

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:)
)
 APPLICATION OF RAPTOR NATURAL PIPELINE,) CASE NOS. 12,588
 LLC, f/k/a LG&E ENERGY CORPORATION, FOR)
 SPECIAL RULES FOR THE GRAMA RIDGE MORROW)
 GAS STORAGE UNIT, LEA COUNTY, NEW MEXICO)
)
 APPLICATION OF LG&E NATURAL PIPELINE,) and 12,441
 LLC, FOR SPECIAL RULES FOR THE GRAMA)
 RIDGE MORROW GAS STORAGE UNIT, LEA)
 COUNTY, NEW MEXICO)
) (Consolidated)

REPORTER'S TRANSCRIPT OF PROCEEDINGSEXAMINER HEARING

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

Special Hearing, D. L.
 May 21st, 2001

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MICHAEL E. STOGNER, Hearing Examiner, on Monday, May 21st, 2001, 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.

* * *

01 JUN -5 PM 1:47
 DEPT. OF ENERGY

I N D E X

May 21st, 2001
 Examiner Hearing
 CASE NOS. 12,588 and 12,441 (Consolidated)

	PAGE
EXHIBITS	3
APPEARANCES	4
PRELIMINARY COMMENTS By Mr. Hall	7
APPLICANT'S WITNESSES:	
<u>JOHN F. SCHELL, JR.</u>	
Direct Examination by Mr. Hall	13
Examination by Mr. Carr	21
Examination by Examiner Stogner	22
<u>KARL M. LOOFF (Geologist)</u>	
Direct Examination by Mr. Hall	34
Examination by Mr. Carr	52
Examination by Examiner Stogner	54
<u>JOHN A. WELLS (Engineer)</u>	
Direct Examination by Mr. Hall	58
Examination by Mr. Carr	74
Further Examination by Mr. Hall	76
Further Examination by Mr. Carr	77
Examination by Examiner Stogner	77
Further Examination by Mr. Carr	81
REPORTER'S CERTIFICATE	86

* * *

E X H I B I T S

Applicant's	Identified	Admitted
Exhibit 1	15	21
Exhibit 2	16	21
Exhibit 3	16	21
Exhibit 4	16	21
Exhibit 5	19	21
Exhibit 6	37	52
Exhibit 7	37	52
Exhibit 8	39	52
Exhibit 9	39	52
Exhibit 10	40	52
Exhibit 11	40	52
Exhibit 12	41	52
Exhibit 13	41, 46, 48	52
Exhibit 14	42	52
Exhibit 15	43	52
Exhibit 16	43	52
Exhibit 17	44	52
Exhibit 18	44	52
Exhibit 19	45	52
Exhibit 20	45	62
Exhibit 21	62	74
Exhibit 22	63	74
Exhibit 23	64	74
Exhibit 24	68	74
Exhibit 25	69	74
Exhibit 26	70	74
Exhibit 27	71	74
Exhibit 28	46, 61	74
Exhibit 29	51	52
Affidavit	82	-

* * *

A P P E A R A N C E S

FOR THE APPLICANT:

MILLER, STRATVERT and TORGERSON, P.A.
150 Washington
Suite 300
Santa Fe, New Mexico 87501
By: J. SCOTT HALL

FOR YATES PETROLEUM CORPORATION; NEARBURG EXPLORATION
COMPANY, LLC; C.W. TRAINER; BTA OIL PRODUCERS; CONCHO
RESOURCES, INC.,; and EOG RESOURCES, INC.:

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

ALSO PRESENT:

RICHARD EZEANYIM
Chief Engineer
New Mexico Oil Conservation Division
1220 South Saint Francis Drive
Santa Fe, NM 87501

DARREN T. GROCE
Counsel
Conoco, Inc.
McLean Building
600 N. Dairy Ashford
P.O. Box 4783
Houston, TX 77210-4783

* * *

1 WHEREUPON, the following proceedings were had at
2 9:00 a.m.:

3 EXAMINER STOGNER: This hearing will come to
4 order for Docket Number 19-01. Please note today's date,
5 Monday, May 21, 2001. Today's a special hearing docket
6 today, in which we will consider two matters.

7 At this time I will call Case Number 12,588,
8 which is the Application of Raptor Natural Gas Pipeline,
9 LLC, that's LG&E Energy Corporation, for special rules for
10 the Grama Ridge Morrow Gas Storage Unit in Lea County, New
11 Mexico.

12 At this time I'll call for appearances.

13 MR. HALL: Mr. Examiner, my name is Scott Hall
14 with the Miller Stratvert Torgerson law firm of Santa Fe.
15 I'm representing Raptor Natural Pipeline, LLC. I had
16 originally entered my appearances in these proceedings for
17 LG&E Natural Pipeline, LLC, which by virtue of its
18 acquisition by Conoco entity no longer exists.

19 I do have three witnesses this morning.

20 EXAMINER STOGNER: Okay, are there any other
21 appearances?

22 MR. CARR: May it please the Examiner, my name is
23 William F. Carr with the Santa Fe office of the law firm
24 Holland and Hart, L.L.P. I'd like to enter my appearance
25 for a number of companies today, and I'd like to, as I do

1 this, state that when this matter originally came before
2 the Division approximately, I guess, a year ago, on a
3 proposal from LG&E. There was substantial concern by a
4 number of other operators in the area.

5 The proposal before you today -- and we
6 understand it's going to be presented today by Raptor -- we
7 believe in a large measure addresses those concerns. And
8 so by appearing for all these people I don't want to give
9 the wrong signal. We're here because we have been involved
10 and are interested.

11 And I would like to enter appearances for Yates
12 Petroleum Corporation; Nearburg Exploration Company, LLC;
13 C.W. Trainer; BTA Oil Producers; Concho Resources, Inc.,;
14 and EOG Resources, Inc.

15 I do not have a witness. I may have a couple of
16 questions, perhaps a very brief statement, but we're not
17 here taking a position in opposition to the Application of
18 Raptor.

19 EXAMINER STOGNER: Thank you. Any other
20 appearances?

21 Now, how many witness do you have, Mr. Hall?

22 MR. HALL: Three.

23 EXAMINER STOGNER: You have three witnesses.
24 Before we do, there is a Case Number 12,441, that's LG&E
25 Natural Pipeline, LLC, for special rules. I guess for the

1 record I need to call this matter and issue probably one
2 order in this matter, consolidate the two cases. Is that
3 in order today, Mr. Hall?

4 MR. HALL: I think that would be fine. And I've
5 prepared a draft order showing both case numbers, so that
6 will work.

7 EXAMINER STOGNER: All right. So let the record
8 show that both cases, 12,441 and 12,588, are consolidated
9 for purposes of testimony.

10 How many witnesses do you have?

11 MR. HALL: Three.

12 EXAMINER STOGNER: Will all witnesses please
13 stand to be sworn?

14 (Thereupon, the witnesses were sworn.)

15 EXAMINER STOGNER: Before we get started today,
16 the gentleman to my left, Mr. Richard Ezeanyim, is the new
17 Chief Engineer here at the Oil Conservation Division.
18 Welcome.

19 MR. EZEANYIM: Thanks.

20 EXAMINER STOGNER: He'll be sitting in today,
21 observing.

22 Okay, is it necessary for opening statements at
23 this time?

24 MR. HALL: I'd like to make some preliminary
25 comments, Mr. Examiner. I think it would be helpful to

1 place this case into context.

2 I would also like to say that we're most
3 appreciative for this special hearing date this morning,
4 and we also appreciate the patience of the Division. This
5 case has literally been on the docket for almost a year
6 now, been continued a number of times.

7 We'd also like to express appreciation to the
8 other parties who have participated in formulating these
9 rules represented by Mr. Carr, as well as to the State Land
10 Office.

11 Mr. Examiner, this facility, as you will find
12 through the course of testimony, is quite a unique
13 facility. I have been involved with the project for well
14 over a year, having initially entered an appearance for
15 LG&E, getting the property ready for acquisition. It was
16 subsequently acquired by Raptor Natural Pipeline, LLC,
17 which is a Conoco entity.

18 During the course of my involvement with the
19 project, the need to protect the integrity of the unit and
20 unit operations became clear. And as I said, it is a
21 unique property. What makes it unique, Mr. Examiner, is
22 that the property began its life as a traditional primary
23 production unit, and it was later phased into an injection,
24 storage and withdrawal facility. At its start it consisted
25 of two sections of primarily State of New Mexico acreage

1 and 40 acres of fee acreage and was expanded once to
2 include two additional sections of federal lands.

3 What's unique about this property is that during
4 this transition from a production facility to a storage
5 facility, the legal and regulatory aspects of the facility
6 changed. Once operations phased from production to
7 storage, the customary concept of oil and gas leasing no
8 longer squarely applied.

9 When you review the documents in the exhibit
10 book, the unit agreements for the federal lands and the
11 state lands, you'll see that this is a hybrid. Once the
12 phased-into storage operations was complete, the
13 traditional concepts and notions of lease dedication no
14 longer clearly applied, and benefits were no longer
15 allocated according to an oil and gas lease ownership
16 basis. They instead were allocated according to a surface
17 ownership basis.

18 So we went from a situation where we had royalty
19 payments during the production phase under oil and gas
20 leases to the payment of injection, storage and withdrawal
21 fees that were allocated to the landowners according to
22 their surface ownership interests.

23 During our analysis of the documents -- It was a
24 difficult concept to understand, really. And what we
25 concluded is that this is somewhere in between an oil and

1 gas lease entity and what is really a surface easement
2 entity. So by operating the gas storage unit, what the
3 operator really has is a surface easement interest through
4 the pore volume in the rock to store gas. And it's for
5 that reason that the surface acreage component of the
6 agreement really prevails now.

7 During the course of my involvement with this
8 property, there were two state oil and gas leases dedicated
9 to the unit that expired. The leases had been dedicated to
10 the unit, quite literally, for a couple of decades.

11 The base oil and gas leases were assigned out,
12 the unitized formation reserved, although I think you're
13 aware that the State Land Office itself does not recognize
14 vertical segregation of its leases. The unit agreement
15 itself provides that the state oil and gas leases are to be
16 conformed with the contents of the unit agreement.
17 Nevertheless, those leases were expired. The State Land
18 Office issued new leases in their stead.

19 One of Mr. Carr's clients, Nearburg, came in, had
20 acquired the lease through various assignments and drilled
21 its Grama Ridge East Morrow State 34 well in the northeast
22 quarter of Section 34. It will be shown in some of the
23 exhibits.

24 With that, that created some concerns on the part
25 of the operator at the time, LG&E, that we need to provide

1 some sort of regulatory mechanism to guard against the
2 problems that the lease expiration and the drilling of that
3 well precipitated.

4 All the parties, including State Land Office and
5 the new operator, Raptor, entered into extensive
6 negotiations with each other, and we believe that the
7 problems with respect to the lease cancellation have been
8 overcome, as well as we believe, based on the data that's
9 presently available to us, the drilling of the Nearburg
10 well within the unit boundaries.

11 However, as the witness testimony will
12 demonstrate, there is still the potential for additional
13 development in the area of the unit, including within the
14 unit boundary, in targets above and below and perhaps even
15 within the Morrow. And so in our view, the need for
16 special project rules continues to apply.

17 With that, Mr. Examiner, I'd be pleased to start
18 with the witnesses.

19 EXAMINER STOGNER: One clarification question, if
20 you would, please. You said it started out as a primary
21 producing and then went into the injection storage phase.
22 Was that a -- Was there a break in between of where that
23 production ceased, or was that well producing and then
24 turned into an injector immediately?

25 MR. HALL: I don't have the full history of that.

1 What I can provide you, Mr. Examiner, is --

2 EXAMINER STOGNER: Will that be part of the
3 testimony today? Will that be answered?

4 MR. HALL: I really could not derive the answer
5 to that from the OCD records. What I do have is a
6 collection of all of the Division's orders that address
7 this unit. There is an order approving the initial
8 production unit, and then two other orders in 1973
9 approving of the injection unit, and then injection
10 authorization. And I'll be glad to give those to you.

11 EXAMINER STOGNER: Yes, why don't you go ahead
12 and bring those forward?

13 MR. HALL: That will be --

14 EXAMINER STOGNER: -- I'm familiar with those
15 orders, and that's the reason I asked the question right
16 off the bat, if --

17 MR. HALL: I understand.

18 EXAMINER STOGNER: Thank you.

19 Will you want a copy of this back, or do you have
20 a copy?

21 MR. HALL: That's yours.

22 EXAMINER STOGNER: This is mine, thank you, sir.

23 Okay, with that you may proceed. Or do you have
24 anything, Mr. Carr, to add at this time?

25 MR. CARR: No, I do not. Thank you, Mr. Stogner.

1 MR. HALL: At this time, Mr. Examiner, we'd call
2 John Schell to the witness stand.

3 JOHN F. SCHELL, JR.,
4 the witness herein, after having been first duly sworn upon
5 his oath, was examined and testified as follows:

6 DIRECT EXAMINATION

7 BY MR. HALL:

8 Q. For the record, please state your name.

9 A. John F. Schell, Jr.

10 Q. Mr. Schell, where do you live and how are you
11 employed?

12 A. I live in Katy, Texas. I'm employed by Conoco,
13 Incorporated.

14 Q. What do you do for Conoco?

15 A. Currently I'm the manager of growth and
16 transition for our NG and GP Division of Conoco,
17 Incorporated.

18 Q. All right. And Mr. Schell, are you familiar with
19 the Application that's been filed in this case and the
20 lands it applies to?

21 A. Yes.

22 Q. And are you familiar with the Grama Ridge Morrow
23 Gas Storage Unit?

24 A. Yes.

25 Q. How did you become familiar with the unit and

1 when?

2 A. I became familiar with the unit last year when
3 Conoco was pursuing the acquisition of the unit and other
4 assets from LG&E.

5 MR. HALL: All right. Mr. Examiner, I would note
6 that Mr. Schell is being offered as a fact witness, rather
7 than an expert witness, so I don't tender him for
8 qualification certification.

9 EXAMINER STOGNER: One quick question. What
10 Conoco office are you affiliated with? Is that out of the
11 Houston office?

12 THE WITNESS: Yes, sir.

13 EXAMINER STOGNER: Okay, thank you. That's all I
14 have.

15 Q. (By Mr. Hall) If you would give us a brief
16 history of Conoco's -- Raptor's acquisition of the unit
17 from LG&E, explain that briefly.

18 A. Conoco -- Or let me start from the ground up.
19 The Grama Ridge Storage Unit is owned -- or was owned by
20 LG&E Natural Pipeline, LLC. LG&E Natural Pipeline, LLC,
21 was a wholly owned subsidiary of LG&E Facilities, Inc.

22 Effective December 1st, 2000, Conoco,
23 Incorporated, acquired 100 percent of the stock ownership
24 of LG&E Facilities, Inc.. And the way we get to Raptor is
25 that Conoco did a name change of LG&E Facilities, Inc., and

1 LG&E Natural Pipeline, LLC, deleting LG&E and inserting
2 Raptor in its place.

3 Q. So it was effectively a name change?

4 A. A name change to Raptor, yes.

5 Q. And so Raptor is now a unit operator?

6 A. Yes.

7 Q. If you would, briefly, Mr. Schell, explain what
8 Raptor is seeking by this Application.

9 A. Well, what we're seeking here is to protect the
10 integrity of our storage unit and the commercial viability
11 of the facility. We're asking that if wells are either
12 completed or drilled within the unitized formation, that we
13 have access to data, both drilling and completion data, and
14 also requiring that if it is penetrated within this
15 formation, that there are certain requirements, such as
16 casing and cementing requirements, put upon the operators
17 that do so.

18 Q. All right, let's look at the exhibit notebook,
19 and if you would turn to Exhibit 1, is that a map showing
20 the current unit project area?

21 A. Yes, it is.

22 Q. All right. Could you provide the Hearing
23 Examiner with a brief overview of the creation of the unit
24 and its intended operation?

25 A. As you alluded to earlier, the unit was created

1 post the production phase of the unit itself, for storage.
2 And Section 33, 34 and 3 are all part of the state unit
3 agreement, with the exception of a little bit of fee-owned
4 surface in Section 33.

5 Subsequent to the state unit agreement, Section 4
6 and 10 were added with an agreement with the federal
7 government.

8 Q. All right, and if we refer to the exhibit
9 notebook and look under Exhibit Tabs 2 and 3, are those the
10 federal and state unit agreements?

11 A. Yes, they are.

12 Q. With 2 being the state agreement, 3 the federal?

13 A. Yes.

14 Q. All right, let's refer to Exhibit 4. Is this a
15 draft of the special project rules that Raptor is
16 proposing?

17 A. Yes, it is.

18 Q. If you'll look at Rule 3 there, what is the
19 unitized formation?

20 A. The unitized formation extend to log depths in
21 the Morrow formation between 12,722 feet and 13,208 feet.

22 Q. Okay. Was the unit always used for storage
23 operations?

24 A. No.

25 Q. What was its prior use?

1 A. Prior use, as stated earlier, was a production
2 facility.

3 Q. All right. Could you briefly explain the surface
4 oil and gas interest components of the unit and their
5 functions over time?

6 A. The oil and gas leases were put in place and then
7 unitized under the unit formation for the production of oil
8 and gas. When the state unit agreement was put in place,
9 the surface acreage became the predominant facility of
10 defining the unit area. Therefore we pay the State fees
11 associated with the lease of the surface acreage, and also
12 we pay fees associated with injecting and withdrawing gas
13 from the facility.

14 Q. All right. Now, in reviewing the state unit
15 agreement, does it reflect that the primary recoverable
16 reserves in the property were estimated and some payment
17 was made to the State so that they were deemed produced and
18 paid for?

19 A. Yes, there's provision in the state agreement
20 stipulating that.

21 Q. So -- All right. Conceptually, then, all of the
22 recoverable reserves in the unitized formation are being --
23 have been produced already?

24 A. Produced, and royalties paid for.

25 Q. All right. Would you explain what had

1 precipitated LG&E's and now Raptor's Application in this
2 case?

3 A. My understanding what precipitated LG&E's was the
4 drilling of the Nearburg well in the northeast quarter of
5 Section 34. And there was a question of whether or not
6 this well was actually in communication with the storage
7 unit interval. And with that, brought about concerns as to
8 how do we protect, or how would they protect the unit
9 itself, the storage unit facility?

10 Q. All right. How are the federal leases affected
11 by any potential expiration? Is there some provision in
12 the federal unit agreement that addresses expiration and
13 reissuance of federal leases?

14 A. Yes, the federal leases are subject to the unit
15 agreement, the federal unit agreement --

16 Q. All right.

17 A. -- as they issue oil and gas leases.

18 Q. And does that federal unit agreement provide that
19 any subsequently issued leases will contain a stipulation
20 that they are subject to the gas storage unit?

21 A. Yes, my understanding is yes.

22 Q. All right. And is the federal unit agreement
23 presently effective?

24 A. Yes.

25 MR. HALL: And Mr. Examiner, I would point out

1 again another aspect of the unique nature of this unit is
2 that you have two adjacent units, federal and state,
3 governed by two separate agreements, but they are operated
4 as a single entity. The federal agreement is under Tab 3
5 and the state agreement is under Tab 2.

6 Q. (By Mr. Hall) Now, Mr. Schell, what's the
7 present status of the state unit agreement?

8 A. It is an active agreement. There has been one
9 amendment to the unit agreement that is effective and
10 recognized by the State Land Office.

11 We are currently -- We negotiated a second
12 amendment that is in front of the Land Commissioner for
13 approval at this time.

14 Q. All right. Mr. Schell, to your knowledge do
15 instruments of record in the county and at the State Land
16 Office provide notice of the existence of the Grama Ridge
17 Gas Storage Unit?

18 A. Yes, they do.

19 Q. Let's refer to Exhibit 5 briefly. Could you
20 identify that? Is Exhibit 5 a copy of an excerpt from the
21 State Land Office tract book for the lands that are the
22 subject of this Application?

23 A. Yes.

24 Q. And if you look at the upper right-hand corner,
25 is there a title block notation of the Grama Ridge Morrow

1 Unit agreement?

2 A. Yes.

3 Q. Now, does Raptor propose making the special
4 project rules applicable to the unit area as described in
5 the unit agreements?

6 A. Yes, they do.

7 Q. Mr. Schell, will granting of this Application
8 help to ensure that Raptor's rights in the unit in storage
9 gas are protected?

10 A. Yes.

11 Q. And will granting of the Application also help to
12 provide that further drilling in the area will be properly
13 coordinated with unit operations?

14 A. Yes.

15 Q. Now, does Raptor seek to prevent further drilling
16 through the Morrow in the area?

17 A. No, that's not our intention.

18 Q. All right. Now, were Exhibits 1 through 5
19 prepared by you or assembled at your direction?

20 A. Yes, they were.

21 Q. And did you participate in the redrafting of the
22 special project rules, Exhibit 4?

23 A. Yes, I did.

24 MR. HALL: Mr. Examiner, that concludes my direct
25 of this witness. We'd move the admission of Exhibits 1

1 through 5.

2 EXAMINER STOGNER: Exhibits 1 through 5 will be
3 admitted into evidence.

4 Mr. Carr, do you have any questions?

5 MR. CARR: Yes.

6 EXAMINATION

7 BY MR. CARR:

8 Q. Mr. Schell, are you the appropriate witness to
9 ask questions of concerning these particular rules, or will
10 someone else be testifying?

11 A. The technical aspects, there will be someone else
12 testifying.

13 Q. I'm going to ask you a question, and if I'm
14 asking the wrong person -- As I read the rules, in certain
15 circumstances if a well is drilled there's going to be a
16 requirement that certain information be provided to Raptor
17 on the well. My question is, if an operator files that
18 information with Raptor, would Raptor have any objection to
19 keeping that information confidential unless it is required
20 to be made public by other rules or procedures of the Oil
21 Conservation Division?

22 A. No, we would not have any reason to dispute that.

23 Q. When you talk about the interval to which these
24 rules apply, we have, it appears to me, two different
25 definitions, one in the state unit which is tied to a

1 portion of the Morrow, and then the federal unit that
2 includes the entire Morrow interval. Is that a correct
3 understanding of the rules? The wrong person?

4 A. I'm probably the wrong person to get in that
5 detailed.

6 Q. So I'll follow that with someone else.

7 A. I will say, Mr. Carr, it's our intention to apply
8 these rules to the unit agreement as it's defined in the
9 unit agreement.

10 Q. And when we talk about -- When we define the
11 Morrow formation in one portion of the rules and then we
12 talk about data being supplied on the entire Morrow
13 formation in another -- I'm just trying to find out what is
14 the interval to which you're trying to apply the rules;
15 that's my whole question. And you may not be the right
16 witness.

17 A. Right.

18 MR. CARR: I'll follow that with someone else.
19 Thank you very much.

20 THE WITNESS: Okay.

21 EXAMINATION

22 BY EXAMINER STOGNER:

23 Q. Mr. Schell, in looking at Exhibit Number 5 --

24 A. Yes, sir.

25 Q. -- this is for one 640-acre lease, being Section

1 34. Now, Section 3, was that a separate state lease very
2 similar to this one?

3 A. Section 3 --

4 Q. Yes.

5 A. -- was -- I'll refer to my counsel. That may
6 have been an amended edition. Is that right, Mr. Hall --

7 MR. HALL: Let me see if --

8 THE WITNESS: -- to the original unit --

9 MR. HALL: -- I can give you that information.
10 The unit as originally approved consisted of both Section
11 34 and Section 3, Mr. Stogner.

12 EXAMINER STOGNER: Okay. And what I was getting
13 at, looking at Exhibit Number 5, I only have one page and
14 that's for just, I guess, a representation that Section 34
15 had the stipulation about the Grama Ridge Morrow Unit
16 agreement being in effect. Did Section 3 also have that?

17 MR. HALL: I believe it did, and if you like I
18 could follow up with an excerpt from that --

19 EXAMINER STOGNER: Let's do, I think that would
20 be a good idea to --

21 THE WITNESS: I'll do that.

22 EXAMINER STOGNER: -- to make an amendment to
23 Exhibit Number 5 and insert this -- make that a part of
24 this exhibit for clarification.

25 Q. (By Examiner Stogner) Okay, let's see. Who's

1 the royalty interest owner underneath that fee tract in
2 Section 33?

3 A. We have exhibits of that.

4 Q. Okay, that will come later?

5 MR. HALL: We hadn't planned on introducing this,
6 but we can if you like.

7 EXAMINER STOGNER: I think it would be a good
8 idea if we're considering making special pool rules or
9 special -- let me rephrase that -- special operating rules
10 in and around this area. I want to make sure that
11 everybody's identified. Of course, we know who the federal
12 government is, we know who the State of New Mexico is, but
13 I'd like to at least have it on the record, of the fee
14 interest owners.

15 Now, did that fee tract ever join any -- or
16 ratify a unit? Because the original unit, I believe, only
17 covered two sections, Sections 3 and 34; is that correct?

18 MR. HALL: Yes, that's right.

19 EXAMINER STOGNER: And then when it was expanded
20 into Section 33, did the fee owner ratify the unit?

21 MR. HALL: I am not sure that they did ratify the
22 initial unit, and I'll simply just have to follow up.

23 Q. (By Examiner Stogner) Okay, do you know if --
24 Now, you made a statement that all the royalties had been
25 paid out, gas was produced and royalties paid. Are you

1 including the fee royalty in this instance, in that
2 statement?

3 A. Yes, sir.

4 Q. Okay.

5 A. Pursuant to the unit agreement, that's stipulated
6 in the unit agreement.

7 Q. And they are now a part of -- did we call that
8 a -- I'm trying to get away from using oil and gas terms --
9 the storage unit portion of it, they partake in the void
10 space or the surface allocation --

11 A. Yes, sir --

12 Q. -- storage --

13 A. -- they are paid annual surface lease payments
14 and injection and withdrawal fee payments.

15 EXAMINER STOGNER: I'd like them identified,
16 since we did --

17 MR. HALL: I'm sorry, Mr. Stogner.

18 EXAMINER STOGNER: I'd like to have them
19 identified, because I think these questions that he just
20 answered are important, and if we can just identify them.
21 And I'm assuming that they were notified of today's
22 hearing.

23 MR. HALL: Mr. Examiner, let me discuss that with
24 you. When we originally filed the Application I was
25 uncertain what notice provisions should apply, and in

1 consultations with Mr. Catanach and later with Ms. Hebert,
2 it was agreed that we should notify all operators affected
3 in the unit area.

4 We also notified all the operators in the
5 bounding 320s, because as originally advertised there was a
6 buffer-zone concept -- since been eliminated -- that would
7 have affected them. So that's what we did.

8 EXAMINER STOGNER: I can understand that reason,
9 because this is more of an operational --

10 MR. HALL: Yes, sir.

11 EXAMINER STOGNER: -- stipulation.

12 MR. HALL: We did notify BLM and the State Land
13 Office, but we did not notify these particular fee owners,
14 I don't believe.

15 EXAMINER STOGNER: I can agree, or I can see
16 where Ms. Hebert was coming from, and I'll take it at that.

17 I want to clarify. On the unit, the state unit
18 agreement portion of it, there was some -- you had directed
19 a question to him about they don't recognize this unit in
20 existence for leasing purposes of minerals; is that
21 correct? Is that what you were --

22 MR. HALL: You know, I think I can elaborate on
23 that. I think what I said is that the State does not
24 recognize vertical assignments of only a portion of its oil
25 and gas leases, for record title purposes at the State Land

1 Office, anyway. Everybody does those in the county. So
2 you're on notice when an assignment is made of a state
3 lease and an interval is reserved, that usually shows up in
4 the county. But the State Land Office will not approve
5 assignments with exceptions and reservations like that.

6 Does that answer your question?

7 EXAMINER STOGNER: I believe it does. And the
8 federal unit agreement --

9 MR. HALL: It had a specific provision that in
10 the event a lease terminated and a new one reissued that
11 the new lease would be specifically subject to the unit
12 agreement. I believe there will be a specific stipulation
13 form attached to the actual oil and gas lease.

14 EXAMINER STOGNER: That will actually either
15 separate or stipulate that vertical --

16 MR. HALL: Yes.

17 EXAMINER STOGNER: -- extension that the
18 storage --

19 MR. HALL: Right.

20 EXAMINER STOGNER: -- area consisted of.

21 MR. HALL: Now, in the state unit agreement
22 itself there is a provision, I think I mentioned, that
23 indicates that all state oil and gas leases are to be
24 conformed with the terms of the unit agreement. So you can
25 see we had an issue with the State when there was an

1 expiration of the lease. It should not have been expired.
2 Perhaps it should have been perpetuated.

3 So initially we were at odds with the State on
4 that, and we've since reconciled that position. We don't
5 believe it's an issue any longer.

6 EXAMINER STOGNER: And how are they handling it?

7 MR. HALL: What we did is, we entered into some
8 extensive negotiations with the State Land Office to
9 clarify what the interest owned is under the unit agreement
10 and the extent of operations, what property rights are
11 affected.

12 EXAMINER STOGNER: And this is a piece of
13 property where the State owns both the surface and the
14 minerals?

15 MR. HALL: There are combinations of that, and I
16 believe we have -- Well, we didn't reflect that surface
17 ownership entirely on the plat. But for instance, I
18 believe the northeast quarter of Section 4 is federal
19 minerals; but the surface, pursuant to an acreage swap with
20 the BLM, became state surface. So that was part of our
21 negotiations with the State; we added that surface acreage
22 to our agreement with the State, and that had an effect on
23 these injection, storage and withdrawal fees.

24 EXAMINER STOGNER: That northeast quarter of 4 --

25 MR. HALL: Yes.

1 EXAMINER STOGNER: -- 34 was federal minerals?

2 MR. HALL: Yes. It was the subject of a land
3 exchange, on the surface anyway, with the State.

4 EXAMINER STOGNER: Okay. Now, what is Exhibit
5 Number 5? Is this a surface lease record or a mineral
6 lease record?

7 MR. HALL: It is the unit project area, as
8 described in the federal and state unit agreements.

9 EXAMINER STOGNER: Okay, now I'm talking about
10 Tab 5.

11 MR. HALL: Oh, I'm sorry, Tab 5 is simply a
12 tract-book excerpt from State Land Office records.

13 EXAMINER STOGNER: Now, but is this concerning
14 the surface and the minerals, or just --

15 MR. HALL: This is from the oil and gas tract
16 book, I should say.

17 EXAMINER STOGNER: This goes all the way back to
18 1919, but I show it to be 640 acres mineral -- state
19 minerals. Or am I reading it wrong?

20 THE WITNESS: Mr. Examiner, I'm not sure if you
21 misheard what Mr. Hall said. We're looking at Section 4,
22 is what he was referring to. Section 4, if you'll look at
23 Exhibit 1, is 100-percent owned minerals by the federal
24 government. And then in a land swap, the northeast quarter
25 of Section 4 surface is now owned by the State.

1 EXAMINER STOGNER: Okay. Four, Section 4. I
2 apologize for that. I had Section 34 and Section 4 mixed
3 up. My apologies on that. Okay.

4 MR. HALL: Well, I just noticed --

5 Q. (By Examiner Stogner) Now, in Section 4, then,
6 the State now owns the surface?

7 A. The surface of the northeast quarter.

8 Q. Okay. Now, how is that affected of the void
9 space agreement for this storage area?

10 A. In the second amendment that we have, we're
11 actually re-allocating the unit area and will pay the
12 State, because we pay the State on surface acreage on an
13 annual fee, and their percentage of the injection
14 withdrawal fees are based on their surface ownership.

15 Q. Now, is the federal -- For the federal leases in
16 this unit for minerals, have they been withdrawn for that
17 vertical extension that includes the storage area? Has
18 that been withdrawn from any possible leasing for minerals
19 in that storage extension?

20 MR. HALL: Other than oil and gas? The
21 federal --

22 EXAMINER STOGNER: Yes, other than oil -- or oil
23 and gas.

24 MR. HALL: The oil and gas leases dedicated to
25 the federal unit agreement effectively take those out of

1 the market.

2 EXAMINER STOGNER: So they have been removed,
3 okay.

4 Q. (By Examiner Stogner) Is there any other
5 ownership differences here on this map where there's a
6 different surface and a different minerals owner, that you
7 know of?

8 A. Scott, isn't there a difference on the Merchant
9 ownership, surface acreage versus mineral?

10 MR. HALL: That is surface and mineral, as I
11 recall, that Tract 6 there. That's owned by Merchant
12 Livestock Company, and they were parties to the unit
13 agreement.

14 EXAMINER STOGNER: Okay, I don't see Tract 6.

15 MR. HALL: Look at Exhibit 1.

16 THE WITNESS: Section 33.

17 EXAMINER STOGNER: I'm sorry, one at a time.

18 THE WITNESS: I'm sorry.

19 EXAMINER STOGNER: I'm sorry. Scott Hall, say --
20 Okay.

21 MR. HALL: It's the southwest of the northeast of
22 33.

23 EXAMINER STOGNER: Southwest northeast of 33.
24 And that is a fee surface owner?

25 MR. HALL: And minerals.

1 EXAMINER STOGNER: Well, I'm a little confused at
2 your map, then. If that be case, why wasn't that be shown
3 here?

4 MR. HALL: You know, what I think we could do,
5 Mr. Examiner, is that in the process of negotiating the
6 second amendment to the unit agreement with the State of
7 New Mexico, we developed a new Exhibit B and C to that
8 agreement, which will reflect ownership, surface and
9 minerals.

10 EXAMINER STOGNER: Okay, now, is B a map of
11 surface and C is a map of minerals?

12 MR. HALL: B is oil and gas leases, C is surface.

13 EXAMINER STOGNER: I would definitely like a copy
14 of that --

15 MR. HALL: Okay.

16 EXAMINER STOGNER: -- yes. And that would show
17 the fee surface and fee minerals --

18 MR. HALL: We'll supplement --

19 EXAMINER STOGNER: -- and/or fee minerals.

20 MR. HALL: We will supplement the record with
21 that.

22 EXAMINER STOGNER: This isn't in the potash area,
23 is it?

24 MR. HALL: No, sir.

25 THE WITNESS: No.

1 MR. HALL: I hope not.

2 EXAMINER STOGNER: Okay, so we have a positive
3 aspect about this. Okay. No gravel pits.

4 MR. HALL: It took me months to get my arms
5 around this, Mr. Examiner.

6 EXAMINER STOGNER: And you understand it and you
7 understand it. Now you're presenting it to me who hasn't
8 seen this.

9 MR. HALL: In 30 minutes you will understand it.

10 EXAMINER STOGNER: Good. I'll tell you what, I
11 think the two maps that you were talking about, if you can
12 supplement Exhibit 1 with a copy of those two maps --

13 MR. HALL: Well, they are exhibits -- There's
14 still work in progress, but they show by description an
15 interest in each of the tracts.

16 EXAMINER STOGNER: Now, are they included in
17 today's exhibits?

18 MR. HALL: No, sir.

19 EXAMINER STOGNER: No.

20 MR. HALL: I'll supplement the record with that.

21 EXAMINER STOGNER: If you would. Let's do that,
22 let's supplement the record. Okay, which tab has the
23 proposed -- Tab 4. Now, is there any kind of a
24 notification procedure included in these rules and regs?

25 MR. HALL: When we had filed the amended

1 Application on behalf of LG&E, I believe back in August of
2 last year, a draft of special project rules was attached to
3 that and sent out to the parties. By that time -- Mr. Carr
4 will correct me, but I believe he had entered an appearance
5 for the same parties today.

6 EXAMINER STOGNER: Well, let me rephrase this.
7 With an operator who's drilling through here, is there an
8 obligation for that individual to notify the storage
9 operator?

10 MR. HALL: Yes, and we have a witness upcoming
11 who can explain the operation.

12 EXAMINER STOGNER: Okay, I'm getting ahead of
13 everybody, then. Okay. With that, I don't have any other
14 questions of this witness. Are there any other questions
15 of this gentleman?

16 Mr. Schell, you may be excused.

17 THE WITNESS: Thank you.

18 MR. HALL: At this time, Mr. Examiner, I would
19 call Karl Looff to the stand.

20 KARL M. LOOFF,
21 the witness herein, after having been first duly sworn upon
22 his oath, was examined and testified as follows:

23 DIRECT EXAMINATION

24 BY MR. HALL:

25 Q. For the record, sir, please state your name?

1 A. Karl Michael Looff.

2 Q. And how do you spell that, for the court reporter
3 here?

4 A. L-o-o-f-f.

5 Q. All right. And where do you live, Mr. Looff?

6 A. Route 1, Box 197A, Lovelady, Texas.

7 Q. And how are you employed?

8 A. I'm a geologic consultant.

9 Q. All right. Have you previously testified before
10 the New Mexico Oil Conservation Division?

11 A. No, I haven't.

12 Q. Have you testified in front of other regulatory
13 agencies?

14 A. Yes, I've testified in the Texas Railroad
15 Commission.

16 Q. All right. Would you provide this Examiner with
17 a brief summary of your educational background and work
18 experience?

19 A. I have a bachelor's and master's degree in
20 geology from the University of Missouri, 1963 and 1968. I
21 have worked 36 years in the oil and gas industry. I've
22 held various positions. The more significant ones, I was
23 chief geologist for Tenneco, I was vice president of
24 exploration for Samson Resources, and I served as manager
25 of exploration and offshore development for Mark Producing.

1 In 1987 I became a geologic consultant, and in
2 1989 I started doing extensive work with geologic
3 evaluations associated with underground storage, both salt
4 and conventional.

5 Q. And are you familiar with the Application that's
6 been filed in this case?

7 A. Yes.

8 Q. And are you familiar with the lands that are the
9 subject of that Application?

10 A. Yes.

11 Q. As well as the gas storage unit?

12 A. Yes.

13 MR. HALL: At this point, Mr. Examiner, we'd
14 offer Mr. Looff as an expert in petroleum geology.

15 EXAMINER STOGNER: Any objections?

16 MR. CARR: No objection.

17 EXAMINER STOGNER: Mr. Looff, it's University of
18 Missouri at Rolla today; what was it --

19 THE WITNESS: It's Columbia.

20 EXAMINER STOGNER: It was what, it was called --
21 Oh, it was Columbia?

22 THE WITNESS: Columbia, yes.

23 Q. (By Mr. Hall) Mr. Looff, have you made a study
24 of the unit and the surrounding area in conjunction with
25 the hearing in this case?

1 A. I have.

2 Q. Let's refer to the exhibit notebook, if you
3 would, and would you provide the Hearing Examiner with a
4 brief geological overview of the Morrow formation in the
5 area?

6 A. Okay, can we turn to Item 6? Item 6 is a
7 regional paleogeographic map that was produced by Bruno
8 Hanson. It shows what is normally considered the
9 depositional environment for the Morrow. The arrow is
10 pointing to the area of Lea County in which the storage
11 area is.

12 The type of deposition becomes important in this
13 issue. We are looking at a fluvial deltaic environment,
14 grading into a marginal marine. This environment is
15 subject to extreme lateral changes of the facies. In other
16 words, sandbodies can come and go very quickly on you.

17 Q. All right, let's refer to the remaining exhibits.
18 Exhibit 6, what is that intended to reflect?

19 A. Exhibit 6?

20 Q. I'm sorry, Exhibit 7.

21 A. 7, excuse me. Exhibit 7 is a type log that I've
22 used for correlation into the storage unit. It shows the
23 top of the Morrow clastics, correlations of Morrow "A",
24 "B", "C" and "D", which are local correlations which have
25 been used in a previous geologic study of this area. This

1 well is not located in the unit area; it is located in
2 Section 9, in the northeast quarter.

3 The type log shows that between the Morrow
4 clastics and Morrow "C" you have a lot of very thinly
5 bedded sands coming and going. You have the Morrow "C" and
6 "D" unit, which are channel complexes, which are the
7 primary storage units.

8 Q. All right. Let me ask you at this point, Mr.
9 Looff, if you would refer back to Exhibit 2, which is the
10 unit agreement itself, page 3, Article 3 of that agreement,
11 is that the definition of the unitized formation we're
12 dealing with here today?

13 A. Yes, it is.

14 Q. What is that, for the record?

15 A. "That subsurface portion of the unit area
16 commonly known as the Morrow sands which is the same zone
17 as the top and bottom of which were encountered at log
18 depths of 12,722 feet and 13,208 feet in the Shell Oil
19 Company State GRA Well No. 1 as shown on the Schlumberger
20 Sonic Log - Gamma Ray Log of said well dated July 5th,
21 1965, which said well is located 1980 feet from the North
22 line and 660 feet from the west line of Section 3, Township
23 22, Range 34..." West [sic] and "...is unitized under this
24 agreement and is hereinafter referred to as the 'unitized
25 formation'."

1 Q. And that well location is reflected on some of
2 the subsequent exhibits, is it not?

3 A. Yes, it is.

4 Q. Now, let's refer back again to the Exhibit 7, the
5 type log, and let me ask you, is there consensus among
6 operators in the area on the nomenclature identification
7 for all the Morrow intervals in the area?

8 A. No, there is not.

9 Q. Okay. Let's refer to Exhibits 8 and 9, if you
10 would explain those to the Hearing Examiner, please, sir.

11 A. Exhibits 8 and 9 are structure maps showing how
12 the structure transcends the unit area. The first map is a
13 structure of Morrow clastics, which is the top of the
14 interval that has been unitized. This map does not attempt
15 to address any of the smaller faults in the area. It
16 addresses the large fault which exists to the west of the
17 unit, the storage area. But it shows that there is
18 basically a southward-plunging nose, structural nose, that
19 crosses the unit area.

20 Exhibit 9 is a similar map done on the structure
21 of Morrow "A", which is located about 100 feet below the
22 upper marker. It shows the same type of pattern again,
23 that there is a structural axis crossing the unitized -- or
24 the unit area.

25 Q. Now, does 9 also show all the Morrow penetrations

1 in the area?

2 A. Yes.

3 Q. All right, let's refer to Exhibit 10. What does
4 that reflect?

5 A. Unit [sic] 10 is an isopach of the thickness
6 between these two structural datums that were presented
7 earlier. The purpose of the isopach map is to determine
8 whether the structure was active at the time of deposition
9 of the Morrow clastics to Morrow "A" interval, and provides
10 a basis, then, for further structural as to what is the
11 potential for smaller faults to exist in the area?

12 Q. All right. Mr. Looff, in your opinion is the
13 reservoir boundary for the storage project indeterminate in
14 certain cases?

15 A. The reservoir boundaries for the individual
16 storage sands is very indeterminate, based off the
17 stratigraphy that's set up by the depositional environment.
18 Channels can change on you very, very quickly, and they of
19 course can be very hard to determine with subsurface
20 control.

21 Q. All right. Now, will Exhibits 11 through 19 help
22 demonstrate why that is so?

23 A. Exhibits 11 through 19, yes. They first address
24 the structure in the -- showing the possibilities for
25 additional faulting in the area.

1 Q. And that's Exhibit 11 you're referring to?

2 A. Yes. And the following exhibits, then,
3 demonstrate the stratigraphic possibilities that can exist.

4 Q. So that's Exhibit 12. What does Exhibit 13
5 reflect?

6 A. 13 is a sum of the structural analysis in which
7 the deformation of the isopach interval that we looked has
8 been analyzed at -- it has been buried from 100 feet to its
9 present depth of 13,000 feet, or in this case subsurface of
10 9200 feet. That allows you to look at changes that have
11 taken place between these points and to infer where smaller
12 faulting is likely.

13 So the structural nose that was rather simple on
14 the first two maps that we looked at is now still present,
15 but we imposed on it a number of small faults.

16 Of interest is the faulting that we see in the
17 Section 34, near the Nearburg well. If you look back at
18 the isopach -- and the analysis was done without the
19 presence of the Nearburg well -- the isopach, which is
20 Figure 10, shows that most of the values in here around the
21 well are 90 to 100-plus feet. The Nearburg well is 62
22 feet, indicating the likelihood of a 30-foot fault that is
23 passing through this interval in the Nearburg well.

24 Q. And does it also establish the existence of
25 numerous other faults?

1 A. Oh, yes. The analysis indicated that there
2 should have been on the order of 60 feet of deformation
3 between the east and west side of Section 34. We have
4 demonstrated a possibility of 30 feet in the Nearburg well,
5 which leaves another 30 feet of faulting to be present
6 someplace to the west.

7 Q. Now, what bearing does the existence of the
8 numerous faults have on the indefinite nature of the
9 storage reservoir?

10 A. Well, the faulting allows you to juxtapose sand
11 against sand, so that in addition to the depositional
12 imprecision with the storage sand, you also have now a
13 fault component that will come into play also, which means
14 the fault may not seal.

15 Q. All right. Let's look at Exhibit 14. You have a
16 number of schematic exhibits. Why don't you explain each
17 of those to the Hearing Examiner?

18 A. The purpose of the schematics are to
19 diagrammatically or schematically portray the stratigraphic
20 situations that can exist in this type of a fluvial deltaic
21 environment in which a well away from the main storage sand
22 could still encounter sands that are in communication.

23 Schematic 1 is a prograding distributary, which I
24 believe everybody accepts as a form of deposition in this
25 area.

1 Q. Is that Exhibit 14, for the record?

2 A. The channel is the striped area. As it progrades
3 out, it lays down thin sands out in front of its front or
4 prograding delta. As the channel moves over these, it can
5 actually erode down into them and therefore be in
6 communication with them after the channel is filled.

7 The vertical dashed line represents a well,
8 theoretically, that could be drilled outside of the main
9 channel. It encounters two thin sands that are gas-filled
10 and are in communication with the main channel.

11 Q. What does Exhibit 15 show?

12 A. 15 is a case of a bifurcating channel. As the
13 channels move down towards the delta, they often break up
14 into component pieces. It shows a main channel to the
15 right, which would be -- let's assume, is a storage area.
16 A well drilled off to the left encounters a smaller
17 channel. It is also gas-filled, because in an areal
18 extent, it's still connected to the main storage reservoir.

19 Q. And what does Exhibit 16 reflect?

20 A. 16 is a crevasse splay with distributary channels
21 and a prograding/agrading system. During floods the river
22 quite often overextends itself, it breaches its natural
23 levee and it creates a small -- what you might say is a
24 delta, off on the side. While the communication between
25 that crevasse splay, or sand deposit, and the main channel

1 is somewhat limited, there is reservoir communication.

2 And again, I'm showing the main channel, a small
3 crevasse splay sitting some distance away. A well
4 penetrates it, finds gas, that gas is still in
5 communication with the storage unit.

6 Q. All right, let's look at Exhibit 17.

7 A. 17 is a case where you have basically within the
8 same interval two channels of slightly different age. The
9 older channel is encountered by a well drilled outside of
10 what you believe is a storage channel, which is shown here
11 as the younger. However, the younger channel has actually
12 truncated and eroded down into the lower. Therefore
13 there's a large area of communication between the two
14 channels, even though they're slightly separated
15 stratigraphically in a vertical sense.

16 Q. All right. And let's look at Exhibit 18, please,
17 sir.

18 A. This is Schematic Number 5. This shows offset
19 channels. The sand does not compact very well, and so an
20 earlier channel can actually deflect a later channel off to
21 the side. In this case, using Channel "B", the one to the
22 right, as a storage reservoir, Channel "A" is actually a
23 separate reservoir and could encounter virgin gas.

24 However, the depletion of Channel "A" reservoir
25 could lower the pressure so that the thin shale separating

1 the two would be fractured and no longer serve as a seal,
2 and you would end up communication between the two.

3 Q. All right, let's look at Exhibit 19.

4 A. 19 is addressing the faulting that we were
5 looking at or talking about earlier. This is a faulted
6 distributary in which the size or the magnitude of the
7 faulting is less than the channel thickness. As a result,
8 the channel is in communication with itself across the
9 fault. A well drilled on the downthrown side would
10 actually find a channel that was structurally lower but
11 still in communication with the reservoir.

12 Q. All right, let's explain Exhibit 20 to the
13 Hearing Examiner.

14 A. Okay, schematic cross-section Number 2 is the
15 same scenario, except this time the throw of the fault is
16 greater than the thickness of the reservoir, so a test that
17 was drilled to the right could encounter a virgin reservoir
18 that could be produced. Again, with the production and the
19 pressure depletion of that reservoir, you could open up
20 communication along the fault length between the storage
21 reservoir and the depleted gas reservoir.

22 Q. All right, Mr. Looff, in your geologic opinion do
23 Exhibits 11 through 19 demonstrate the various scenarios
24 that could lead to communication between a new drill and a
25 storage reservoir? And is there a reasonable possibility

1 that any one of these scenarios could exist?

2 A. Yes, there is.

3 Q. During your initial geologic review of the area,
4 did you make a determination whether there are additional
5 drilling locations available?

6 A. Yes, if you refer to Item 13, or Exhibit 13,
7 based off of the structural position in which we have the
8 structural nose coming across the unit area, structural
9 noses are always good places to drill. It's a high point
10 where hydrocarbons can accumulate. We are showing, or I am
11 showing here, the possibility of the numerous small faults
12 that could set up individual traps.

13 So yes, in my opinion a person could come up with
14 reasons that they'd want to drill inside the unit.

15 Q. All right. Now, let's refer back to the exhibit
16 under Tab 28. That is Order Number R-7582.

17 EXAMINER STOGNER: What are we referring to, Mr.
18 Hall, again?

19 MR. HALL: It's under Exhibit Tab 28.

20 EXAMINER STOGNER: 28, thank you.

21 MR. HALL: And that is Order R-7582.

22 Q. (By Mr. Hall) And if you will refer to page 2 of
23 that order, Finding (5), do you see the reference to the
24 L&B Oil Company Federal Well Number 1, 660 feet from the
25 south and 1980 feet from the east line of Section 5 in 22

1 South, 34 East there?

2 A. Yes, sir.

3 Q. Now, is that well reflected on one of the other
4 exhibits?

5 A. They're reflected on all of the structure maps.

6 Q. All right. Have you reviewed that order briefly?

7 A. Yes.

8 Q. What's your understanding of the concerns of
9 Llano, the Applicant in that case, that led to the issuance
10 of that order?

11 A. The concern was that even though the well was
12 outside of the unit as established, that the well could be
13 in communication with the storage sands.

14 Q. All right. If you'll refer to Finding (6) on
15 page 2 it says -- there is a finding that says "That the
16 boundaries of the Grama Ridge Storage Reservoir cannot be
17 precisely determined." Do you see that there?

18 A. Yes.

19 Q. Do you agree with that finding?

20 A. I agree with that finding.

21 Q. And does that finding still hold true today?

22 A. Yes.

23 Q. Do you have an opinion on whether or not the
24 Nearburg State 34 well is in communication with the unit,
25 based on data available to us today?

1 A. Yes.

2 Q. And what is that opinion?

3 A. Based off of the structural analysis which I
4 made, I believe they are fault-separated, incorporating
5 pressure data that has been supplied to me by Mr. Wells
6 that seems to support that. The question remains is, at
7 the depletion of that reservoir will that separation
8 continue?

9 Q. All right. Now, discussing that particular
10 fault, can you tell us the extent of discontinuity between
11 the east-half portion and west-half portions of Sections
12 34, 3 and 10, on the east flank of the unit?

13 A. If we refer again to Exhibit 13, from a
14 structural standpoint, part of the same structural nose,
15 the discontinuities that we would be looking at would be
16 caused by the faulting, which cannot be precisely located,
17 and secondly would be the discontinuity set up by the
18 imprecise boundaries of the channels themselves, which we
19 cannot precisely define.

20 Q. All right. Now, based on currently available
21 data, is there a reasonable possibility that the drilling
22 and development of other Morrow locations within and
23 adjacent to the boundaries of the unit project area might
24 result in communication with the unitized formation?

25 A. Yes.

1 Q. And does the possibility of vertical
2 communication exist?

3 A. The vertical communication, basically, we can
4 look at two ways. The vertical communication would be,
5 first, from the geologic standpoint which was associated
6 with the original deposition; the second is, the vertical
7 communication due to migrating of the gas out into another
8 wellbore and to the surface.

9 Q. Yes. So the record is clear on this, with
10 respect to the State agreement anyway, the unitized
11 formation consists of an interval less than the full Morrow
12 formation; is that correct?

13 A. That's correct.

14 Q. And so is it correct to say that there's a
15 possibility of further Morrow development within the Morrow
16 formation but outside the unitized formation?

17 A. Yes.

18 Q. And that poses the possibility of vertical
19 communication?

20 A. Yes, through the wellbore.

21 Q. Yeah. Mr. Looff, in your opinion would the
22 proposed special project rules protect the correlative
23 rights of the unit participants in the project gas in the
24 unit area?

25 A. Yes.

1 Q. Now, in your opinion, is the granting of this
2 Application necessary for the protection of correlative
3 rights, the prevention of waste and otherwise in the
4 interests of conservation?

5 A. Yes.

6 Q. And have you had -- I believe you briefly
7 mentioned you've had experience with other gas-storage
8 facilities, correct?

9 A. I have.

10 Q. Have you had some involvement with the gas
11 storage facility in Hutchinson, Kansas?

12 A. I have.

13 Q. And tell the Hearing Examiner what precipitated
14 that involvement.

15 A. It was a widely publicized event. There was
16 shallow storage of gas in salt caverns at depths of
17 approximately 450 to 600 feet. A leak occurred in one of
18 the storage wells, in a facility referred to as the Yaggy
19 facility. They lost a large amount of gas, in the range of
20 a hundred to a million cubic feet of gas.

21 Three days later, gas began to erupt under the
22 town of Hutchinson, Kansas, coming up through old brine
23 wellbores that had not been properly plugged. The incident
24 resulted in a very chaotic disruption of the city for about
25 three days. Several people were killed. This is still

1 under investigation from a geologic standpoint, but it is
2 rather obvious that the gas that moved to the surface came
3 up through improperly plugged wells.

4 Q. Now, if you'll look at the materials under
5 Exhibit Tab 29, are these reproductions of articles from
6 the *Oil and Gas Journal* on the Hutchinson Gas Storage Unit
7 incident?

8 A. They are.

9 Q. And although the Grama Ridge Morrow Gas Storage
10 Unit is significantly deeper than the facility in
11 Hutchinson, Kansas, is there still a safety concern
12 associated with this?

13 A. Yes, there's a safety concern, but not of the
14 magnitude that they've experienced at Hutchinson.

15 Q. But there is a reasonable basis for prescribing
16 these rules in this case for safety?

17 A. I believe so.

18 Q. All right. Now, Mr. Looff, were Exhibits 6
19 through 19 and 29 prepared by you or compiled at your
20 direction?

21 A. They were.

22 MR. HALL: And that concludes my direct of this
23 witness, Mr. Examiner. We would also move the admission of
24 Exhibits 6 through 19 and 29 and ask that you take
25 administrative notice of Exhibit 28, which is the prior

1 order.

2 EXAMINER STOGNER: Exhibits 6 through 19, Exhibit
3 29 will be admitted into evidence; Exhibit Number 28, I'll
4 take administrative notice of Order Number R-7582.

5 Mr. Carr, your witness.

6 EXAMINATION

7 BY MR. CARR:

8 Q. Mr. Looff, in your testimony you reviewed the
9 definition of "unitized formation" with Mr. Hall, and you
10 reviewed what is set forth in Rule 3 of the proposed rule.

11 A. Yes.

12 Q. My question is, that definition as I read the
13 rule, applies to state lands. It then goes on to say, "As
14 to Federal lands, the 'Unitized Formation' consists of the
15 Morrow Formation underlying the 'gas storage reservoir...'"

16 Are there different vertical intervals unitized
17 in the state portion of the unit, as opposed to the federal
18 portion of the unit?

19 A. I'll have to defer to counsel.

20 MR. HALL: Yes, what we have attempted to do here
21 in the draft rules, Mr. Examiner, is remain consistent by
22 borrowing the defined term "unitized formation" as it
23 exists in both the state agreement and the federal
24 agreement, and both those definitions are reflected in the
25 Draft Rule 3, under Exhibit Tab 4.

1 Q. (By Mr. Carr) I'm going to ask you another
2 question that you may want to defer to your counsel.

3 A. Okay.

4 Q. If we go to Rule 4 it says, For the purpose of
5 the "Special Project Rules and Operating Procedures, the
6 'Morrow Formation' is the full extent of the vertical
7 limits of the Morrow formation as defined by Order No. R-
8 3006." Do you know what that order is or --

9 A. I'll have to defer again.

10 Q. All right. My question is, when you look at the
11 Morrow formation as a geologist, does the gross interval
12 extend above substantially and below what is unitized for
13 the gas storage project?"

14 A. As I look at the Morrow, the top of the Morrow is
15 what I refer to the Morrow clastics, which has a thick sand
16 above it called the lower Atoka. We do not go to the base
17 of the Morrow. We're -- What has been unitized is about
18 500 feet into it.

19 Q. Does the unitized interval -- Is it at the top of
20 the Morrow? --

21 A. Yes.

22 Q. -- is that what you said?

23 When I look at the type log behind Exhibit Number
24 7, there are various Morrow intervals identified. It says
25 Morrow clastics and then on that same line that goes across

1 the log we have in parentheses "(Morrow 'B'/Nearburg)".

2 What does that mean?

3 A. The information that I have on the Nearburg well
4 is that they refer to this same unit or datum that I'm
5 calling Morrow clastics as their Morrow "B". This is
6 part -- and you know, we have a Morrow "B" in the field, so
7 there's a discontinuity in nomenclature coming across the
8 field.

9 MR. CARR: That's all I have.

10 EXAMINER STOGNER: Thank you, Mr. Carr.

11 Any redirect?

12 MR. HALL: No, sir.

13 EXAMINATION

14 BY EXAMINER STOGNER:

15 Q. Mr. Looff, in -- I'm looking at Exhibit Number 4,
16 Rule 1. It talks about "Each newly drilled or recompleted
17 well penetrating the Morrow formation in the area of the
18 Grama Ridge Morrow Gas..." unit area. What do we mean by
19 "the area"? Is this within one, two miles? Is there a
20 definition of this area?

21 A. I'll defer to Counsel again.

22 MR. HALL: Mr. Examiner, I think the next witness
23 can address this. And I see your point there. Perhaps
24 that's where the rule can be clarified by the deletion of
25 those words, "the area of". I think that would clarify

1 that we're just talking about the unit project area as
2 defined further on in the draft rules. That's our intent
3 anyway.

4 Q. (By Examiner Stogner) Okay, so there is --
5 You're not proposing, Mr. Looff, although your presentation
6 appears to be that wells drilled within the perimeter of
7 this area could affect. In fact, that was your testimony,
8 was it not?

9 A. Yes, sir.

10 Q. Is there a move to include these operating
11 procedures within a boundary area of this unit?

12 MR. HALL: Mr. Stogner, as we had originally
13 filed the Application, yes, we provided for a buffer zone.
14 And as the next witness will explain, there were some
15 objections from area operators to creating a buffer zone.
16 So as now proposed the project rules apply only to the
17 formal unit area.

18 EXAMINER STOGNER: So there was some area of
19 disagreement, and that was one of them?

20 MR. HALL: That buffer-zone concept met with some
21 objection.

22 Q. (By Examiner Stogner) Go back to trim tab [sic]
23 11. What are you trying to show me in this one again? I
24 wasn't clear on the concept.

25 A. On the concept. Well, it may be somewhat

1 difficult to convey, but I will try.

2 The isopach that I showed you from the Morrow
3 clastics to the Morrow "A" reflects the surface that the
4 Morrow "A" would have after it had been deposited or buried
5 by about 100 feet. Since that time, the Morrow "A" has now
6 been buried to 13,000 feet.

7 In the process of that burial that surface has
8 changed, it has been deformed. By comparing the
9 relationship of the points at the isopach to the present-
10 day structure, it shows you the direction and the magnitude
11 of change that has taken place relative to those two
12 points.

13 Now, in this case we know we have a structural
14 nose that is plunging to the southwest. So you would
15 anticipate the deformational vectors that we're showing
16 here, which most of them do, would basically radiate
17 basically out, showing that same dip.

18 We see two exceptions, we see vectors that show
19 the same dip but they have very large delta numbers like
20 741, indicating there's a very large fault going through
21 there. The other numbers are much smaller.

22 But as you can see, some of those arrows point
23 back into that structural axis, not away from it. This is
24 an indication that the magnitude of changes that you're
25 looking at between those points, since the deformation was

1 back towards that axis, was due to faulting, not due to the
2 fold.

3 So this is a means that you go in and can infer
4 the potential fault patterns in areas where the
5 stratigraphy does not allow exact correlation of a large
6 interval, where if you had seismic the faulting is below
7 the seismic resolution level. This is a technique I
8 developed 11 years ago or better. I have presented one
9 school of it to the AAPG and the San Antonio Geologic
10 Society.

11 Q. Now, is this -- Are you trying to make a
12 summation of changes, or the summation of a change --

13 A. The summation --

14 Q. -- those two factors, or all --

15 A. No, just with these, basically, factors. You're
16 looking at the deformation of that surface with continued
17 burial to this present-day position. It really is a
18 working technique that leads me to the results that you see
19 in Exhibit 13. It's simply a means of getting to Exhibit
20 13.

21 Q. Thank you for clarifying that. The only time
22 I've seen that is on front of atlases where it's going to
23 take me how many hours to drive from one point to another.

24 Behind Exhibit Number 6, what publication is this
25 from?

1 A. This is from a Geologic Society of America
2 publication. Just a second. It's titled "The Sedimentary
3 Cover, North American Craton", Geologic Society of America,
4 Volume D2.

5 Q. 1985?

6 A. I believe so, yes. Well, no, what I took from
7 was 1991. It was taken from -- modified from a publication
8 by James in 1985, which I believe is a New Mexico Geologic
9 Survey publication.

10 EXAMINER STOGNER: I have been looking for a map
11 like that, so good presentation. Thank you.

12 Any other redirect, cross-examination, are there
13 other questions of Mr. Looff?

14 You may be excused at this time. I may recall
15 you later, after the next witness.

16 MR. HALL: At this time, Mr. Examiner, we would
17 call John wells to the stand.

18 JOHN A. WELLS,
19 the witness herein, after having been first duly sworn upon
20 his oath, was examined and testified as follows:

21 DIRECT EXAMINATION

22 BY MR. HALL:

23 Q. For the record, sir, please state your name.

24 A. John Allen Wells.

25 Q. Mr. Well, where do you live and how are you

1 employed?

2 A. I reside at 3442 Woodbrook Lane, Sugarland,
3 Texas, and I am a principal in the firm of Fairchild and
4 Wells Petroleum Consultants in Houston, Texas.

5 Q. And what is your professional expertise?

6 A. Well, my professional expertise is generally in
7 the area of petroleum reservoir engineering. My specific
8 abilities focus more on the subsurface flow of oil and gas
9 and water and the modeling of those types of -- the physics
10 of that type of processes.

11 Q. Now, have you previously testified before the New
12 Mexico Oil Conservation Division?

13 A. No, I have not.

14 Q. Why don't you give the Hearing Examiner a brief
15 summary of your educational background and work experience?

16 A. I hold a bachelor of science degree in
17 mathematics and chemistry and a master's degree in physics.
18 My career started out in funded research by the Petroleum
19 Research Foundation. I subsequently then was hired by
20 Texaco and worked for seven years in the Bel-Air Research
21 Facility there in Houston, Texas, in various assignments,
22 including field engineering assignments.

23 I then became the engineering manager
24 specializing in gas projects division at Scientific
25 Software Intercomp, an international consulting firm. I

1 was there for seven years and then started my own company
2 and have been providing consulting services at Fairchild
3 and Wells for the last 15 years, and a significant part of
4 our work is in the natural gas storage industry.

5 Q. All right. And you're familiar with the
6 Application that's been filed in this case?

7 A. I am.

8 Q. And you're familiar with the Grama Ridge Morrow
9 Gas Storage Unit?

10 A. Yes, I am.

11 MR. HALL: At this point, Mr. Examiner, we'd
12 offer Mr. Wells as an expert petroleum engineer.

13 EXAMINER STOGNER: Any objection? Mr. Wells,
14 where did you get your degrees?

15 THE WITNESS: Mississippi State University.

16 EXAMINER STOGNER: Both undergrad and grad?

17 THE WITNESS: The undergrad was at Delta State
18 University, and graduate was at Mississippi State
19 University.

20 EXAMINER STOGNER: Where's Delta State?

21 THE WITNESS: Delta State is in Mississippi, it's
22 in Cleveland, Mississippi.

23 EXAMINER STOGNER: So qualified. Thank you, Mr.
24 Wells.

25 Q. (By Mr. Hall) Mr. Wells, again would you explain

1 what Raptor is seeking by this Application and its
2 special --

3 A. Well, what Raptor proposes that this is, is that
4 this Commission promulgate certain special project rules
5 that will govern the completion and plugging practices
6 applied to wells to be drilled within Raptor's gas storage
7 unit in the future, and thereby to establish a protocol
8 such that the possibility of capture or escape of their
9 nonindigenous high-pressure storage gas can be assured.

10 In addition, Raptor feels that these project
11 rules will promote the general public safety.

12 Q. All right. And Mr. Wells, at this point I'd like
13 you too to refer to Exhibit Tab 28 and Order Number 5782
14 [sic] in there. Have you reviewed that order?

15 A. Yes, I have.

16 Q. Can you express from the order what were the
17 concerns of Llano, the applicant in that case?

18 A. Well, Llano's concerns were expressed in the
19 findings of the Commission order, and they were basically
20 threefold: one, that the L&B intended to drill a well that
21 was a direct offset to their storage unit, to Llano's
22 storage unit, and that this storage unit was known to be
23 indeterminate. It's not as the -- as our geologists --
24 earlier geologists have all said that it's just not
25 precisely known, the lateral extent of this Morrow

1 formation. So that was known.

2 And then the third thing was that it would likely
3 cause disruption to the storage facility and the loss of
4 gas or the escape of gas by this well drilling next to
5 them.

6 Q. Is it safe to say that Llano was looking for a
7 way to monitor activity on what they thought might be the
8 storage reservoir and collect data?

9 A. Exactly.

10 Q. And what are the monitoring and data-collection
11 operations currently in place for this --

12 A. Well, I have some exhibits that will -- which --
13 what number those are, I'm not sure.

14 Q. Start with Exhibit 21.

15 A. 21, yeah --

16 EXAMINER STOGNER: Which leads me up -- I don't
17 believe that we accepted Exhibit Number 20. I think I did
18 from 6 to 19, but at this time I'll accept Exhibit 20,
19 which was part of Mr. Looff's presentation.

20 MR. HALL: Yes, so offered. Thank you, Mr.
21 Examiner.

22 THE WITNESS: Exhibit 21, in fact, might be of
23 interest to the Examiner's original question to Mr. Hall,
24 having to do with the lag time between primary production
25 and the start of storage.

1 What this exhibit shows is the chronology of the
2 reservoir pressure that has been measured in the Morrow
3 interval, and this particular pool was discovered in the
4 mid-1960s and was depleted there rapidly. You can see that
5 the pressure in the reservoir declined to less than 1000
6 pounds as measured in some of the wells by 1970.

7 And then shortly thereafter, in 1973, is when
8 injection began. And this figure demonstrates the dynamic
9 nature of this storage facility, how the pressure swings
10 seasonally and annually, and we've had pressures go back up
11 as high as 4000 pounds and as low as slightly less than
12 2000 pounds.

13 The next figure, the next exhibit, 22,
14 demonstrates how Raptor continuously monitors the gas-
15 accounting inventory and the measured pressures, the fall,
16 spring, high inventory, low inventory, shut-in pressure
17 surveys, equilibrated reservoir pressures, to generate
18 essentially a graphical solution to the material balance
19 equation, which provides an indication of what inventory
20 you would expect to have stored at a given pressure.

21 And this relationship, as you can see, is not
22 exact, but the trend line is used to monitor the ongoing
23 performance, and if we see things at some point in the
24 future that appears to get us off of this trend line, then
25 that gives us reason to suspect we've had gas escape or

1 some kind of migration problems or something like that.

2 And Figure 23, this is just to provide the
3 Commission with some additional detailed examples of the
4 kinds of data that are collected at the gas storage unit.

5 This particular exhibit provides a snapshot
6 between October 25th of 2000 and November 30th of 2000 on
7 the first page. You can see that we have for the Grama
8 Ridge Morrow Unit Well Number 1, Number 2, Number 4. These
9 are the daily casing and tubing pressures and injection and
10 withdrawal rates and cumulative volumes.

11 On the second of this exhibit is plotted the
12 tubing pressure and the injection or withdrawal rates that
13 are applied to this well. So you can see that that
14 particular well, that its tubing pressure will move between
15 a high of, oh, you know, 2300 pounds to as low as 100
16 pounds. And during that period of time, the injection --
17 I'm sorry, that's the withdrawal rate.

18 The tubing pressure -- This is not in color, it's
19 not -- I hope your version is in color, but --

20 EXAMINER STOGNER: Mine is in color --

21 THE WITNESS: Yeah, okay --

22 EXAMINER STOGNER: -- it's --

23 THE WITNESS: -- I'm talking about the plot, I'm
24 talking about the plot here.

25 EXAMINER STOGNER: Oh, the plot.

1 THE WITNESS: Yeah.

2 EXAMINER STOGNER: Yes, I have a color version.
3 It's yellow with a magenta line.

4 THE WITNESS: Right. So the green line is the
5 injection withdrawal rate. And so you can see that that's
6 plotted off of the Y axis on the right side of the graph.

7 And so during this period, October 21st to
8 November 30th, this particular well, looking at the green
9 curve, experienced injection that went as high as 15
10 million cubic feet per day, and then it experienced
11 withdrawal that went as high as close to 20 million cubic
12 feet a day. And during that period you can see the
13 corresponding swing in the tubing pressure.

14 The next plot is a similar plot for Grama Ridge
15 Storage Well Number 2, and those are essentially the two
16 wells that experience 99 percent of all the activity that
17 constitutes the storage unit.

18 Q. (By Mr. Hall) So these exhibits show, rather
19 than having a steady state of decline in the reservoir, you
20 have a rather dynamic --

21 A. Exactly.

22 Q. -- pressure situation?

23 A. Right.

24 Q. Refer back again to Order R-7582 under Exhibit
25 Tab 28 --

1 A. Uh-huh.

2 Q. -- and could you explain what type of data the
3 operator of the offsetting Morrow well offsetting the unit
4 was directed by the Division to provide in that case?

5 A. Yeah, that Division order required detailed
6 drilling data to be submitted to the gas storage operator,
7 including the time and the weight on the bit, changes of
8 bit, copies of drill stem tests, mudlog information,
9 samples of drill cuttings, of course a complete suite of
10 logs.

11 And in addition, if the operator, the gas storage
12 operator, was to determine from this information that this
13 well was within their structurally or stratigraphically
14 equivalent unit, then they had -- by virtue of this order,
15 had the right to take over that well for some period of
16 time and actually test it themselves, run an RFT test or
17 things like that.

18 Q. All right. And is Raptor recommending similar
19 well data be provided in conjunction with the order and
20 special project rules that might issue from this
21 proceeding?

22 A. Similar, but certainly to a lesser extent.

23 Q. All right. Let's look at Exhibit 4, the Proposed
24 Special Project Rules and Operating Procedures. If you
25 could briefly go through that for the Hearing Examiner and,

1 for instance, look at the requirement for well data under
2 Rule 5 there, what do these rules propose to do?

3 A. Well, Rule 5 is kind of our notification rule.
4 If you intend to drill within the Raptor Gas Storage Unit,
5 we would ask you, 5. a.), to give us some notification
6 you're getting ready to do that.

7 5. b), we would ask that when you start drilling
8 operations that you would provide us with the normal
9 International Association of Drilling Contractor-type daily
10 drilling reports. We would ask, then, that when you
11 anticipate encountering the top of the Morrow formation
12 with your drill bit, that you kind of let us know when
13 that's going to happen.

14 Other than that, we're just asking for a suite of
15 logs on the well.

16 So Rule 5 is just notification, some what we
17 consider to be non-onerous requests but some daily drilling
18 reports and then a suite of logs, all of which I'm sure
19 this could be kept confidential as was discussed earlier.

20 Rule 6 --

21 Q. Go ahead and explain what additional steps would
22 be required during the various drilling and completion
23 phases.

24 A. Okay. During the completion phase, if the new
25 well or recompletion well within Raptor's unit is intended

1 to be completed above the unitized formation or below the
2 unitized formation, then we are requesting certain
3 procedures in terms of submitting requirements to be
4 implemented to protect the high-pressure nonindigenous gas
5 stored within that unitized interval.

6 If the well is to be -- If it's just an
7 exploratory well they drilled and decide -- don't find
8 anything worth completing, then there's certain plugging
9 requirements that we ask for that are, again, just asking
10 that cement be covered, our unitized formation. We're
11 certainly asking that no completions be allowed directly
12 within the vertical limits of the unitized formation.

13 Q. All right. Let's explain the operation of Rule
14 7, and are there graphic depictions of the operations of
15 each of these rules?

16 A. Yes, we have some exhibits that depict what we're
17 asking for in actually Rules 6. b.) and c.) and Rule 7 and
18 such as that.

19 Q. All right, let's refer to Exhibit 24. Does this
20 graphically demonstrate the application of Rule 6. b.) for
21 completions above the unitized formation?

22 A. Yes. Let me look at this colored one here.

23 Q. As I understand it, the rules that apply when you
24 have a Morrow penetration, first of all.

25 A. Right.

1 Q. Let's work our way down from that circumstance
2 where you have a Morrow penetration and you have casing set
3 into the unitized formation with the completion above the
4 unitized formation.

5 A. Right. This is a depiction of what we're asking
6 for in Rule 6. b.). If we have an operator -- a new well
7 that intends to be drilled into our unitized formation, and
8 they subsequently desire to set their casing within our
9 formation and then complete above the unitized formation,
10 or let's say that they have drilled all the way through our
11 formation and desire to set casing completely -- I don't
12 know why anybody would really do that in the depiction on
13 the right side of the exhibit for Rule 6. b.), but just in
14 case that circumstance occurs, in both cases all we're
15 asking for is that a cement plug cover our unitized
16 formation and that as added protection that the new driller
17 put a cement plug above and below our unitized interval,
18 and then again as additional protection a little block
19 squeeze below their perforated interval.

20 That is what we're asking for in Rule 6. b.), and
21 again it applies to those wells that are drilled into or
22 through our formation and completions above.

23 The next exhibit, 25, this is a depiction of what
24 we're asking for to help protect release of our storage gas
25 in Rule 6. c.). In Rule 6. c.) we contemplate the

1 situation where the hole might be drilled into our unitized
2 formation, but casing is not actually set into the
3 formation, just set the casing above.

4 In that case, on the left side of this exhibit,
5 we're just asking to put a cement plug down there and bring
6 it up at least, you know, 15 feet or so higher than the top
7 of our unitized formation, and then also to do a little
8 block squeeze below their set of perforations.

9 On the right side of that exhibit we contemplate
10 another set of circumstances, possibly, where they drill
11 open-hole through our unitized formation. In this case
12 we'll say, Well, let's give them a break, you don't have to
13 dump cement all the way to TD, you can cut off and set a
14 bridge plug at maybe 15, 20 feet or so below the bottom of
15 our unitized formation and then set your cement plug on top
16 of that, then in addition squeeze below your perforations.

17 On the next exhibit, 26, this applies on the left
18 to Rule 7. b.). Rule 7. b.) contemplates that a well would
19 be drilled into and through our unitized formation, and
20 that operator would subsequently elect to complete in some
21 interval below our unitized formation.

22 If he does that, again, standard request, we're
23 asking that our unitized formation be isolated with block
24 squeezes above and below, and then a block squeeze above
25 his shallowest depth, his shallowest set of perforations.

1 Rule 8. b.) applies to a case where we just --
2 someone has drilled an exploratory well, they log it and
3 decide they're not going to set casing or complete
4 anywhere, so in that case all we're asking is that
5 sufficient cement be put across our formation. And if the
6 well is real deep, you can come up and put a bridge plug
7 there and just fill cement across the unitized formation
8 from that interval.

9 Q. Mr. Wells, in your opinion, based on your
10 experience as well, are these proposed special project
11 rules reasonable?

12 A. Yes, I think they certainly are reasonable, yes.

13 Q. And did the proposed rules impose an undue burden
14 on operators in the area?

15 A. No, I don't believe they do.

16 Q. Is there a precedent from other states for
17 operating procedures like we're proposing here?

18 A. Yes, in fact, I brought an exhibit from the Texas
19 Railroad Commission --

20 Q. Is that Exhibit 27?

21 A. -- Exhibit Number 27. This is a Texas Railroad
22 Commission order having to do with a situation very
23 analogous to what we're dealing with here. The Atkinson
24 Storage Field in Karnes County, Texas, had a unitized
25 interval that was designated within the findings here.

1 And then back in Rule 7 on the last page, the
2 Texas Railroad Commission stated that hereinafter anyone
3 drilling in this field or within the storage unit for
4 completion below the so-called Atkinson gas storage
5 reservoir would be required to block-squeeze cement.

6 And you can see that some of their requirements
7 are more stringent than what we're asking for. They're
8 setting 100 feet below the base of the Atkinson and 150
9 feet above the top. We're just asking for -- you know,
10 we're asking to either cover our zone and give us 15, 20
11 feet or something, top and bottom. They went on here to
12 set similar rules for wells that would be completed --
13 drilled through and completed below.

14 So this, I think, is a good example of, you know,
15 regulatory precedent on what we're asking for.

16 Q. All right. Now, do you understand the injection,
17 storage and withdrawal of gas within the project area to
18 constitute what is known as a common source of supply?

19 A. Yes, I do recognize that it is a common source of
20 supply, with the caveat, however, that this is -- this gas
21 belongs to Raptor, it's non-indigenous gas, it was injected
22 and belongs to them.

23 Q. All right. But the owners of the gas injected
24 within the storage project do have correlative rights to
25 the ownership of that gas?

1 A. Exactly.

2 Q. And would the owner or operator of a newly
3 drilled well, recompleted well penetrating the Morrow
4 formation have any correlative rights in the project gas
5 itself?

6 A. Certainly not.

7 Q. It's separately owned, isn't it?

8 A. Certainly.

9 Q. On the other hand, if a newly drilled well or a
10 recompletion proves to be in communication with the project
11 area, would the correlative rights of the interest owners
12 in the unit gas be adversely affected?

13 A. They would, most certainly.

14 Q. And in your opinion, would the proposed special
15 project rules protect the correlative rights of the unit
16 participants in the project gas?

17 A. They would go a long way towards protecting those
18 correlative rights.

19 Q. All right. Were Exhibits 21 through 27 prepared
20 by you or assembled at your direction?

21 A. They were.

22 MR. HALL: That concludes our direct of this
23 witness. We'd move the admission of Exhibits 21 through
24 27.

25 EXAMINER STOGNER: Any objection?

1 MR. CARR: No objection.

2 EXAMINER STOGNER: Exhibits 21 through 27 will be
3 admitted into evidence.

4 Thank you, Mr. Hall.

5 Mr. Carr, your witness.

6 EXAMINATION

7 BY MR. CARR:

8 Q. Mr. Wells, as I look at these rules, you're not
9 proposing anything for existing wells. Old wells are
10 grandfathered in?

11 A. That's right, these are for new wells to come
12 inside of the unit.

13 Q. And when I look at the rules and the schematics
14 that you have presented, the only time there would be
15 additional cementing requirements, in fact, is if a well is
16 drilled that penetrates unitized interval; isn't that
17 right?

18 A. Exactly, if you don't penetrate the interval, we
19 don't care anything about it.

20 Q. And as far as you understand, there's no
21 objection to keeping logs or other information confidential
22 unless otherwise required?

23 A. That's certainly up to Raptor, right.

24 Q. You wouldn't see any reason --

25 A. I wouldn't recommend any --

1 Q. We've looked at --

2 A. -- objection.

3 Q. -- prior drafts of rules. Have you seen the
4 earlier drafts that were advanced by LG&E and others?

5 A. The earlier drafts?

6 Q. Drafts of proposed rules?

7 A. Yes, I have.

8 Q. This set of rules has eliminated the buffer zone
9 around the unit.

10 A. Yes.

11 Q. Is it fair to say that there's nothing in these
12 rules that give Raptor the right to take over a wellbore if
13 another operator came in? They're required to cement and
14 do some other things, but they're not like earlier rules
15 where there would be circumstance where the wellbore would
16 have to be turned over?

17 A. Withinside the unit --

18 Q. Yes.

19 A. -- or are you saying outside the unit?

20 Q. Anything in these rules.

21 A. Either one. In any case -- Well, first of all,
22 we're not asking for any project rules -- as I understand
23 it, we're not requesting any special project rules to apply
24 to any well that's outside of these five sections. The
25 wells inside of those five sections, we're not specifically

1 asking to come take over your well. No, we're not asking
2 for that.

3 Q. You're concerned that any of the gas that's
4 injected to the reservoir not be produced by a third party?

5 A. Exactly.

6 Q. It's your gas?

7 A. Right. Not only not produced, but not allowed --
8 unintentionally allowed to have some escape point for
9 the -- behind -- That's the reason for all that cementing,
10 is to make sure we don't have escape points.

11 Q. And if these rules are implemented and wells --
12 if there are additional wells that are properly drilled,
13 this would also protect the rights of other people to
14 develop and produce indigenous gases without interfering
15 with the storage project?

16 A. I'd agree with that, yeah.

17 MR. CARR: That's all I have. Thank you.

18 EXAMINER STOGNER: Any redirect?

19 MR. HALL: Clarify one matter.

20 FURTHER EXAMINATION

21 MR. HALL:

22 Q. Mr. Wells, isn't it the case that the special
23 project rules would in fact apply to wells penetrating the
24 unitized formation as well as wells penetrating the Morrow
25 formation above the unitized formation?

1 A. Yes. I mean, the project rules apply -- I guess
2 that's where we get into some semantics on the definitions
3 of all of that, and that's -- If we have storage gas that
4 potentially resides over some vertical interval, then my
5 recommendation is that we don't allow completion anywhere
6 in that interval.

7 FURTHER EXAMINATION

8 BY MR. CARR:

9 Q. Just one follow-up. I'm not trying to create
10 confusion here. As I looked at the rules, if you don't
11 penetrate the unitized interval, there's really nothing to
12 put a cement plug in or behind, is what my thought was, and
13 so if you don't get to the unitized formation, you probably
14 don't have an additional requirement?

15 A. Right, if you don't drill down to the top or
16 anything, then we have no concern.

17 MR. CARR: That's all I have.

18 EXAMINATION

19 BY EXAMINER STOGNER:

20 Q. Top of the unitized interval, or top of Morrow
21 formation?

22 A. Well, there we go, see? It's --

23 MR. HALL: And -- Would you like me to address
24 that?

25 EXAMINER STOGNER: I need somebody to address it.

1 MR. HALL: Yes. The way we have provided for
2 these rules to work is to trigger their application when
3 the top of the Morrow formation is penetrated. The
4 additional specific requirements apply where there are
5 actual penetrations of the top of the unitized formation as
6 well, within the Morrow.

7 And now, remember, we have two definitions of
8 unitized formation at work here, under the State unit
9 agreement and the federal unit agreement, and both of those
10 definitions are set forth in Rule 3. It is correct that
11 the unitized formation, the definition set forth in the
12 federal agreement is probably larger vertically than that
13 in the State, which is off of log picks.

14 EXAMINER STOGNER: It's a twofold -- If the
15 Morrow is penetrated, then it triggers, you said --

16 MR. HALL: Yes.

17 EXAMINER STOGNER: -- other stipulations in here?

18 Q. (By Examiner Stogner) Now, Mr. Carr had asked
19 you a question, Mr. Wells, about existing wells. Wouldn't
20 these rules cover those once those wells were plugged and
21 abandoned?

22 A. Well, if a well is to be plugged and abandoned,
23 yes. If there is a current well that penetrates the
24 unitized formation and that well is to be plugged and
25 abandoned, these rules we would ask to be applied to that

1 abandoning situation, yes, or recompletions of wells that
2 may already exist withinside of the unit, certainly.

3 Q. Okay, and that's clear in Rule 5 because it talks
4 about the drilling of a new well, or recompletion of an
5 existing well?

6 A. Right, right.

7 Q. These rules only address the cementing practices,
8 but not stimulation practices; is that correct?

9 A. We have not elected to get into prescribing
10 things about future operators' intention to stimulate their
11 wells, no.

12 MR. HALL: Mr. Examiner, if I might address that
13 point, when we use the phraseology in here, completions or
14 recompletions, you said in the broader sense if there is
15 some, say, fracture stimulation outside of the Morrow or
16 the unitized formation that results in fractures
17 penetrating the unitized formation, I think that might be
18 considered a completion within, and so it's conceivable
19 that they could apply in that context.

20 Q. (By Examiner Stogner) Referring to Exhibit
21 Number 28, whatever happened to that well? Is that well
22 still producing? Did it get turned over?

23 A. Well, no, what they did was -- Yeah, they did
24 turn over the well, and they ran some tests on it, but I
25 don't think that the ultimate disposition of that was that

1 it was found to be in communication. In fact, we've got an
2 interpretation today that shows a fairly major fault that
3 separates the gas storage unit from that well. But at the
4 time, that was additional data that went into helping us to
5 delineate that fault.

6 Q. Is that well still producing?

7 A. I don't know the status of that well, to tell you
8 the truth. Again, you know, the ongoing performance and
9 predictability of the pressure and inventory relationship
10 at the storage unit has been sufficient for the unit
11 operators to feel comfortable if their gas is being
12 maintained within some confines and it hasn't been escaped
13 or produced or anything like that.

14 The problem is that we still contend we don't
15 have a good idea of exactly how far laterally our gas might
16 propagate. But we don't think it propagates to the west of
17 that major fault that separates that Federal Number 1.

18 Q. That original order, or that order from 1984, if
19 that well had been turned over, was there a clause that
20 that unit would have automatically expanded to include that
21 area?

22 A. I'll have to defer on that.

23 MR. HALL: Mr. Examiner, I just don't know the
24 complete history of that. All we do know is that the unit
25 was not expanded to include that, although I would point

1 out that under the Underground Gas Storage Act, the unit
2 operator of gas storage units have the power of eminent
3 domain to condemn acreage like that in such a circumstance.
4 To our knowledge, that was not done.

5 We'll be glad to run down that information,
6 whether that well is still producing, provide that to you.

7 EXAMINER STOGNER: I'll just take administrative
8 record of the Division well files on that particular well.
9 Not only eminent domain, but also it would have been
10 obligated, since somebody's void space was being utilized
11 for commercial properties and not being properly funded,
12 they would have been responsible in that manner, the
13 storage people; is that correct?

14 MR. HALL: Possibly so.

15 EXAMINER STOGNER: Possibly, or probably?

16 MR. HALL: Maybe.

17 EXAMINER STOGNER: Maybe. Hopefully?

18 THE WITNESS: Most likely.

19 EXAMINER STOGNER: Are there any other questions
20 of Mr. Wells?

21 MR. CARR: One.

22 FURTHER EXAMINATION

23 BY MR. CARR:

24 Q. Mr. Wells, have you reviewed any information on
25 the Nearburg well in the north half of Section 34?

1 A. I have had an opportunity to look at some of
2 that, yes.

3 Q. Based on your review of that, do you have an
4 opinion as to whether or not it is at this time producing
5 reserves --

6 A. It is --

7 Q. -- the project?

8 A. It's my opinion that there's not sufficient data
9 that can point to definite communication. On the other
10 hand, I have advised Raptor that they should continuously
11 monitor that and collect data and watch it, because just
12 because it's not in communication at one point in time
13 doesn't mean that -- as Karl Looff indicated, things can
14 happen that would cause communication at a later date.

15 MR. CARR: Thank you.

16 EXAMINER STOGNER: Any other questions?

17 MR. HALL: No, sir.

18 EXAMINER STOGNER: You may be excused. Is there
19 any other need for bringing any of the other witnesses back
20 at this time?

21 MR. HALL: No, sir. We would offer you the
22 counsel's notice affidavits for both Case 12,441 and
23 12,588, move their admission into the record. I don't have
24 them marked as exhibits *per se* but would be glad to do so.

25 EXAMINER STOGNER: I don't believe it will be

1 necessary to mark them as an exhibit. We'll just refer to
2 them as the affidavit of mailing and notifications.

3 MR. HALL: Mr. Examiner, I also have draft orders
4 to offer you on disc and hard copies.

5 EXAMINER STOGNER: Thank you. I believe we're
6 ready for closing statements.

7 Mr. Carr, I'll let you go first.

8 MR. CARR: Mr. Stogner, the only comment I have
9 at the conclusion is, we would request that the rules
10 provide that information made available to Raptor or its
11 successor pursuant to these rules be kept confidential
12 unless disclosure is otherwise required by the Division.

13 Other than that, I have no closing statement.

14 MR. HALL: And I have no closing statement
15 either.

16 I would say that a confidentiality provision
17 would certainly be agreeable to us. And I'll be glad to
18 work with Mr. Carr to develop some language to put in an
19 order, if you request it.

20 EXAMINER STOGNER: If you two would work together
21 and propose an amendment or a change to one, or addition of
22 a rule or whatever is necessary, and -- that would be most
23 helpful.

24 MR. HALL: Mr. Examiner, you had asked me a
25 question at the outset with respect to information about

1 the history of the conversion of the initial production
2 well to conversion well. I'm not sure I understood your
3 question, but is that still on the table? Do I need to
4 follow up on that?

5 EXAMINER STOGNER: No, it's not necessary now
6 because I believe Mr. Wells satisfied that with some
7 information. At the time, as we were starting today, I was
8 wanting just a little bit more of a background, and he did
9 satisfy that, and it looks to me there was a time there, or
10 I'm satisfied that there's some information. So the
11 cumulative testimony of all of them that the royalties were
12 taken care of before the storage unit came into effect...

13 Is there anything else further at this time?

14 MR. HALL: No, sir. Again, we appreciate this
15 special hearing date and also appreciate the long patience
16 of the Division for these cases.

17 EXAMINER STOGNER: Thank you very much, and thank
18 you for working -- all the parties involved, thanks for
19 working together on something like this.

20 If there's nothing further in this matter then I
21 will prepare to take this matter under advisement.

22 If you two will work together and at your
23 convenience bring forth an amendment about the
24 confidentiality, and only the confidentiality. And don't
25 let that become a contention between the parties.

1 MR. CARR: Just wait.

2 (Laughter)

3 EXAMINER STOGNER: Right, that's an order. Okay,
4 with that, hearing is adjourned.

5 (Thereupon, these proceedings were concluded at
6 11:00 a.m.)

7 * * *

8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

[Handwritten signature and stamp]
12,588 and 12441
May 2001
Conservation Officer

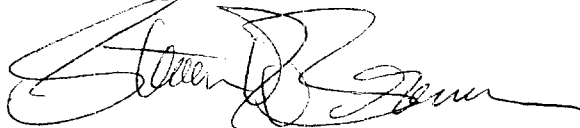
CERTIFICATE OF REPORTER

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 May 31st, 2001.



STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 2002