You can get some indication, but it's  
14 such a deeply dipping structure that we thought it was more  
15 structural in dip than it was in faulting, and the results  
16 of the seismic has shown that it's very faulted.

17 Q. Now, the -- I assume there were other seismic  
18 lines out here in this area, other than this one that you  
19 show, that added information so you can come up with this  
20 geological diagram?

21 A. I'm sorry, other seismic lines?

22 Q. Yeah, have there been any other transects shot  
23 out there?

24 A. Well, this was a 3-D seismic shot on a 150-foot  
25 grid, so there were actual lines shot across this structure



1 at 150-foot intervals.

2 Q. So it was an extensive grid system?

3 A. An extensive grid system, which is what has led  
4 us to see so much more on this structure.

5 Q. Now, you show other brown lines.

6 A. Yes.

7 Q. Do those denote faults within the Dakota?

8 A. Yes, they do. I should make one statement to  
9 that. The mapping package that we use on the seismic here,  
10 you'll notice that the two faults that we've indicated are  
11 very hairy faults.

12 Q. Yeah.

13 A. Those are not actual fault traces, those are not  
14 actually small broken faults there, even though they're  
15 represented in brown.

16 When we're looking at an area in detail, the  
17 geophysicist will pick as -- every single point along that  
18 line to identify those faults. And so in doing so, those  
19 are his pick lines, those are not faults. They're  
20 perpendicular to the actual fault trace.

21 So the continuous line there is the fault, not  
22 the little hairy parts of the -- is that -- I'm not sure  
23 I'm making myself clear.

24 Q. Yeah, you are, actually. I'm glad you did  
25 mention that.

1           A.    It's kind of an unusual way to look at it, but  
2   when we look at the area in detail, we really want to tack  
3   down those faults before we plan a well, and he has left  
4   his fault picks on here.

5           Q.    Well, now, that little fault block that we're  
6   talking about, that the well is to penetrate, is that an  
7   upthrown or a downthrown?

8           A.    As you can see, it's downthrown. Basically,  
9   these faults are causing the structure to fall off more  
10  rapidly to the southeast than would have occurred.

11               And if you look at the seismic transect, you can  
12  see just that. The Dakota is falling down the structure by  
13  the faults.

14           Q.    I was talking about the fault itself. Is it in  
15  an uplift or a --

16           A.    Well, from fault to fault, basically, they would  
17  be a normal fault, the fault would be dropping away from  
18  the high wall.

19           Q.    Okay.

20           A.    Does that -- In other words, the fault would be  
21  block-dropped to the southeast. Does that answer your --

22           Q.    But you're only seeing about a 25-foot  
23  separation?

24           A.    They're very -- They're small faults, but they  
25  are enough, we believe, to seal the Dakota. That's what's

1 made this -- the ability to test this idea and see if we do  
2 have fault separation. We've got a lot of resolution on  
3 the seismic now, and we can see those much better.

4 Q. Has there been any other wells drilled in that  
5 Ute Dome Dakota, based on this type of information or this  
6 information?

7 A. Not to this date. We have done our drilling, we  
8 have proposed one other well for simultaneous dedication,  
9 that being this -- a well between this A17 and A7. We have  
10 a drilling program proposed of five wells in this area for  
11 this season.

12 But due to the shallowness of these wells and the  
13 rapid drilling schedule, we want to go and drill all of  
14 these wells at the same time, so we are trying to get all  
15 of our regulatory approvals prior to moving our rig in.

16 Q. The existing C1 well, would you go into a little  
17 more detail on that, its history, when was it drilled, its  
18 perforated interval, thickness, stimulation?

19 A. That well was drilled in July of 1973. It is  
20 perforated in the Dakota, and I do not have the exact  
21 perforations. It did IP for 1.5 million a day. It's on a  
22 10-percent decline rate.

23 We anticipate the EUR on that to be 1.5 MMSCF,  
24 and it is -- I do not have the exact perforations, but I  
25 believe it is perforated in the upper part of the Dakota

1 zone.

2 Q. What was the stimulation in 1973 of these type of  
3 wells?

4 A. I don't know -- I can't tell you specific volumes  
5 on this well, but we typically stimulated these with fairly  
6 small sand-water fracs. They were not extensive --- not  
7 large fracs.

8 Basically, we were trying to get past any  
9 wellbore damage that we might have had.

10 The Dakota has some sensitivity here in clays,  
11 and so we're very careful on the sizes of fracs that we put  
12 on.

13 But the fracture technology, although we were  
14 doing large fracs everywhere else in the Basin at that  
15 time, this was a smaller frac area.

16 Q. Is this the ideal location, structurally  
17 speaking, geologically speaking?

18 A. Well, from a caution standpoint and to test  
19 ideas, yes. We don't want to move further upstructure by  
20 virtue of the fact of getting closer to the fault on the  
21 west.

22 We -- If this idea works, we probably will be  
23 proposing a well in the fault block to the west of that.  
24 What we're doing with our program is trying to test a  
25 variety of ideas with the money that we have to drill wells

1 this year, and so that sets up trying to drill this well in  
2 a location that protects us from perhaps hitting either of  
3 those faults, as well as being as high up on the structure.

4 But we also have the restrictions that the Utes  
5 have asked us to maintain, which also drive us a little bit  
6 further up than would be an orthodox location, but it still  
7 structurally would be the best location.

8 Q. How extensive is this lease that you're drilling  
9 on? And I'm referring to, I guess, the second page,  
10 showing the yellow, Amoco Production Company.

11 A. I believe it is 4200 acres.

12 Q. And that's all common ownership throughout  
13 that --

14 A. It is all common ownership, all common.

15 Q. You're offsetting to the east by Benson-Montin-  
16 Greer. Do they have any production from the Ute Mountain-  
17 Dakota Pool?

18 A. They do. Their wells have been shut in. If you  
19 look at our seismic map, you can probably see why that is.

20 The structure continues to fall down from there,  
21 but they have penetrated the Dakota and found it to be  
22 fairly wet in that area, which we would anticipate, looking  
23 at our seismic maps.

24 They have three wells out there that are inactive  
25 at this point.

1 EXAMINER STOGNER: Any other questions of Ms.  
2 Staley?

3 MS. TRUJILLO: Not from me.

4 EXAMINER STOGNER: She may be excused.

5 Do you have anything further, Ms. Trujillo?

6 MS. TRUJILLO: No, I do not.

7 EXAMINER STOGNER: Anybody else have anything  
8 further in Case Number 11,605?

9 This case will be taken under advisement.

10 (Thereupon, these proceedings were concluded at  
11 9:00 a.m.)

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I do hereby certify that the foregoing is  
a true and correct record of the proceedings in  
the hearing of Case No. 11605.  
heard by me this 19 96.  
\_\_\_\_\_, Examiner  
Oil Conservation Division

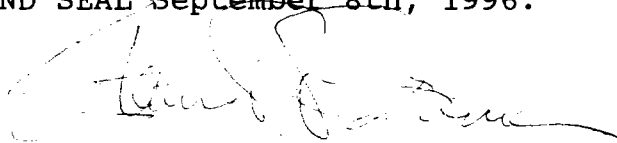
## CERTIFICATE OF REPORTER

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

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; and that the foregoing is a true and accurate record of the proceedings.

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

WITNESS MY HAND AND SEAL September 8th, 1996.



STEVEN T. BRENNER  
CCR No. 7

My commission expires: October 14, 1998