

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. 13,220

APPLICATION OF MACK ENERGY CORPORATION)
FOR APPROVAL OF A SALTWATER DISPOSAL)
WELL, LEA COUNTY, NEW MEXICO)

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

February 19th, 2004

Santa Fe, New Mexico

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Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, NM 87505

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, February 19th, 2004, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South Saint Francis Drive, Room 102, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

* * *

I N D E X

February 19th, 2004
 Examiner Hearing
 CASE NO. 13,220

PAGE

APPLICANT'S WITNESS:

MATT J. BREWER (Geologist)

Direct Examination by Mr. Carr

3

Examination by Examiner Catanach

20

REPORTER'S CERTIFICATE

24

* * *

E X H I B I T S

Applicant's	Identified	Admitted
Exhibit 1	6	20
Exhibit 2	6	20
Exhibit 3	7	20
Exhibit 4	7	20
Exhibit 5	8	20
Exhibit 6	7, 10	20
Exhibit 7	13	20
Exhibit 8	16	20
Exhibit 9	17	20

* * *

A P P E A R A N C E S

FOR THE APPLICANT:

HOLLAND & HART, L.L.P., and CAMPBELL & CARR
 110 N. Guadalupe, Suite 1
 P.O. Box 2208
 Santa Fe, New Mexico 87504-2208
 By: WILLIAM F. CARR

* * *

STEVEN T. BRENNER, CCR
 (505) 989-9317

1 WHEREUPON, the following proceedings were had at
2 8:51 a.m.:

3 EXAMINER CATANACH: At this time I'll call Case
4 Number 13,220, the Application of Mack Energy Corporation
5 for approval of a saltwater disposal well, Lea County, New
6 Mexico.

7 Call for appearances in this case.

8 MR. CARR: May it please the Examiner, my name is
9 William F. Carr with the Santa Fe law firm Holland and
10 Hart, L.L.P. We represent Mack Energy Corporation in this
11 matter, and I have one witness.

12 EXAMINER CATANACH: Any additional appearances?

13 Will the witness please be sworn in?

14 (Thereupon, the witness was sworn.)

15 MATT J. BREWER,
16 the witness herein, after having been first duly sworn upon
17 his oath, was examined and testified as follows:

18 DIRECT EXAMINATION

19 BY MR. CARR:

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

21 A. Matt Brewer.

22 Q. Mr. Brewer, by whom are you employed?

23 A. Mack Energy Corporation.

24 Q. And what is your current position with Mack
25 Energy Corporation?

1 A. Petroleum Engineer and Petroleum Geologist.

2 Q. Have you previously testified before the New
3 Mexico Oil Conservation Division?

4 A. Yes.

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

8 A. Yes.

9 Q. Are you familiar with the Application filed in
10 this case?

11 A. Yes.

12 Q. Are you familiar with the status of the lands
13 involved in this Application?

14 A. Yes.

15 Q. Have you made a geological and engineering study
16 of the area surrounding the proposed injection well?

17 A. Yes.

18 Q. Are you prepared to share the results of that
19 work with Mr. Catanach?

20 A. Yes.

21 MR. CARR: Mr. Catanach, we tender Mr. Brewer as
22 an expert in petroleum geology and petroleum engineering.

23 EXAMINER CATANACH: He is so qualified.

24 Q. (By Mr. Carr) Would you briefly state what it is
25 that Mack Energy Corporation seeks in this case?

1 A. Mack Energy Corporation seeks the authorization
2 to dispose of produced water in our Federal 18 Number 2,
3 located 1980 from the north line and 2039 from the west
4 line, Section 18, Township 19 South, Range 33 East, in Lea
5 County, New Mexico, injecting into the Yates formation and
6 the perforated interval from 3213 to 3256.

7 Q. Have you prepared exhibits for presentation here
8 today?

9 A. Yes.

10 Q. Before we get into those, I think it would be
11 helpful, Mr. Brewer, to provide a brief history of the
12 efforts of Mack Energy to utilize this well for the
13 disposal of produced water. So could you tell us, when was
14 the well actually drilled?

15 A. The well was drilled in 1960 by Hudson and
16 Hudson, and it produced from June of 1960 to June of 2003,
17 out of the Yates formation, out of the perforations
18 previously stated. The well has produced 204,000 barrels
19 of oil and 28 million cubic feet of gas.

20 The application for the authorization to inject,
21 Form C-108, was submitted on August 29th, 2003. The Oil
22 Conservation Division responded on October 2nd, 2003 and
23 raised the questions concerning the status of certain wells
24 within the area of review for their proposed injection well
25 and provided Mack Energy with an opportunity to present

1 additional data on these wells.

2 Q. Would you identify what has been marked as Mack
3 Energy Corporation Exhibit Number 1?

4 A. Exhibit Number 1 is a letter from the Oil
5 Conservation Division dated October 21st, 2003, and in that
6 letter it states that the Hobbs District geologist had
7 determined that our Federal 18 Number 2 does not penetrate
8 the Seven Rivers formation or the Capitan Reef. Concerns
9 were expressed that there are two wells in the area of
10 review that might be avenues where injected fluid could
11 escape into the Seven Rivers or the Capitan Reef.

12 It also provided that Mack Energy present
13 additional evidence on these wells and will issue a permit
14 containing replugging of both of these wells.

15 Q. Now, Mack did not submit additional data, did it?

16 A. No.

17 Q. And then what is Exhibit Number 2?

18 A. Exhibit Number 2 is another letter from the Oil
19 Conservation Division, dated December 4, 2003, where the
20 Oil Conservation Division reconsidered its prior position
21 and determined that a hearing would be necessary for this
22 application, and the application was returned to Mack
23 Energy.

24 Q. The Division advised us that if we wanted to
25 pursue this disposal well, that an Examiner Hearing would

1 be required; is that not correct?

2 A. Yes.

3 Q. And that's why we're here today?

4 A. What is Exhibit Number 3?

5 A. Exhibit Number 3 is an ownership plat which shows
6 the area of review drawn around the Federal 18 Number 2,
7 which is in the center of the circle. All the wells in
8 that area of review are shown.

9 Q. This is the same base map, is it not, that is
10 included in our Form C-108 that's marked as Exhibit 6 in
11 this case?

12 A. Yes.

13 Q. Are the offset leasehold operators identified?

14 A. Yes.

15 Q. And what is the character of the land on which
16 the well is to be located?

17 A. It is all federal land.

18 Q. Has Mack Energy Corporation provided a copy of
19 this Application to the owner of the surface of the land on
20 which the land is located and to all leasehold operators
21 within the area of review, notifying them of today's
22 hearing and their right to object?

23 A. Yes.

24 Q. And is Exhibit Number 4 a copy of an affidavit
25 confirming that this notice has been provided?

1 A. Yes.

2 Q. And it shows that notice was provided to the BLM
3 and also to Kenny Smith. Who is Kenny Smith?

4 A. Kenny Smith is the surface lessee.

5 Q. And then the leasehold operators are identified
6 as well on this exhibit; is that correct?

7 A. Yes.

8 Q. And a copy of the letter is also enclosed, and
9 return receipts from all of these operators?

10 A. Yes.

11 Q. Let's go to the geological portion of the case,
12 and Mr. Brewer, if you would go to what has been marked
13 Mack Energy Corporation Exhibit Number 5, first would you
14 identify this and then review the information on the
15 exhibit for Mr. Catanach?

16 A. Exhibit Number 5 is a log section that I
17 prepared. It's a stratigraphic cross-section. The well on
18 the left is our Federal 18 Number 2, which is in the center
19 of the circle on the ownership plat in the bottom left-hand
20 corner. The well on the right is the Mustang Federal
21 Number 1, which is straight south of our Federal 18 Number
22 2 --

23 Q. Mr. Brewer --

24 A. -- at the edge of the circle --

25 Q. -- the Mustang Federal --

1 A. -- Number 1, I'm sorry.

2 Q. -- Number 1 --

3 A. I'm sorry.

4 Q. -- is that well one of the wells about which the
5 Division has expressed concern?

6 A. Yes.

7 Q. Where is the Federal AC Well Number 2, the other
8 well that has been the subject of concern?

9 A. The Federal AC Number 2 is a quarter of a mile
10 west of our Federal 18 Number 2.

11 Q. And it's shown on the kind of index map in the
12 lower left-hand corner of this exhibit; is that right?

13 A. Yes.

14 Q. Okay, would you review what this shows?

15 A. The log section shows on our Federal 18 Number 2
16 -- the cross-section is hung on top of the Yates,
17 stratigraphic cross-section, and on our Federal 18 Number 2
18 it shows the perforated interval from 3213 to 3256, which
19 is in the Yates formation. And on the Mustang Number 1 log
20 section, it shows the top of the Seven Rivers and the top
21 of the Capitan Reef. And what this is showing is that
22 there is separation between the perforated interval on the
23 Federal 18 Number 2 and the Capitan Reef.

24 Q. There's also some structural drift in the area
25 that impacts the separation; is that not correct?

1 A. Yes.

2 Q. Basically, you're about what? Sixty feet, 58
3 feet above the Seven Rivers?

4 A. Yes.

5 Q. And 108 feet above the top of the Capitan Reef?

6 A. Yes, on a stratigraphic level.

7 Q. Have you reviewed this log section and this
8 information with Paul Kautz, the district geologist in the
9 Hobbs District Office?

10 A. Yes, I have.

11 Q. And when was that done?

12 A. That was done on February the 16th.

13 Q. And any concern expressed by Mr. Kautz in that
14 meeting?

15 A. Mr. Kautz and I discussed this log section, and
16 he was in agreement where the top of the Seven Rivers was
17 and the top of the Capitan Reef.

18 Q. Let's go to Exhibit Number 6, the Application for
19 Authorization to Inject.

20 A. Okay.

21 Q. Does this Application contain all the information
22 required by Form C-108?

23 A. Yes.

24 Q. And you're only with this Application seeking
25 authorization to inject in one well; is that right?

1 A. Yes.

2 Q. This is not the expansion of an existing project?

3 A. No.

4 Q. I've numbered the pages in Exhibit 6 down in the
5 lower right corner. Let's go to page -- I guess it's page
6 5 in this exhibit, Exhibit 6, and just identify that,
7 please. Is that the area-of-review map?

8 A. Yes, I'm sorry, yes, it is.

9 Q. And this is the same map that we showed earlier?

10 A. Yes.

11 Q. It also shows all well within a two-mile radius
12 of the proposed injection well --

13 A. Yes.

14 Q. -- does it not?

15 All right, let's go to page 7 of this exhibit.
16 What is this?

17 A. Page 7 is a tabulation of all the data within the
18 area of review on each well.

19 Q. And this is all information required by Section 6
20 of Form C-108?

21 A. Yes.

22 Q. Are there plugged and abandoned wells within the
23 area of review?

24 A. Yes.

25 Q. And are schematics of all plugged and abandoned

1 wells contained in this Application on what has been
2 numbered pages 13 through 24?

3 A. Yes.

4 Q. Does this show the plugging detail on these
5 wells?

6 A. Yes.

7 Q. With the exception of the Mustang well and the
8 Federal AC well, in your opinion are all wells plugged so
9 as to prevent the migration of injection fluids from the
10 injection interval?

11 A. Yes.

12 Q. What volumes does Mack propose to inject in this
13 well?

14 A. 2000 barrels of water per day at a maximum rate
15 of 4000 barrels of water per day.

16 Q. And what is the source of the injection water?

17 A. The source is produced water from the San Andres,
18 Glorieta and Paddock formations in the area.

19 Q. Will this be an open or a closed system?

20 A. Closed.

21 Q. What injection pressure is Mack planning to use?

22 A. The injection pressure should be -- it should be
23 on a vacuum.

24 Q. And do you have a maximum pressure that you may
25 want to go to?

1 A. 100 p.s.i.

2 Q. In any event, would a pressure limitation of .2
3 pound per foot of depth for the top of the injection
4 interval be satisfactory for Mack Energy Corporation?

5 A. Yes.

6 Q. If that pressure needs to be increased above the
7 100 p.s.i.g., would Mack agree to only increasing that
8 pressure after Division-witnessed step-rate tests to assure
9 that the confining strata is not fractured or damaged by
10 the injection?

11 A. Yes.

12 Q. Have you reviewed the data available on the wells
13 within the area of review for the disposal well and
14 satisfied yourself that there is no remedial work required
15 on any of these wells, other than the Mustang and the --

16 A. -- Federal AC Number 2.

17 Q. -- Federal AC Number 2?

18 A. Yes.

19 Q. Let's go to what has been marked for
20 identification as Mack Energy Corporation Exhibits 7 and 8,
21 and I'd like you to review these together for Mr. Catanach.
22 First identify what they are, and then explain the
23 information on the exhibit.

24 A. Exhibit Number 7 is the wellbore diagram of the
25 Federal AC Number 2 and how that well was plugged.

1 In reviewing these diagrams with Mr. Kautz, we're
2 in -- he is in agreement on the way that we have described
3 how we are going to plug these wells, this well in
4 particular.

5 Q. Just review exactly what you're proposing to
6 do --

7 A. Okay.

8 Q. -- as you go through the effort to replug each of
9 these wells.

10 A. On the Federal AC Number 2, we plan to drill out
11 the surface plug down to 330 feet, drill out the next plug
12 from 2290 to 2030, and drill into the 7-inch casing. The
13 7-inch casing is cut off at 2250. Drill into that casing,
14 go down and tag the tubing that is cut off at 3866, run a
15 cement bond log to determine where the top of the cement
16 is.

17 If in fact there is no cement between the 7-inch
18 and the 9-5/8 casing, then we will shoot that 7-inch off,
19 pull it, and re-run the bond log and determine where the
20 top of the cement is, behind the 9-5/8. Perforate above
21 that cement and circulate cement back to surface, and then
22 replug the well, re-spot the plugs from 2290 to 2030 and
23 re-spot the surface plug.

24 Q. Mr. Brewer, what if you do have cement between
25 the 7-inch and the 9-5/8 casing? What will you do then?

1 A. If we cannot pull the 7-inch casing and we do
2 have cement between the two strings of casing, whenever
3 they set the 9-5/8 casing they pump 300 sacks of cement.
4 The estimated top of that cement is at 3600 feet. We will
5 attempt to shoot squeeze holes at that depth and try to
6 establish circulation and bring the cement up to
7 approximately 2000 feet, which will be above the cutoff of
8 the 7-inch casing. And from that point we will run a bond
9 log again, determine where the top of the cement is, and
10 squeeze that from that point to the surface.

11 Q. Now, this is a difficult job; is that right?

12 A. This can be a difficult job.

13 Q. And you have in your discussions with Mr. Kautz
14 agreed to provide all bond logs to him for his review; is
15 that right?

16 A. Yes.

17 Q. You've also advised Mr. Kautz that you will
18 notify the Division, or are willing to notify the Division,
19 prior to commencing this work, so all the work can be
20 witnessed by the Oil Conservation Division?

21 A. Yes.

22 Q. What happens if you're unable to satisfactorily
23 replug this well?

24 A. If we cannot satisfactorily replug this well,
25 then we will not inject into the Federal 18 Number 2.

1 Q. Okay, let's go to the Mustang well. What do you
2 propose to do there?

3 A. Exhibit Number 8 shows the Mustang wellbore
4 diagram and how that well was plugged. We will drill out
5 the surface plug, drill out the plug from 410 to 564 and
6 drill out the plug from 2219 to 3195, drill into the 4-1/2
7 casing, which is cut off at 3132, go down and tag the top
8 of the cement inside that 4-1/2 casing, which should be at
9 5602, run the bond log through the 4-1/2, determine where
10 the top of the cement is behind the 4-1/2-inch casing, and
11 after that we will shoot squeeze holes and establish
12 circulation and pump cement to the top of the 4-1/2-inch
13 casing, and then pump cement all the way up into the 8-5/8-
14 inch casing.

15 Q. So on this exhibit what you intend to do first of
16 all is get rid of the two question marks outside the 4-1/2-
17 inch casing; is that right?

18 A. Yes, sir.

19 Q. And so the effort here again is one where you
20 will send all bond logs to Mr. Kautz?

21 A. Yes.

22 Q. And again advise the Division so they can witness
23 all this work?

24 A. Yes.

25 Q. And if you're unsuccessful with this well, again

1 you understand you will not use the subject well for
2 disposal purposes; is that right?

3 A. That is correct.

4 Q. And so the work we're going to do is to get rid
5 of the question marks on these exhibits and to try and get
6 rid of the words "estimated" on the exhibit and be sure
7 that we have the wells properly plugged?

8 A. Yes.

9 Q. What is the current status of the Mack Energy
10 Corporation Federal 18 Well Number 2?

11 A. It is currently shut in.

12 Q. And would you go to what has been marked Mack
13 Exhibit Number 9 and identify and review this for Mr.
14 Catanach?

15 A. Exhibit Number 9 is the wellbore diagram of our
16 Federal 18 Number 2, and what it's going to show is how the
17 well will be equipped for injection. We will run in with
18 2-7/8-inch plastic-coated tubing with a Halliburton Trump
19 packer set at 3113, and inject from that point forward,
20 into the perforations from 3213 to 3256.

21 Q. How will Mack Energy monitor this well to assure
22 the integrity of the wellbore?

23 A. The annular space will be filled with an inert
24 fluid and a pressure gauge at the surface, as required by
25 the Federal Underground Injection Control Program.

1 Q. Are there freshwater zones in the area?

2 A. Yes.

3 Q. And what are they?

4 A. The Ogallala formation, a producing interval from
5 410 to 795 feet from the surface.

6 Q. Are there any other freshwater sources overlying
7 the proposed injection interval?

8 A. No.

9 Q. Are there freshwater wells within a mile of the
10 proposed injection well?

11 A. Yes, there's one active freshwater well.

12 Q. And is the location of this well shown on page 25
13 of Exhibit 6?

14 A. Yes, it is.

15 Q. Is there also one abandoned well in the area?

16 A. Yes, sir.

17 Q. And where is that?

18 A. That well is --

19 Q. Is it also shown --

20 A. It is also shown on that exhibit.

21 Q. -- on Exhibit 5?

22 A. Yes, it is on the northeast corner of that
23 circle.

24 Q. Is a water analysis from the one active
25 freshwater well in the area attached to this Application?

1 A. Yes.

2 Q. And that's page 27?

3 A. Yes, sir.

4 Q. If you're able to successfully replug the Mustang
5 and the Federal Number 2 wells, is it your opinion that the
6 wells in the proposed project area are properly completed
7 and cased so as to prevent problems with any freshwater
8 wells?

9 A. Yes.

10 Q. Have you examined the available geologic and
11 engineering data on this reservoir and as a result of that
12 examination have you found any evidence of open faults or
13 other hydrologic connections between the injection interval
14 and any underground source of drinking water?

15 A. Yes, and I have not found any.

16 Q. You have reviewed the data, and you have not
17 found any?

18 A. Yes.

19 Q. Will approval of this Application, in your
20 opinion, be in the best interest of conservation, the
21 prevention of waste and the protection of correlative
22 rights?

23 A. Yes.

24 Q. Were Mack Energy Exhibits 1 through 9 prepared by
25 you, compiled under your direction, or can you otherwise

1 testify as to their accuracy?

2 A. Yes.

3 MR. CARR: Mr. Catanach, at this time we move the
4 admission into evidence of Mack Energy Corporation Exhibits
5 1 through 9.

6 EXAMINER CATANACH: Exhibits 1 through 9 will be
7 admitted.

8 MR. CARR: And that concludes my direct
9 examination of Mr. Brewer.

10 EXAMINATION

11 BY EXAMINER CATANACH:

12 Q. Mr. Brewer, the injection formation is going to
13 be the Yates, right?

14 A. Yes, sir.

15 Q. And not -- You didn't penetrate the Seven Rivers
16 with this well?

17 A. No.

18 Q. Okay, I don't know where we get San Andres from,
19 but I notice San Andres was in the advertisement for this
20 case, but that's --

21 MR. CARR: It was in the original application
22 that we filed --

23 EXAMINER CATANACH: Okay, so that's --

24 MR. CARR: -- so that was an error on our part.

25 THE WITNESS: Strike that.

1 Q. (By Examiner Catanach) Now, the Yates had been
2 produced in this well for a considerable length of time; is
3 that right?

4 A. Yes.

5 Q. It's a gas zone?

6 A. No, it's an oil.

7 Q. It was an oil zone?

8 A. Yes, sir.

9 Q. Okay. And the well is depleted at this point?

10 A. Yes.

11 Q. Okay. Is there any offset production in the same
12 zone?

13 A. I do not think so in that area right there, there
14 is not.

15 Q. At least Mack doesn't have anything that --

16 A. We do not have anything, no, sir.

17 Q. And you don't know of any other producing wells?

18 A. No.

19 Q. So you don't -- Injection into that formation is
20 not going to cause damage to any other producing wells, as
21 far as you know?

22 A. As far as I know it should not.

23 Q. And you've notified offset operators, so if they
24 had any concern they probably would have spoken up about
25 it?

1 A. Yes.

2 Q. Okay. Do we have a water analysis from the Yates
3 zone? Did you guys provide that?

4 A. We did not have a water analysis from the Yates
5 zone.

6 Q. Is one available?

7 A. I can find out for you and see if we can get one.

8 Q. Okay.

9 A. I'll look in our records and see if we have that.

10 Q. How about the source water? Did you guys provide
11 an analysis of that?

12 A. We did not provide a source, but we can get one.

13 Q. Okay, we'll probably need that as well. San
14 Andres, Glorieta and Paddock was my understanding, right?

15 A. Yes.

16 Q. Okay, if you can get those.

17 A. Okay.

18 Q. And in your opinion, the Ogallala will be
19 protected from these operations, right?

20 A. Yes. All the wells have been plugged to where
21 they should not have any interference with the Ogallala.

22 Q. Okay. I guess the only other thing I would ask
23 is that -- can you -- I know you went over the procedure
24 that you're going to use to re-enter and replug these
25 wells. I suppose you probably have that written somewhere,

1 or maybe if you could provide that at a later time --

2 A. Okay.

3 Q. -- just a written procedure on how you're going
4 to re-enter and replugin the wells.

5 A. Okay.

6 Q. (By Examiner Catanach) And with that, I think
7 that's all I have, Mr. Brewer.

8 MR. CARR: That concludes our presentation in
9 this case.

10 EXAMINER CATANACH: Okay, there being nothing
11 further, Case Number 13,220 will be taken under advisement.

12 (Thereupon, these proceedings were concluded at
13 9:16 a.m.)

14 * * *

15
16
17 I do hereby certify that the foregoing is
18 a complete record of the proceedings in
the Examiner hearing of Case No. 13220.
19 heard by me on February 18 2004
20 David R. Catanach, Examiner
Oil Conservation Division
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22
23
24
25

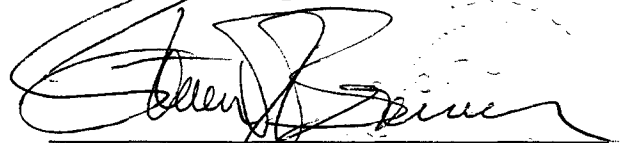
CERTIFICATE OF REPORTER

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 February 20th, 2004.



STEVEN T. BRENNER
CCR No. 7

My commission expires: October 16th, 2006