

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 OXY USA WTP LIMITED CASE NO. 16159
PARTNERSHIP FOR APPROVAL OF A
WATERFLOOD UNIT AGREEMENT FOR
PURPOSES OF IMPLEMENTING A PRESSURE
MAINTENANCE PROJECT IN THE BENSON;
BONE SPRING POOL THROUGH ITS SMOKEY
BITS STATE COM NO. 2H WELL, EDDY
COUNTY, NEW MEXICO.

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

May 17, 2018

Santa Fe, New Mexico

BEFORE: SCOTT DAWSON, CHIEF EXAMINER
 MICHAEL McMILLAN, TECHNICAL EXAMINER
 PHILLIP GOETZE, TECHNICAL EXAMINER
 DAVID K. BROOKS, LEGAL EXAMINER

 This matter came on for hearing before the
New Mexico Oil Conservation Division, Scott Dawson,
Chief Examiner, Michael McMillan and Phillip Goetze,
Technical Examiners, and David K. Brooks, Legal
Examiner, on Thursday, May 17, 2018, at the New Mexico
Energy, Minerals and Natural Resources Department,
Wendell Chino Building, 1220 South St. Francis Drive,
Porter Hall, Room 102, Santa Fe, New Mexico.

REPORTED BY: Mary C. Hankins, CCR, RPR
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1 (2:39 a.m.)

2 EXAMINER DAWSON: Okay. Back on the
3 record. It's about 2:40.

4 The next case we will hear is number 33 on
5 the list, Case Number 16159, which is an application of
6 OXY USA WTP Limited Partnership for approval of a
7 waterflood unit agreement for purposes of implementing a
8 pressure maintenance project in the Benson; Bone Spring
9 Pool through its Smokey Bits State Com #2H well, Eddy
10 County, New Mexico.

11 Call for appearances.

12 MR. FELDEWERT: May it please the Examiner,
13 Michael Feldewert, from the Santa Fe office of Holland &
14 Hart, appearing on behalf of the Applicant. I have four
15 witnesses here today to be sworn.

16 EXAMINER DAWSON: Okay. Can your four
17 witnesses please stand and be sworn in?

18 (Ms. Guest, Mr. Harty, Dr. Liu and
19 Mr. Morris sworn.)

20 MR. FELDEWERT: We'll call our first
21 witness.

22 EXAMINER DAWSON: Yes.

23 LAUREN GUEST,
24 after having been first duly sworn under oath, was
25 questioned and testified as follows:

1 DIRECT EXAMINATION

2 BY MR. FELDEWERT:

3 Q. Would you please state your name, identify by
4 whom you are employed and in what capacity?

5 A. Lauren Guest, Occidental Petroleum, a landman.

6 Q. And how long have you been a landman with OXY?

7 A. July will be five years.

8 Q. Have your responsibilities included the Permian
9 Basin in New Mexico?

10 A. Yes, they have.

11 Q. Have you had the opportunity, Ms. Guest, to
12 previously testify before this Division?

13 A. I have not.

14 Q. Would you please outline your educational
15 background?

16 A. I have my Bachelor's in Energy Commerce from
17 Texas Tech University.

18 Q. When did you receive that?

19 A. In May of 2013.

20 Q. So between the time of your graduation and the
21 time you joined Occidental, what did you do for that
22 short period of time?

23 A. I enjoyed the summer.

24 Q. Did you? Okay.

25 Did you meet and work with OXY?

1 A. I did. After graduating, July 1st, I began
2 working with OXY.

3 **Q. In what parts of the country?**

4 A. I started in Wyoming, and then I moved over to
5 the Texas Delaware side, and then I've transferred over,
6 close to about two years ago now, the New Mexico
7 Permian.

8 **Q. Are you familiar with the application that's**
9 **been filed in this case?**

10 A. Yes.

11 **Q. And did you participate in efforts to obtain**
12 **approval of this proposed unit agreement and injection**
13 **project?**

14 A. Yes.

15 MR. FELDEWERT: I would tender Ms. Guest as
16 an expert witness in petroleum land matters.

17 EXAMINER DAWSON: Okay. One thing I want
18 to cover, there are no other parties making appearances
19 in this case. I just want to put that on the record.

20 At this time Ms. Guest will be admitted to
21 the record as an expert in petroleum land management --
22 petroleum land matters.

23 **Q. (BY MR. FELDEWERT) Ms. Guest, there are a**
24 **number of things the company seeks under this**
25 **application, correct?**

1 A. Yes. We are seeking approval of a voluntary
2 unit agreement for the pressure maintenance project in
3 Section 36, Township 18, Range 30 East, Eddy County, New
4 Mexico, and authorization to inject -- sorry --
5 authorization to inject produced water through an
6 existing horizontal well, and authorization for
7 administrative approval of additional injection wells
8 within the unit area without additional hearings or
9 notices. And the fourth thing is authorization to set
10 injection packers more than 100 feet above the uppermost
11 injection perforation.

12 **Q. Okay. And we have three other witnesses**
13 **besides yourself to address these four basic requests**
14 **for relief, right?**

15 A. Yes.

16 **Q. What is the nature of the acreage in Section**
17 **36?**

18 A. Section 36 is made up of three different State
19 of New Mexico oil and gas leases.

20 **Q. And then you also mentioned that you're seeking**
21 **authorization to approve the injection of produced water**
22 **through an existing horizontal well?**

23 A. Yes.

24 **Q. Okay. If I turn to what's been marked as OXY**
25 **Exhibit Number 1, does this contain a C-102 plat that**

1 was filed for the proposed injection well -- I should
2 say that was filed for this proposed injection well at
3 the time that it was producing?

4 A. Yes, it is.

5 Q. And this is -- under Exhibit Number 1, this is
6 the well that you seek to convert to an injection well,
7 correct?

8 A. Correct.

9 Q. All right. And this reflects, does it not,
10 that it's located in the south half of the north half of
11 Section 36?

12 A. That is correct.

13 Q. And what is the proposed injection zone?

14 A. The Benson; Bone Spring.

15 Q. And particularly within that pool, what bench
16 of the Bone Spring Formation do you seek to authorize
17 for injection?

18 A. The 2nd Bone Spring.

19 Q. And that's where this well is completed?

20 A. Yes.

21 Q. Okay. Is there -- is there a communitization
22 currently involved with this well because you have
23 various state leases?

24 A. Yes. There is an existing communitization
25 agreement for the 2H well.

1 Q. Now, in addition to this 2H well in Section 36,
2 are there -- are there other horizontal wells that
3 offset this well within Section 36?

4 A. Yes. There are just no offsetting wells.

5 Q. And if I turn to what's been marked as OXY
6 Exhibit Number 2, does this contain the filed C-102s for
7 the two wells in Section 36 that immediately offset the
8 proposed injection well?

9 A. Yes. These are the two offsetting wells.

10 Q. And are they completed in the same pool?

11 A. Yes, they are.

12 Q. And are they completed in the same interval of
13 the Bone Spring Formation?

14 A. Yes.

15 Q. One offsets the north, and one offsets the
16 south, right?

17 A. That is correct.

18 Q. Which is which?

19 A. The 6H is in the north half-north half, and the
20 3H -- oh -- yes. The 3H is in the north half-south
21 half.

22 Q. Okay. And does OXY expect that these two wells
23 that are identified in Exhibit Number 2 -- this is the
24 proposed injection operation?

25 A. Yes.

1 Q. If I then move to the acreage at issue, if I
2 turn to what's been marked as OXY Exhibit Number 3, is
3 this a map identifying the acreage that the company
4 seeks to both unitize and then utilize as the project
5 area for this pressure maintenance project?

6 A. Yes. These are the lands.

7 Q. And it shows -- I think you said there are
8 three stages involved?

9 A. Yes. These are three different state leases
10 within that Section 36.

11 Q. Okay. Now, you mentioned the company seeks
12 approval of a unit agreement for this acreage, right?

13 A. Yes, we are.

14 Q. If I turn to what's been marked as OXY Exhibit
15 Number 4, is this a copy of the proposed unit agreement
16 for that Section 36 acreage?

17 A. This is.

18 Q. Now, does this agreement follow the state form
19 for a waterflood unit?

20 A. Yes. It follows the state standard form.

21 Q. Okay. But? Go ahead.

22 A. It's been modified to accommodate for the
23 pressure maintenance project.

24 Q. Okay. So let's back up. If you go to the
25 state forms, there is no unit form for a pressure

1 maintenance project?

2 A. There is not.

3 Q. So did you work with the State Land Office to
4 take their waterflood unit form and modify it to
5 accommodate this pressure maintenance project?

6 A. Yes, we did.

7 Q. And if I look at page 4 of this exhibit and I
8 look down there under definitions, Section 2 --

9 A. Uh-huh.

10 Q. -- does this identify, about halfway down, the
11 unitized formation to be subject to this proposed unit
12 agreement?

13 A. Yes. The unitized formation for this project
14 is defined under the Section 2 definitions.

15 Q. And it references the type log, does it not,
16 for the OXY Smokey Bits -- OXY Smokey Bits State #1?

17 A. It does.

18 Q. Let me ask you something: Why is the company
19 seeking approval of a unit agreement for this pressure
20 maintenance project?

21 A. When we convert the 2H well, the
22 communitization agreement will expire, and so the State
23 has requested that OXY put in the waterflood unit
24 agreement. And so we are creating the unit agreement to
25 work along with the State.

1 Q. So this is a request by the State Land Office?

2 A. Yes.

3 Q. To create a unitized area for this pressure
4 maintenance project?

5 A. It is.

6 Q. Using the modifications to this form that we
7 see in Exhibit Number 4?

8 A. Yes, using this modified form.

9 Q. Now, if I then turn to OXY Number 5, is this a
10 letter from the State Land Office providing preliminary
11 approval of this modified unit agreement form that we
12 see in Exhibit Number 4?

13 A. Yes, it is.

14 Q. And as part of the conditions here, does it not
15 reflect on the second page that the State Land Office
16 requests that the Oil Conservation Division approve the
17 unit?

18 A. Yes. It does request that. It requires that
19 approval.

20 Q. Hence, that's the initial request in their
21 application, right?

22 A. That is.

23 Q. Okay. All right. Since this is a voluntary
24 agreement, what's the status of the approval of the unit
25 agreement by the other working interest owners in

1 **Section 36?**

2 A. For this project, all but one of the working
3 interest owners have approved the project. And after
4 this hearing, so next week, I'll be sending out a letter
5 about the unit agreement, along with the unit agreement
6 to all of the working interest owners seeking their
7 ratification.

8 Q. And you hope to reach -- expect to reach
9 agreement with everyone or at least some kind of
10 agreement?

11 A. Yes. The one party we are continuing to
12 communicate with and determine the best way to get him
13 on board with the project.

14 Q. Okay. Now, the other aspect which you seek in
15 this application is authorization for administrative
16 approval of additional injection wells within the
17 project area without providing additional notice, right?

18 A. Correct.

19 Q. Okay. And that would be an exception -- are
20 you familiar with the Division's Rule 24?

21 A. I am.

22 Q. And this would be an exception to Rule 24 that
23 would normally require notice each time you obtain
24 authority for additional injection, right?

25 A. That is correct.

1 Q. So to avoid having to give the same notice
2 again that you did with this application, you're
3 requesting an exception to that in this application
4 itself, right?

5 A. That is what we're doing. Yes.

6 Q. Okay. Therefore, did OXY identify the surface
7 owner of the entire project area rather than just the
8 injection well?

9 A. Yes. We identified for the whole -- the
10 project area.

11 Q. And that's the State Land Office?

12 A. That is the State Land Office.

13 Q. Okay. And then, likewise, did OXY identify
14 each operator or other affected person within a half
15 mile of the proposed project area, not just the
16 injection well?

17 A. Yes. We notified a half mile from the project
18 area.

19 Q. So we had an extended notice area?

20 A. Yes.

21 Q. And if you turn to what's been marked as OXY
22 Exhibit Number 6, does this identify the proposed
23 project area in blue?

24 A. Yes, it does.

25 Q. That would be Section 36?

1 A. Correct.

2 Q. The same acreage you're seeking to unitize?

3 A. Correct.

4 Q. Okay. And then does this identify the interest
5 owners in the areas that you notified within a half-mile
6 of that project area?

7 A. The half mile identifies the offsetting
8 operators. And anywhere that OXY was an operator in
9 that half-mile area, we included all the working
10 interest owners in those wells.

11 Q. Okay. Then if I turn to what's been marked as
12 OXY Exhibit Number 7, is that an affidavit prepared by
13 my office with the attached letter providing notice of
14 this hearing to the parties and the interests that we
15 just discussed?

16 A. It is.

17 Q. And did you then also include within notice of
18 this hearing the working interest owners within your
19 proposed project area?

20 A. Yes.

21 Q. Finally, is OXY Exhibit Number 8 a Notice of
22 Publication of this hearing and of this project directed
23 by name to each of these various parties we just
24 discussed?

25 A. Yes.

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

3 A. Yes, they were.

4 MR. FELDEWERT: Mr. Examiner, I would move
5 the admission into evidence of OXY Exhibits 1 through 8,
6 which includes the notice affidavit and the Affidavit of
7 Publication.

8 EXAMINER DAWSON: At this time Exhibits 1
9 through 8, including the notice affidavit and the
10 Affidavit of Publication, will be admitted to the
11 record.

12 (OXY USA WTP LP Exhibit Numbers 1 through 8
13 are offered and admitted into evidence.)

14 MR. FELDEWERT: And that concludes my
15 examination of this witness.

16 EXAMINER DAWSON: Michael?

17 EXAMINER McMILLAN: Go ahead.

18 CROSS-EXAMINATION

19 BY EXAMINER DAWSON:

20 **Q. I just have one question. So, Ms. Guest, when**
21 **you talked to the State Land Office initially about the**
22 **preliminary approval of this unit, did they -- regarding**
23 **the communitization agreement for that well, is that**
24 **going to be terminated once injection starts with the**
25 **proposed injector well -- injection well, or do you**

1 **know?**

2 A. I don't know that we set a date of when that
3 communitization agreement would expire, but I feel like
4 once the production from the 2H is gone and we begin
5 converting it, that would begin the expiration of the
6 communitization agreement.

7 Q. So I would assume that once injection begins on
8 your OXY Smokey Bits 2H well, that com will be
9 terminated, and the unit will become effective on that
10 date, is what I'm assuming?

11 A. Yeah.

12 Q. That's the only question I have. Thank you.

13 EXAMINER DAWSON: David?

14 EXAMINER BROOKS: No questions.

15 CROSS-EXAMINATION

16 BY EXAMINER McMILLAN:

17 Q. So my only question is your --

18 EXAMINER McMILLAN: The case is going to be
19 continued, right?

20 MR. FELDEWERT: No.

21 EXAMINER McMILLAN: Because the Affidavit
22 of Publication was -- oh, it's 5/1. Okay. That's fine.

23 MR. FELDEWERT: Don't do that to me, Mike.

24 EXAMINER McMILLAN: I don't want to confuse
25 you. I'm good at it.

1 EXAMINER DAWSON: Phil, do you have any
2 questions?

3 CROSS-EXAMINATION

4 BY EXAMINER GOETZE:

5 Q. So based on your Exhibit 6, you made a rigid
6 one-half-mile notification outside of 36 -- you use 36
7 as your guideline?

8 A. Correct.

9 EXAMINER GOETZE: And I guess this would be
10 for the attorney. You say, "We don't get people who
11 want to participate." What are we looking at?

12 MR. FELDEWERT: We have to cross that
13 bridge when we get there. The hope would be that once
14 the Division proves this, that everybody will see the
15 benefit and will jump on board.

16 EXAMINER GOETZE: See the light?

17 MR. FELDEWERT: Like we said, there is one
18 remaining owner who seems to have questions. So --

19 EXAMINER GOETZE: Okay. I've never
20 compulsory pooled an injection order before.

21 MR. FELDEWERT: Well, you're right. We had
22 to do something else.

23 EXAMINER GOETZE: I have no further
24 questions for this witness.

25 EXAMINER DAWSON: Thank you, Ms. Guest.

1 THE WITNESS: Thank you.

2 MR. FELDEWERT: We'll call our next
3 witness.

4 SHUNHUA LIU, Ph.D.,
5 after having been previously sworn under oath, was
6 questioned and testified as follows:

7 DIRECT EXAMINATION

8 BY MR. FELDEWERT:

9 Q. Would you please state your name, identify by
10 whom you're employed and in what capacity?

11 A. I'm Shunhua Liu. I work for Occidental, and
12 currently I'm the director of unconventional simulation
13 and design.

14 Q. And, Dr. Liu, you have worked in what areas of
15 the country here for OXY?

16 A. So currently I'm working for New Mexico and
17 Texas.

18 Q. And do you lead a team that deals with these
19 kinds of projects?

20 A. Yes. Most of our projects are related to
21 unconventional, you know, technical support and enhanced
22 oil recovery or improved recovery.

23 Q. So how long been doing this for OXY?

24 A. For the unconventional part, like four years,
25 but for the other, enhanced oil recovery, I've been more

1 than ten years.

2 Q. Dr. Liu, you have previously testified before
3 this Division as an expert in petroleum reservoir
4 engineering, correct?

5 A. Yes.

6 Q. In fact, didn't you testify back in 2017 with
7 respect to the Cedar Canyon Pressure Maintenance
8 Project?

9 A. Yes.

10 Q. And that's the case, Dr. Liu, am I correct, in
11 which the Division approved injection into the same
12 formation that we seek here in the 2nd Bond Spring?

13 A. Yes.

14 Q. And likewise, just like we have here, did that
15 project area comprise of a single section of land?

16 A. Yes.

17 Q. Section 16?

18 A. Uh-huh.

19 Q. And that was, likewise, state lands, right?

20 A. Yes.

21 MR. FELDEWERT: And, Mr. Examiner, in case
22 you're interested, that was Case 15616, approved by
23 Order R-14322.

24 EXAMINER DAWSON: Thank you.

25 Q. (BY MR. FELDEWERT) Dr. Liu, did you and your

1 team conduct a study of this same injection -- for this
2 particular --

3 A. Yes.

4 Q. And did you and your team also then design this
5 proposed pressure maintenance project?

6 A. Yes.

7 MR. FELDEWERT: I would retender Dr. Liu as
8 an expert witness in petroleum reservoir engineering.

9 EXAMINER DAWSON: Dr. Liu will be accepted
10 as an expert petroleum -- as a witness in petroleum
11 engineering.

12 Q. (BY MR. FELDEWERT) Dr. Liu, would you do me a
13 favor and turn to what's been marked as OXY Exhibit
14 Number 9? And I want to utilize this to discuss a
15 little bit about the project. First off, if we look at
16 the right-hand side of this exhibit, we see an inset.
17 And you've identified on there the proposed injection
18 well?

19 A. Yes. The well label as read is the 2H well.
20 It's the planned water injection well. And then the
21 offset 3H and 6H is the offset producer to gather
22 admittance [sic] from the injection.

23 Q. And that corresponds with the C-102s that I
24 just went through with Ms. Guest?

25 A. Yes.

1 **Q. Tell us a little bit about this project.**

2 A. So the project is just trying to convert this
3 2H well and then inject the water there, because we
4 already observed the pressure depletion significantly in
5 this lease. So we try to reinject the water, maintain
6 the pressure. Hopefully we can change the decline and
7 get the additional oil from the offsets.

8 **Q. Okay. And you have the opportunity to use the**
9 **produced water from several sources in this area?**

10 A. Yes.

11 **Q. Okay. I see your second bullet point says it**
12 **will be pretreated for injection. What does that mean?**

13 A. So the pretreated water is very common in
14 conventional water injection. So when we produce the
15 water from the reservoir, typically you -- you have some
16 carryover of oil. Even if you have separation, you
17 still have some carryover oil in the water. And
18 secondly, you have some -- sometimes you have some
19 solids in the produced water. And then third, sometimes
20 when you expose the water into the surface, you may
21 introduce some bacteria or bugs, you know, in the water.
22 So we don't want to reinject oil or solids or any barrel
23 stuff to go back into our reservoir. So we want to
24 clean the water before we inject.

25 **Q. Now, with respect to the particular reservoir**

1 in this area, the offsetting wells are currently
2 producing, right?

3 A. Yes.

4 Q. And does this still -- does this area still
5 have a primary drive mechanism to some extent?

6 A. Yes. Yes.

7 Q. I know these are horizontals.

8 A. All the horizontals that they -- they were
9 producing just by their primary recovery mechanism.
10 Actually, if you want to state it, solution gas drive.

11 Q. Okay. But this is not yet -- so in your
12 opinion, this is not yet an EOR, enhanced oil recovery?

13 A. It could be in the future, but currently we
14 want to maintain the pressure.

15 Q. Okay. So that's why there is a pressure
16 maintenance project?

17 A. Yes.

18 Q. If I turn to what's been marked as OXY Exhibit
19 Number 10, does this depict the type of impact or flow
20 that you hope to see from your pressure maintenance
21 project?

22 A. Yes.

23 Q. Explain this to us.

24 A. So explicitly showing in this plot, we're
25 injecting the 2H. We are trying to get the pressure

1 response from the injection, trying to get the pressure
2 supported to the 6H and the 3H.

3 **Q. Why will the pressure support -- or the**
4 **injected fluids, why will they maintain more of a**
5 **north-south -- as opposed to east-west?**

6 A. Uh-huh. So the two main reasons for that,
7 why [sic] is the hydraulic fracture, because we
8 hydraulic-fractured all the horizontals. So the
9 hydraulic fracture orientation is more north to south.
10 So it tends to -- you know, we inject. The pressure
11 response should be -- you know, go north and south.

12 Secondly, you have a north-to-south. There
13 are two offsets that are producing, and they act as a
14 pressure sink. So when you inject the water, they
15 support the sink area. You know, this is like a nature
16 on the surface even.

17 **Q. So you expect your positive response to come**
18 **from the offsetting wells just to the north and south?**

19 A. Yes.

20 **Q. Do you expect any migration or any impact east**
21 **or west of the proposed project area?**

22 A. It's very unlikely.

23 **Q. Because of the circumstances you just**
24 **described?**

25 A. Yes.

1 Q. If I turn to what's been marked as OXY Exhibit
2 Number 11, does this provide the Examiners what you hope
3 to gain from implementing this pressure maintenance
4 project now?

5 A. Yes. So -- yes.

6 Q. One of the things I find interesting is you
7 anticipate that if primary production alone continues,
8 you would recover just 5 to 10 percent of the oil in
9 place?

10 A. That's correct.

11 Q. What do expect to -- to what extent do you
12 anticipate improvement on that recovery by starting this
13 pressure maintenance project now?

14 A. That's probably an additional 5 to 15 percent.
15 It depends on how the reservoir responds.

16 Q. And you've had some similar success in other
17 projects like this?

18 A. Yes.

19 Q. When do you anticipate seeing a positive
20 response in OXY's offsetting horizontal wells underlying
21 this state lease?

22 A. It depends on the scenario, but we expect it
23 should be less than two years.

24 Q. Were you involved in determining the
25 appropriate surface-injection pressures?

1 A. Yes.

2 Q. If I turn to what's been marked as OXY Exhibit
3 Number 12, does this accurately identify the surface
4 injection pressure that OXY seeks to utilize for this
5 project?

6 A. Yes.

7 Q. And does this reflect that your calculations
8 are, in essence, based on the .2 psi found in the
9 Division's manual?

10 A. Yes.

11 Q. In your opinion, will this proposed -- does
12 this proposed surface injection pressure pose any threat
13 to the targeted reservoir?

14 A. No.

15 Q. In your opinion, Dr. Liu, will OXY's proposed
16 injection project impair the correlative rights of the
17 mineral owners in the adjacent sections outside this
18 project area?

19 A. No.

20 Q. And will approval of this injection project
21 result in the production of substantially more
22 hydrocarbons from the project area than would otherwise
23 be recovered by primary production methods?

24 A. Yes, that's correct.

25 Q. Dr. Liu, were OXY Exhibits 9 through 12

1 prepared by you or compiled under your direction and
2 supervision?

3 A. Yes.

4 MR. FELDEWERT: Mr. Examiner, I would move
5 admission into evidence of OXY Exhibits 9 through 12.

6 EXAMINER DAWSON: OXY Exhibits 9 through 12
7 will be admitted to the record at this time.

8 (OXY USA WTP LP Exhibit Numbers 9 through
9 12 are offered and admitted into evidence.)

10 MR. FELDEWERT: That completes my
11 examination of this witness.

12 EXAMINER DAWSON: Okay.

13 Phil?

14 EXAMINER GOETZE: One question first: Your
15 other two witnesses, what do they specialize in?

16 MR. FELDEWERT: We have one for the C-108,
17 a drilling engineer, and then we have a geologist.

18 EXAMINER GOETZE: All right.

19 CROSS-EXAMINATION

20 BY EXAMINER GOETZE:

21 Q. Then my question for you, sir: We're looking
22 in this application to add additional wells in the
23 future. At this point what are your feelings of where
24 the section would have additional wells? Are you going
25 to use existing wells, or are you actually going to put

1 **new wells in?**

2 A. That's all on the table, sir.

3 **Q. Ah.**

4 A. Yeah. The thing is that we want to see how
5 fast -- how much -- if it responds. And then we will
6 decide, you know, how -- should we down-spacing, or
7 should we just use existing well. And then, you know --
8 that's why we do the pilot.

9 **Q. Given last time -- are we going to use any**
10 **produced gas in this well?**

11 A. No. We don't have enough gas here.

12 **Q. Okay. So you're going -- not going to have --**
13 **require any type of additional pressure for a gas --**

14 A. No.

15 MR. FELDEWERT: I was hoping I would get to
16 say huff and puff.

17 EXAMINER GOETZE: There's only so many
18 times.

19 **Q. (BY EXAMINER GOETZE) I have one more question.**
20 **We have the tubing in this one as designated and a liner**
21 **that -- I am not familiar with the lining material.**

22 A. Uh-huh.

23 **Q. Could you enlighten me to that, to the C-102 or**
24 **C-108?**

25 A. I don't know. What's the question again?

1 **Q. Tuboscope TK-15, are you familiar with that?**

2 A. Sorry. I'm not.

3 **Q. That'll be for the next person.**

4 A. Uh-huh.

5 **Q. Then I have no more questions. Thank you very**
6 **much.**

7 A. Okay. Thank you.

8 EXAMINER McMILLAN: No. Thank you.

9 EXAMINER DAWSON: I just have a few
10 questions.

11 CROSS-EXAMINATION

12 BY EXAMINER DAWSON:

13 **Q. The OXY Hackberry wells, how far away are**
14 **those?**

15 A. How far away?

16 **Q. Yes.**

17 A. You mean the well spacing?

18 **Q. No. How far from this project are the wells**
19 **located, the Hackberry wells, the source for your**
20 **produced water?**

21 A. Okay. So even the true producer, that will be
22 our source -- part of our source, and then the west of
23 this section, we have -- we have two-and-a-half sections
24 of horizontal wells, 2nd Bone Spring wells. That's west
25 of this section.

1 Q. So the wells that you're getting your produced
2 water from, they're the same formation that you --

3 A. Yes.

4 Q. So the water's compatible?

5 A. Compatible, yes.

6 Q. So there are no issues for swelling or anything
7 like that?

8 A. Yes, yes, yes. We have an exhibit here to
9 show --

10 MR. FELDEWERT: Now, if I may, just so the
11 record is clear, page 19 of the C-108 identifies that
12 they anticipate produced water from the Wolfcamp, Bone
13 Spring and the Queen Formations. And I do have -- the
14 next witness is going to talk about that.

15 EXAMINER DAWSON: Okay.

16 THE WITNESS: Yeah. We have all -- a whole
17 compatible study -- water compatible study for these.

18 Q. (BY EXAMINER DAWSON) And then I was noticing on
19 your Exhibit Number 10, you have the pressure support
20 diagram, and you have the water station there.

21 A. Yeah.

22 Q. Is that where you're going to treat the water?
23 There?

24 A. Yes.

25 Q. Is that going to be an earthen containment?

1 A. Huh?

2 Q. Is it an earthen containment or aboveground
3 containment?

4 A. It's going to be above -- aboveground. Yeah.
5 And we have not built that yet. It depends on this.

6 Q. Do you have an idea -- I don't know if I should
7 ask you or one of the next witnesses -- about how much
8 of those wells are producing currently that you're --

9 A. So I can say for the 2H well, the commercial
10 well, it's counting 40 barrels per day.

11 Q. And the offset wells, do you know how much?

12 A. Offset is higher than that, but it's, you know,
13 less than 100 barrels or 100 barrels-ish.

14 Q. Do you have an estimate of maybe what that
15 100-barrels-per-day offset well -- what it may go to?

16 A. We are thinking, the best scenario, we can
17 double that. Most of our incremental comes from the
18 wedge, because the thing is, this primary drainage is
19 declining very, very fast. We are hoping when you
20 maintain the pressure, you can alter the decline. It
21 won't be like a huge decline. We can have a shallow
22 drain [sic] so you can build a huge wedge, you know, for
23 many, many years.

24 Q. Okay. That's all the questions I have. Thank
25 you, Dr. Liu.

1 A. Thank you.

2 EXAMINER DAWSON: David?

3 EXAMINER BROOKS: No questions.

4 EXAMINER DAWSON: All right. Thank you
5 very much.

6 THE WITNESS: Thanks.

7 MR. FELDEWERT: Call our next witness.

8 EXAMINER DAWSON: Yes, please.

9 JUSTIN MORRIS,
10 after having been previously sworn under oath, was
11 questioned and testified as follows:

12 DIRECT EXAMINATION

13 BY MR. FELDEWERT:

14 **Q. Would you please state your name, identify by**
15 **whom you're employed and in what capacity?**

16 A. Justin Morris, Occidental Oil and Gas. I'm a
17 drilling engineer by trade, and I'm currently a
18 regulatory team lead.

19 **Q. And what are your areas of responsibility in**
20 **terms of geographic areas?**

21 A. Right now I'm a team lead over all of
22 New Mexico Permian Basin.

23 **Q. So does that include Texas and New Mexico --**
24 **does it also include Texas?**

25 A. For my current job role, no, but as a drilling

1 engineer, I did both Texas and New Mexico.

2 Q. Okay. Have you previously testified before the
3 Division?

4 A. I have not.

5 Q. Would you outline your educational background?

6 A. Yes. I have a civil engineering degree from
7 the University of Michigan. I worked for about one year
8 for an oilfield service company in south Texas, and then
9 I've been with OXY for six years mainly as a drilling
10 engineer.

11 Q. Do you participate in the drilling of
12 horizontal wells?

13 A. Yes, sir.

14 Q. And in particular the 2nd Bone Spring --

15 A. Yes, sir.

16 Q. -- that area, so you're familiar with that?

17 A. Yes, sir.

18 Q. Are you familiar with the application filed in
19 this case, including the C-108 application?

20 A. Yes.

21 Q. If I turn to what's been marked as OXY Exhibit
22 Number 13, look at the second page. This is the C-108
23 form, right?

24 A. That's correct.

25 Q. And I see it was certified by Kelley

1 **Montgomery?**

2 A. Yes. She's my direct supervisor.

3 **Q. So you work directly with Ms. Montgomery?**

4 A. Yes.

5 **Q. And did you assist in developing the**

6 **information on the C-108 application with**

7 **Ms. Montgomery?**

8 A. Yes, I did.

9 MR. FELDEWERT: I would tender Mr. Morris
10 as an expert witness in petroleum engineering.

11 EXAMINER DAWSON: Mr. Morris will be
12 accepted as an expert petroleum engineer at this time.

13 **Q. (BY MR. FELDEWERT) Okay. Now, Mr. Morris, I**
14 **want to run through this C-108 application. And you and**
15 **Kelley did a great job of paginating, so that makes it**
16 **easier. Okay? If I start flipping through this**
17 **application and I get over to page 6, that's where we**
18 **start the discussion about the injection well, correct?**

19 A. Yes.

20 **Q. And it provides the data on the 2H, which is to**
21 **be the injection well?**

22 A. That's correct.

23 **Q. And then we see a diagram of that particular**
24 **injection well on page 8?**

25 A. Yes.

1 Q. Would you just outline and discuss briefly the
2 casing and cementing of -- that is proposed -- that
3 exists for this well?

4 A. Sure. So it's pretty typical, a three-string
5 casing design. All of the perforated interval is within
6 the 2nd Bone Spring. The production cement job from the
7 production casing, as measured by a CBL, is about 100
8 feet from surface, which is well within the previous two
9 casing strings. So it has a good cement job. And we
10 propose to put our packer approximately 41 degrees
11 inclination into the curve, which is more than 100 feet
12 above the uppermost perforated interval, which is why
13 we're asking for that exception.

14 Q. Okay. So the third thing that's being
15 requested in this application is an exception to the
16 normal setting location of the packer, right?

17 A. That's correct.

18 Q. Now, explain why you need an exception to
19 that -- the normal provision, which says 100 foot
20 above -- no more than 100 feet above the proposed
21 injection perforation. Why do we need an exception to
22 that?

23 A. So with the deviated wellbore, it's really hard
24 to properly set a packer once you get past about 45
25 degrees into the curve. So, you know, in all our

1 experience, it's much, much easier to come up higher
2 than that, which is more than 100 feet above the --
3 above the uppermost perf.

4 Q. And we show your location here on page 8,
5 right, the proposed location?

6 A. Yes, that's correct.

7 Q. And that location in and of itself is more than
8 100 feet, right?

9 A. Right.

10 Q. But it meets the requirements of not being
11 within the 45-degree or greater angle?

12 A. Right.

13 Q. In your opinion, is that an efficient and
14 proper location to set the packer for this particular
15 type of an injection well?

16 A. Yes, it is.

17 Q. Okay. Now, the Examiner -- Examiner Goetze had
18 some questions about your tubing. Tell us about that.

19 A. It's a pretty typical standard 2-7/8 tubing.
20 You know, we can -- we can send you the specifications
21 on that if you'd like to see that. I didn't include
22 them in the application.

23 Q. Okay. Now, with respect to this injection
24 well, how does OXY anticipate monitoring this well to
25 ensure the integrity of the wellbore throughout the

1 **injection process?**

2 A. So the tubing casing annulus will be filled
3 with an inert fluid, and we're going to have surface
4 gauges installed so that we'll be able to monitor the
5 pressures real time from anywhere. So we can detect --
6 we'll be monitoring the pressures within the tubing and
7 the annulus, so we can detect any leaks in the wellbore.

8 Q. Okay. In your opinion, is this well designed
9 to safely and efficiently inject produced water into the
10 Bone Spring Formation for this proposed pressure
11 maintenance project?

12 A. Yes, it is.

13 Q. All right. Let's turn to the area of review.
14 Now, that starts on page -- we see the map on page 11,
15 correct -- I'm sorry -- page 10.

16 A. Page 10, that's correct.

17 Q. Now, you show, again, the proposed injection
18 well in red in the middle of this exhibit?

19 A. Yes.

20 Q. And then is that red, kind of oval, is that the
21 two-mile radius?

22 A. Yes, that's correct.

23 Q. Okay. And did you and Ms. Montgomery gather
24 the data for all the wells that penetrate the Bone
25 Spring Formation within that --

1 A. Yes, we did.

2 Q. If I turn to pages -- starting on page 12, does
3 this provide a tabulation of the data for all of those
4 wells?

5 A. Yes.

6 Q. How did you, for example, determine the top of
7 the cement for these active wells?

8 A. So for any of them that weren't circulated to
9 surface, many of them had a CBL on file or a temperature
10 survey, and there were some that were just calculated.
11 So we both took the calculated value that was on file at
12 the OCD and then also did our own calculation with a
13 very conservative yield of 1.1/8 just to determine like
14 a worst-case scenario. And still in both of those
15 cases, we had sufficient cement on all of those
16 wellbores.

17 Q. Okay. In your opinion, are these wells
18 sufficiently cased and cemented to prevent fluid
19 migration out of the proposed injection zone?

20 A. Yes, they are.

21 Q. Did you find any plugged-and-abandoned wells
22 within the area of review?

23 A. Yes. There were two plugged-and-abandoned
24 wells.

25 Q. If I turn over to page 15, 16, does that

1 provide the diagrams for the two wells that you found
2 that were plugged and abandoned within the area of
3 review?

4 A. Yes, that's correct.

5 Q. Have you reviewed both of these diagrams?

6 A. Yes, sir.

7 Q. Do they raise any concerns?

8 A. No, they do not.

9 Q. In your opinion, are these wells sufficiently
10 plugged and cemented to prevent fluid migration out of
11 the proposed injection zone?

12 A. Yes, they are.

13 Q. If I then flip over to page 19 -- I'm going to
14 skip the geologic portion. If I flip over to 19, this
15 provides the requested -- provides the anticipated
16 volumes [sic] but also, more important, the
17 surface-injection pressure?

18 A. That's correct.

19 Q. Does OXY intend to install pressure-control
20 devices to ensure that the well remains within the
21 proposed maximum surface-injection pressure?

22 A. Yes, we will.

23 Q. And how will those be designed and monitored?

24 A. They'll be monitored in real time so that if
25 there is any sort of issue, we can immediately be

1 alerted and can shut down injection if we need to.

2 Q. Okay. Now, page 19, also, under paragraph four
3 notes the sources of -- potential sources of the
4 injection water, right?

5 A. That's correct.

6 Q. And did the company then do a compatibility
7 analysis of these various water sources to ensure that
8 they would be amenable to this type of project?

9 A. Yes, we did.

10 Q. And those studies start on page 20?

11 A. Yes, that's correct.

12 Q. And what's the conclusion of all these studies?

13 A. The studies did not find any issues at all with
14 water comparability.

15 Q. And do you agree with that conclusion?

16 A. Yes, I do.

17 Q. In your opinion, Mr. Morris, does this
18 injection project pose a threat to the public health or
19 the environment?

20 A. No, it does not.

21 Q. And in your opinion, will the approval of this
22 injection project promote the efficient recovery of the
23 oil underlying these state lands and thereby prevent
24 waste?

25 A. Yes.

1 Q. Were OXY Exhibits -- I should say, was OXY
2 Exhibit 13 prepared by you or under your direction and
3 supervision by your team?

4 A. Yes, it was.

5 MR. FELDEWERT: Mr. Examiner, I would move
6 admission into evidence of OXY Exhibit 13, which is the
7 C-108 application.

8 EXAMINER DAWSON: OXY's Exhibit 13, which
9 is the C-108, will be admitted into the record at this
10 time.

11 (OXY USA WTP LP Exhibit Number 13 is
12 offered and admitted into evidence.)

13 MR. FELDEWERT: That concludes my
14 examination of this witness.

15 CROSS-EXAMINATION

16 BY EXAMINER GOETZE:

17 Q. The TK-15 coating, what is that? Is that a
18 plasticized coating or --

19 A. I don't believe so. I'm not very familiar with
20 this tubing -- with that TK-15 coating, rather. But
21 like I said, we can send you specifications.

22 Q. Well, let's go ahead. I mean, the last project
23 was uncoated, and I understood that because it was a
24 variety of different gas fluids being used. So just for
25 clarity sake, for us in the future, provide us the

1 specifications so we can know what it is.

2 A. Okay. Sure. Yeah.

3 Q. We like to have the tubing lined so that we can
4 make it live a little bit longer.

5 A. Right.

6 Q. And, again, based on Dr. Liu's conversation,
7 we're not putting any gas in. Does this have any
8 history of gas lift valves on this tubing?

9 A. No. No.

10 Q. Again, looking at your other project, we're
11 trying to figure out what's the best way to get there.

12 A. Right.

13 Q. We also, historically, we will give you the
14 option of placing your packer based upon where you are
15 in the 2nd Bone Spring. So we'll give you a greater
16 area to work with. So if you do run into problems in
17 the curve, you will have the flexibility to set it.

18 And seeing how this is a little more
19 simpler than the last project, we would probably also
20 ask that this be monitored by a SCADA System.

21 And other than that, it's a good package.

22 Thank you.

23 A. Thank you.

24 EXAMINER McMILLAN: I don't have any
25 questions.

1 CROSS-EXAMINATION

2 BY EXAMINER DAWSON:

3 Q. Do you know when the OXY Smokey Bits #2H was
4 drilled initially?

5 A. Off the top of my head -- I don't want to
6 guess.

7 MR. FELDEWERT: Mr. Examiner, I think
8 Exhibit Number 1 is the C-102, and it's filed as an
9 as-drilled report. So I think it would appear that that
10 would be around the time when it was drilled.

11 EXAMINER DAWSON: So maybe somewhere around
12 2012?

13 THE WITNESS: Yeah. That sounds right.
14 Around there, yeah.

15 Q. (BY EXAMINER DAWSON) Okay. Do you anticipate
16 having to use any pressure water for makeup water? It's
17 all going to be --

18 A. It's all going to be produced water.

19 Q. No fresh water in the project?

20 A. That's right. It's an entirely closed-looped
21 system, so any water produced from those offsetting
22 wells will be reinjected right into this well. So it's
23 all just produced water.

24 Q. That's all the questions I have. Thank you.

25 EXAMINER DAWSON: David?

1 EXAMINER BROOKS: No questions.

2 MR. FELDEWERT: Call our next witness.

3 EXAMINER DAWSON: Thank you.

4 THE WITNESS: Thank you.

5 MICHAEL HARTY,

6 after having been previously sworn under oath, was

7 questioned and testified as follows:

8 DIRECT EXAMINATION

9 BY MR. FELDEWERT:

10 Q. Mr. Harty, you know what question I'm going to
11 ask?

12 A. Yes.

13 Q. Go.

14 A. Hi. My name is Michael Harty. I'm a geologist
15 employed by Occidental Oil and Gas Corporation.

16 Q. How long have you been with OXY?

17 A. About one year.

18 Q. And have your responsibilities included the
19 Permian Basin of New Mexico?

20 A. Yes.

21 Q. Have you previously testified before this
22 Division?

23 A. No.

24 Q. Would you please outline your educational
25 background?

1 A. I have a bachelor's degree in geological
2 engineering from Colorado School of Mines that I
3 received in 2015. And I have a master's degree in
4 geology also from the Colorado School of Mines that I
5 received in 2017.

6 Q. So you started your work with OXY roughly about
7 the time you got your master's?

8 A. About that time, yes.

9 Q. Are you a member of any professional
10 affiliations or associations?

11 A. I'm a member of the American Association of
12 Petroleum Geologists and a member of the Society of
13 Exploration Geophysicists.

14 Q. How long have you been a member of the American
15 Association of Petroleum Geologists?

16 A. For about four years.

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

19 A. Yes.

20 Q. And you've conducted a geologic study of the
21 proposed injection zone underlying the acreage to be
22 utilized in this project area?

23 A. Yes.

24 Q. Mr. Harty, if I turn to Exhibit 13 and I use
25 those nice paginations and I go to page 24, this is the

1 geologic statement?

2 A. Yes.

3 Q. Is that your signature there at the bottom?

4 A. Yes.

5 Q. And then likewise do you see your signature as
6 the geologist over on page 29?

7 A. Yes.

8 MR. FELDEWERT: Mr. Examiner, I would
9 tender Mr. Harty as an expert witness in petroleum
10 geology.

11 EXAMINER DAWSON: Mr. Harty will be
12 admitted as an expert witness in petroleum geology at
13 this time.

14 Q. (BY MR. FELDEWERT) Mr. Harty, you're aware that
15 the company seeks here approval of an area for purposes
16 of a unit, right?

17 A. (Indicating.)

18 Q. And approval of that same area as the project
19 area for this pressure maintenance project?

20 A. Yes.

21 Q. In your opinion, does the proposed injection
22 interval in the injection project, does it extend across
23 the acreage that OXY seeks to include within the unit?

24 A. Yes.

25 Q. If I turn to what's been marked as OXY Exhibit

1 **Number 14, is that a structure map that you have created**
2 **for this area?**

3 A. Yes.

4 Q. And the unit agreement actually references a
5 type log with the Smokey State #1. Are you aware of
6 that?

7 A. Yes.

8 Q. Did you utilize that type log to create this
9 structure map?

10 A. Yes.

11 Q. Okay. And did you use other data points?

12 A. Yes. All of the black dots on this map are
13 wells that penetrated -- actually, they're all of the
14 wells that penetrated the 2nd Bone Spring.

15 Q. You used all the wells?

16 A. All the wells that penetrated the 2nd Bone
17 Spring.

18 Q. What do you observe about the structure in this
19 particular area?

20 A. It has a -- there is a fairly consistent 2- to
21 3-degree dip to the southwest.

22 Q. We're focusing particularly on Section 36. Do
23 you observe any pinch-outs or other geologic impediments
24 that would prevent this acreage from being efficiently
25 developed as a project area?

1 A. No.

2 Q. And harkening back to your statement that you
3 made in the C-108 on page 29, are there any faults, in
4 your opinion, that could act as conduits for migration
5 of fluid out of the proposed injection zone?

6 A. No.

7 Q. Let me step back. Did you utilize some of
8 these wells, then, for a cross section?

9 A. Yes. The cross section, A to A prime, runs
10 north to south, from Section 25 across Section 36 and
11 into Section 1.

12 Q. And which well is the Smokey Bits #1H that's
13 referenced in the unit?

14 A. The Smokey -- the Smokey State #1 is the second
15 well from A, A.

16 Q. Okay. Moving north to south, the second black
17 dot?

18 A. Yes.

19 Q. If I turn to what's been marked as OXY Exhibit
20 Number 15, is this the cross section that corresponds
21 with the A to A prime on Exhibit 14?

22 A. Yes.

23 Q. Would you run through this with us, please, and
24 identify the structure tops and any interval that you
25 anticipate to become the source of the injection fluids?

1 A. Yes. This is a stratigraphic cross section
2 that's hung on the top of the 2nd Bone Spring Sandstone
3 that's marked by the orange line at the top of the
4 highlighted zone. The cross section runs north to
5 south, like we had described, from A to A prime with the
6 four vertical wells, with the gamma ray in the left
7 track, measured depth in the center track and
8 resistivity and porosity in the next two tracks. It
9 also shows the four existing horizontal wells in Section
10 36 as the black lines -- black lines with the black
11 circles, and the Smokey Bits 2H is identified as the
12 blue well.

13 **Q. What's the significance of the yellow shading?**

14 A. The yellow shading represents the reservoir
15 interval in the 2nd Bone Spring Formation.

16 **Q. Is that where you expect the injected fluids to**
17 **enter?**

18 A. Yes.

19 **Q. Okay. And have you confirmed that the**
20 **offsetting producing wells for the 2H are completed in**
21 **this same correlative zone?**

22 A. Yes, as demonstrated by this cross section.

23 **Q. Okay. Then if I turn to what's been marked as**
24 **OXY Exhibit Number 16, is this the type log that is**
25 **actually referenced in the unit agreement?**

1 A. Yes.

2 Q. Would you please explain -- now, we can go back
3 to it, but on page 24, you made a number of opinions
4 about the confining nature of this zone, correct?

5 A. Yes.

6 Q. Is that correct?

7 A. Yes, that's correct.

8 Q. Would you explain how this type log supports
9 the opinions that you expressed on that page about the
10 confining nature of this zone?

11 A. Yes. It's confined in two ways, most
12 importantly by the 2nd Bone Spring Limestone, which is
13 above the 2nd Bone Spring Sandstone, and the 3rd Bone
14 Spring Limestone, which is below the 2nd Bone Spring
15 Sandstone. So the injection interval is bound above and
16 below by limestone -- limestone -- lime mudstones are
17 low porosity and low permeability that will serve to
18 confine any injected water in the 2nd Bone Spring
19 Sandstone.

20 Q. Okay. Now, just so I have -- I see a number of
21 lines going from the log on the left to a more detailed
22 view on the right?

23 A. Yes.

24 Q. Would you walk me through that?

25 A. Yeah. The log on the left -- all of the

1 logs -- the raw -- raw log data, and on the inset on the
2 right is a petrophysical interpretation showing -- the
3 cutouts are identifying the 2nd Bone Spring Sandstone,
4 which is marked by orange only in the third track, and
5 the limestone intervals -- if you look in the -- the
6 gamma ray in the first track, the depth in the second
7 track. The formations are identified in the third
8 track. Then there is the resistivity track. And the
9 fourth track has a petrophysical interpretation. You
10 can see the sand is identified by yellow, and the lime
11 is identified by blue. And within the injection
12 interval, the 2nd Bone Spring Sandstone has a hyper
13 portion of sand, and the intervals above and below have
14 a hyper portion of limestone.

15 Q. Okay. And in your opinion, will these
16 limestones provide a sufficient barrier to ensure that
17 the injected fluid remains within the targeted 2nd Bone
18 Spring Sandstone?

19 A. Yes.

20 Q. Okay. Now, if I look at Exhibit Number 13,
21 which is the C-102 -- or C-108, and I go to page 24, you
22 talk about fresh water, right?

23 A. Yes.

24 Q. Okay. It indicates you found one active
25 freshwater well within a mile?

1 A. Yes.

2 Q. If I turn to page 25, 26, 27, does that provide
3 a water analysis of that -- in that freshwater well?

4 A. Yes, it does.

5 Q. What is the -- have you also examined the
6 bottom depth of the groundwater in this area? And I'm
7 talking about the bottom depth.

8 A. Right. The deepest groundwater well in the
9 surrounding townships is 630 feet deep.

10 Q. With that in mind, then, if I go back to the
11 last exhibit, Exhibit Number 16, would you explain to us
12 the -- how this type log supports your opinion on page
13 24, that there are impermeable barriers between this
14 injection zone and that lowest source of fresh water?

15 A. Yeah. The deep -- as I mentioned, the deepest
16 groundwater well is 630 feet deep, and the top of
17 impermeable salt in the well is about -- right around
18 700 feet. And there is over 1,000 feet of impermeable
19 salt and anhydrite separating the injection zone from
20 any sources of drinking water or fresh water.

21 Q. In your opinion, does this proposed injection
22 project pose any threat to underground water sources?

23 A. No.

24 Q. And in your opinion, will this proposed
25 injection project have any negative impact on the

1 correlative rights of mineral owners either above or
2 below your proposed injection zone?

3 A. No.

4 Q. In your opinion, will the granting of this
5 application be in the best interest of conservation,
6 prevention of waste and the protection of correlative
7 rights?

8 A. Yes.

9 Q. Were OXY Exhibits 14 through 16 prepared by you
10 or compiled under your direction and supervision?

11 A. Yes.

12 MR. FELDEWERT: Mr. Examiner, I would move
13 into evidence OXY Exhibits 14 through 16.

14 EXAMINER DAWSON: OXY Exhibits 14 through
15 16 will be admitted to the record at this time.

16 (OXY USA WTP LP Exhibit Numbers 14 through
17 16 are offered and admitted into evidence.)

18 MR. FELDEWERT: That concludes my
19 examination of this witness.

20 EXAMINER DAWSON: Phil?

21 EXAMINER GOETZE: I don't have any
22 questions for this witness. Thank you.

23 EXAMINER DAWSON: Michael?

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1 CROSS-EXAMINATION

2 BY EXAMINER McMILLAN:

3 Q. How much porosity -- porosity and what's the
4 permeability of the injection zone? It's still
5 considered -- go ahead.

6 A. Okay. If you turn to the Exhibit 15, the cross
7 section, within the injection zone, the porosity ranges
8 between 6 and 12 percent.

9 Q. What about the perm?

10 A. The permeability, I don't know the exact
11 numbers. We don't have any measurements in this area.

12 DR. LIU: For the permeability, we do have
13 some. You know, based on production, we construct
14 simulation, and we do have some -- of the permeability
15 of the sand zone. It's low, but we think we can inject.
16 It's --

17 EXAMINER DAWSON: It's not --

18 THE WITNESS: Microdarcy range.

19 DR. LIU: We did a study for that. It's
20 not a core analysis -- it's not a core measurement, but
21 we did a simulation study.

22 EXAMINER DAWSON: Thanks.

23 Would OXY -- could they come back in like
24 three years and give us a report on how this project is
25 working, on their incremental oil that's been produced

1 from this project?

2 MR. FELDEWERT: The question is could we?

3 EXAMINER DAWSON: Yes.

4 EXAMINER GOETZE: I believe -- did we not
5 ask for a two-year?

6 EXAMINER DAWSON: Two-year?

7 MR. FELDEWERT: Did not request one, no.

8 EXAMINER GOETZE: Okay. On the other
9 project, they did pilot it and give it two years to come
10 back.

11 MR. FELDEWERT: Yes, sir.

12 EXAMINER GOETZE: Seeing that you also have
13 asked for the opportunity for a PMX, approval of
14 expansion of this pressure maintenance through
15 administrative methods --

16 MR. FELDEWERT: I get lost in the --

17 EXAMINER GOETZE: Come on. You've been
18 doing this for years. You can pick it up.

19 I guess the question goes back to your
20 clients as to what kind of window of operation as a
21 pilot do you want to work with.

22 MR. FELDEWERT: So you're anticipating
23 you'd like the company to come back and report?

24 EXAMINER GOETZE: Well, on the other, we
25 asked for them to come back in two years and give us a

1 status, and they have the ability to extend the project.
2 Is that feasible with this, or is this something that is
3 not considered or --

4 MR. FELDEWERT: Well, let me step back.
5 Here's my concern. And that is: It's one aspect to
6 come back and report on a project. It's another
7 question about whether there is going to be some sunset
8 on the approval. All right? Because we're going to be
9 investing a lot of money to put this project in place.
10 So I think they need some assurance that, you know, the
11 project is not going to be eliminated by the Division a
12 year or two from now.

13 EXAMINER GOETZE: We don't do ipso factos
14 on -- we give you the chance to show --

15 MR. FELDEWERT: Okay.

16 EXAMINER GOETZE: But I think it's one of
17 those things where it's a new M.P. project, and we would
18 like to know how it's coming along.

19 MR. FELDEWERT: I understand. So if I may
20 confer.

21 EXAMINER GOETZE: Can we have a break?

22 EXAMINER DAWSON: Yeah. We'll do a
23 ten-minute break, and you guys can discuss it.

24 MR. FELDEWERT: We won't need that long.

25 EXAMINER DAWSON: So we'll be on break for

1 five minutes.

2 (Recess, 3:38 p.m. to 3:45 p.m.)

3 EXAMINER DAWSON: Okay. Back on the record
4 for Case Number 16159.

5 MR. FELDEWERT: Mr. Examiner, I conferred
6 with the client, and since this is a water project as
7 opposed to gas, we ask that the company be given a
8 three-year period of time in which to come back and
9 report on the results. I know the other order said two
10 years. If I understand it, the difference in the
11 results dealing with gas and now water and it works a
12 little slower, as I understand it, so if we can have
13 three years.

14 EXAMINER GOETZE: That would be fine. And
15 also realizing this is a commitment with a State Land
16 Office agreement, and it won't have the same limitations
17 that if you don't show up, we'll turn it off. At this
18 point, we'd just like to go ahead and within three years
19 get a summary of what's happened.

20 MR. FELDEWERT: Sure.

21 EXAMINER GOETZE: That's all I have.

22 EXAMINER DAWSON: That would be from the
23 initial day of injection?

24 EXAMINER GOETZE: (Indicating.)

25 EXAMINER DAWSON: Okay.

1 EXAMINER BROOKS: Okay. You've got one guy
2 up there that is not committed, is that correct, one
3 interest?

4 MR. FELDEWERT: Yes.

5 EXAMINER BROOKS: Since this is not -- not
6 under either compulsory pooling or involuntary
7 unitization, you've got to get that interest committed
8 to finish forming this unit; is that correct?

9 MR. FELDEWERT: Yes, sir.

10 EXAMINER BROOKS: Okay. That's what I
11 thought. I just wanted to make sure.

12 MR. FELDEWERT: Like I said, we think with
13 the Division's order and with the presentation and where
14 things are at now, we can bring this person on board.

15 EXAMINER BROOKS: Like Phillip, I haven't
16 done a lot of compulsory unitization injections.

17 EXAMINER GOETZE: But it would be like
18 Holland & Hart to take the frontier of -- a new side of
19 legal counsel.

20 MR. FELDEWERT: That concludes our
21 presentation.

22 EXAMINER DAWSON: With that, we will take
23 Case Number 16159 -- we'll take it under advisement.

24 MR. FELDEWERT: Thank you.

25 EXAMINER DAWSON: Thank you very much.

1 Thanks for coming.

2 (Case Number 16159 concludes, 3:47 p.m.)

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1 STATE OF NEW MEXICO
2 COUNTY OF BERNALILLO

3

4 CERTIFICATE OF COURT REPORTER

5 I, MARY C. HANKINS, Certified Court
6 Reporter, New Mexico Certified Court Reporter No. 20,
7 and Registered Professional Reporter, do hereby certify
8 that I reported the foregoing proceedings in
9 stenographic shorthand and that the foregoing pages are
10 a true and correct transcript of those proceedings that
11 were reduced to printed form by me to the best of my
12 ability.

13 I FURTHER CERTIFY that the Reporter's
14 Record of the proceedings truly and accurately reflects
15 the exhibits, if any, offered by the respective parties.

16 I FURTHER CERTIFY that I am neither
17 employed by nor related to any of the parties or
18 attorneys in this case and that I have no interest in
19 the final disposition of this case.

20 DATED THIS 19th day of June 2018.

21

22

23 MARY C. HANKINS, CCR, RPR
24 Certified Court Reporter
New Mexico CCR No. 20
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