

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

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

7 APPLICATION OF WISHBONE TEXAS OPERATING CASE NO. 20406
8 COMPANY, LLC FOR REINSTATEMENT OF
9 INJECTION WELL PERMITS TO ENHANCE OIL
10 RECOVERY IN DENTON DEVONIAN WATERFLOOD
11 PROJECT, LEA COUNTY, NEW MEXICO.

12

13 REPORTER'S TRANSCRIPT OF PROCEEDINGS

14 EXAMINER HEARING

15 April 4, 2019

16 Santa Fe, New Mexico

17 BEFORE: PHILLIP GOETZE, CHIEF EXAMINER
18 TERRY WARNELL, TECHNICAL EXAMINER
19 MICHAEL McMILLAN, TECHNICAL EXAMINER
20 DAVID K. BROOKS, LEGAL EXAMINER

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23 This matter came on for hearing before the
24 New Mexico Oil Conservation Division, Phillip Goetze,
25 Chief Examiner; Terry Warnell and Michael McMillan,
26 Technical Examiners; and David K. Brooks, Legal
27 Examiner, on Thursday, April 4, 2019, at the New Mexico
28 Energy, Minerals and Natural Resources Department,
29 Wendell Chino Building, 1220 South St. Francis Drive,
30 Porter Hall, Room 102, Santa Fe, New Mexico.

31

32 REPORTED BY: Mary C. Hankins, CCR, RPR
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APPEARANCES

FOR APPLICANT WISHBONE TEXAS OPERATING COMPANY, LLC:

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INDEX

	PAGE
Case Number 20406 Called	4
Wishbone Texas Operating Company, LLC's Case-in-Chief:	
Witnesses:	
Brian Wood:	
Direct Examination by Ms. Callahan	4
Cross-Examination by Examiner Goetze	14
Cory Walk:	
Direct Examination by Ms. Callahan	16
H. Craig Clark:	
Direct Examination by Ms. Callahan	21
Cross-Examination by Examiner Goetze	33, 41
Cross-Examination by Examiner McMillan	38
Proceedings Conclude	45
Certificate of Court Reporter	46

1
2
3
4
5
6
7
8
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10
11
12
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14
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16
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EXHIBITS OFFERED AND ADMITTED

PAGE

Wishbone Texas Operating Company, LLC Exhibit
Numbers 1 through 7

15

Wishbone Texas Operating Company, LLC Exhibit
Numbers 8 through 12

33

1 (3:20 p.m.)

2 EXAMINER GOETZE: Okay. Let's go back on
3 the record.

4 Call Case Number 20406, application of
5 Wishbone Texas Operating Company, LLC for reinstatement
6 of injection well permits to enhance oil recovery in
7 Denton Devonian Water Flood Project, Lea County, New
8 Mexico.

9 Call for appearances.

10 MS. CALLAHAN: Candace Callahan on behalf
11 of Wishbone Texas Operating Company, LLC. I have three
12 witnesses.

13 EXAMINER GOETZE: No other appearances?
14 Will the witnesses please stand and be
15 sworn in by the court reporter, please?

16 (Mr. Wood, Mr. Walk and Mr. Clark sworn.)

17 EXAMINER GOETZE: Please proceed.

18 MS. CALLAHAN: I'd like to call Brian Wood.

19 BRIAN WOOD,

20 after having been first duly sworn under oath, was
21 questioned and testified as follows:

22 DIRECT EXAMINATION

23 BY MS. CALLAHAN:

24 Q. Mr. Wood, will you please for the record state
25 your name, identify by whom you're employed and in what

1 capacity?

2 A. I'm Brian Wood. I'm president of Permits West.
3 I live in Santa Fe.

4 Q. And your relationship with Wishbone is as a
5 regulator consultant?

6 A. That is correct.

7 Q. Okay. And were you involved in the preparation
8 of the C-108, which is filed in this case?

9 A. Yes.

10 Q. All right. And have you previously testified
11 before the Division --

12 A. Yes, I have.

13 Q. -- as a regulatory consultant?

14 Were your credentials as an expert accepted
15 as a matter of record?

16 A. Yes.

17 Q. And does your area of expertise include
18 regulatory matters pertinent to the Permian Basin of New
19 Mexico?

20 A. Yes.

21 Q. Are you familiar with the application filed by
22 Wishbone in this case?

23 A. Yes, I am.

24 Q. Are you familiar with the status of the lands
25 which are the subject of this case?

1 A. Yes, I am.

2 Q. And you prepared the C-108 in conjunction with
3 Mr. Clark, who will be testifying later as Wishbone's
4 engineer; is that correct?

5 A. That is correct.

6 MS. CALLAHAN: I tender Mr. Wood as an
7 expert in petroleum regulatory matters.

8 EXAMINER GOETZE: He is so qualified.

9 Q. (BY MS. CALLAHAN) Mr. Wood, would you please
10 summarize for the examiner what Wishbone seeks in this
11 case?

12 A. We're seeking to have a previously approved
13 water flood reinstated.

14 Q. And how many wells are proposed for injection?

15 A. Two existing water injection wells have been
16 shut in for a number of years.

17 Q. And could you identify for the record, please,
18 what those wells are?

19 A. There is the T.D. Pope 36 #10. The API number
20 is 30-025-39999. The second well is the W.T. Mann,
21 M-A-N-N, A 2. The API number is 30-025-05204.

22 Q. Okay. And the status of those wells?

23 A. They are currently shut in.

24 Q. Shut in. Okay.

25 Let's look at Exhibit 1. Is this the

1 Division's order initially approving Denton Devonian
2 Cooperative Water Flood Project?

3 A. Yes, it is.

4 Q. Would you please give the examiner a brief
5 summary of the project and its current status?

6 A. It was originally approved in 2011 for Celero
7 Energy. Subsequently, the water flood was taken over by
8 Resolute Energy, and then that was the year 2013. In
9 the year 2017, the field was taken over by Wishbone.

10 Q. So the injection authority was previously
11 approved, but it expired. Was that due to the
12 inactivity of the previous operator?

13 A. Yes, that's correct.

14 Q. Okay. And when was the last injection?

15 A. The last injection was in the Mann well in
16 November of 2013.

17 Q. All right. Is the Denton Devonian Water Flood
18 Project a unitized project?

19 A. No. It's a cooperative, nonunitized project.

20 Q. All right. Let's look at Exhibit 2. What is
21 Exhibit 2?

22 A. It shows the project area. It's comprised of
23 three different fee leases.

24 Q. All right. Is the project area identified by
25 an orange outline?

1 A. Yes, somewhat resembling the letter L.

2 Q. Okay. And the leases involved in the project
3 are reflected in this?

4 A. Yes. They're all fee leases.

5 Q. All right. And on the second page of Exhibit
6 2, do we see the description of the lands within the
7 project area?

8 A. That is correct. There are three different
9 leases, the Buckley lease, the Mann lease and the Pope
10 lease. In total, they comprise 320 acres.

11 Q. All right. Let's go to Exhibit 3. What is
12 Exhibit 3?

13 A. It shows the ownership by tracts.

14 Q. The ownership of the owners who were given
15 notice of this --

16 A. That is correct.

17 Q. -- within the one half-mile area of review?

18 A. Right.

19 Q. Okay. And it's listed -- the ownership is
20 listed by tract; is it not?

21 A. Yes.

22 Q. Okay. Do you know the basis of the ownership
23 determination? Was that a takeoff based on record
24 title?

25 A. Mr. Clark can address that.

1 Q. Okay. Let's turn to Exhibit 4. What does this
2 show?

3 A. This shows the working interest in each of the
4 three leases. The Wishbone has a 90.6 percent working
5 interest in the Buckley lease, a 98.3 percent interest
6 in the Pope lease, and a 100 percent interest in the
7 Mann lease.

8 Q. All right. Are all these leases still
9 affected?

10 A. Yes.

11 Q. And is that because there's been continuous
12 production from the leases?

13 A. That is correct.

14 Q. And all three leases are fee leases, I think
15 you said?

16 A. That is right.

17 Q. Okay. Who are the surface owners?

18 A. One surface owner is a -- is Resolute Natural
19 Resources from whom Wishbone acquired the -- the project
20 area from. And the other is a woman by the name of
21 Donna Johnson. She's a surface owner of the Pope well.
22 Resolute is the owner of the Mann well.

23 Q. Actually, are you aware that Wishbone acquired
24 both the surface and the working interest in this?

25 A. Yes, I am.

1 Q. Okay. It's just that the record title still
2 shows Resolute?

3 A. Yes. I checked this morning on the assessor's
4 website, and it still shows Resolute.

5 Q. That assignment just hasn't been recorded?

6 A. Correct.

7 Q. Okay. And is the agreement creating the
8 cooperative project still in effect?

9 A. Yes, it is.

10 Q. And that's because there's been continuous
11 production to satisfy the terms of that agreement?

12 A. Correct.

13 Q. Is Wishbone the current operator of the unit?

14 A. Yes, it is.

15 Q. And let's see. Let's skip over to Exhibit 7.
16 Is this the C-108 that Mr. Clark and you both prepared?

17 A. Yes.

18 Q. Okay. Let's look at Exhibit B within this
19 C-108, if we can dig through this. I guess we might as
20 well -- let's look at Exhibit A to the C-108, and that's
21 a plat locating the two wells at issue here; is that
22 correct?

23 A. Yes. The typographical map shows the location
24 of the two wells, followed by their C-102 forms.

25 Q. Okay. And now we can look at Exhibit B. Can

1 you tell us what this is?

2 A. Yes. This represents water wells, oil and gas
3 wells, plugged-and-abandoned wells in Section 36,
4 adjacent corners of the sections. The water wells are
5 indicated by the letter W and a circle. There are quite
6 a few water wells out there because the project area is
7 in the Ogallala Aquifer area.

8 Q. Okay. Do you anticipate that to be a problem?

9 A. No. The deepest water well within a one-mile
10 radius is 270 feet. Surface casing on both wells will
11 run either 320 feet or 340 feet.

12 Q. All right. And then you give the data in table
13 form --

14 A. Yes.

15 Q. -- which is reflected; is that right?

16 A. Yes.

17 Q. Okay. If we move on to Exhibit C. I guess
18 Exhibit C is the data?

19 A. Right.

20 Q. Yeah.

21 And let's see. How many
22 plugged-and-abandoned wells in the list actually
23 penetrated the Devonian?

24 A. There were a total of six within a
25 one-half-mile radius, kind of combined radii, that

1 penetrated the Devonian, which have subsequently been
2 plugged and abandoned.

3 Q. Okay. And did you determine that they were all
4 properly completed or plugged and abandoned?

5 A. Yes.

6 Q. And if we look at Exhibit G in the C-108, what
7 does this exhibit tell us?

8 A. This is a table of what I call the penetrators
9 and other deeper wells within the one-half-mile radius
10 that penetrated the Devonian. It's a quick tabulation
11 of when the well was spudded, true vertical depth, what
12 pool, what type of well today, hole diameter, casing
13 diameter, setting depths, cement, cement tops, how the
14 tops were determined.

15 Q. Okay. And if we move on to Exhibit H.

16 A. Exhibit H are schematics of the six
17 plugged-and-abandoned wells that penetrated the
18 Devonian.

19 (Examiner Brooks enters the room, 3:32
20 p.m.)

21 Q. Okay. This is -- go back to Exhibit 5. This
22 is an Affidavit of Notice prepared by our office
23 reflecting notice was sent to all the owners identified
24 in Exhibit 3; is that right?

25 A. That's right.

1 Q. And if we look at the last pages of this
2 exhibit, does it reflect the status of the notices that
3 were sent to the 40-odd owners in this?

4 A. That's correct.

5 Q. And we see that seven were unlocatable?

6 A. Right.

7 Q. So is Exhibit 6, then, an Affidavit of
8 Publication to those owners who were unlocatable?

9 A. Yes.

10 Q. If Wishbone's application is approved, is
11 Wishbone requesting any additional injection wells be
12 approved administratively?

13 A. Yes, they are.

14 Q. Were Exhibits 1 through 7 prepared by you or
15 under your supervision or compiled from company business
16 records?

17 A. That is correct.

18 Q. And Exhibit 7, you prepared in conjunction with
19 Mr. Clark?

20 A. That is correct.

21 MS. CALLAHAN: I have no more questions of
22 this witness.

23 EXAMINER GOETZE: Thank you.

24 Mr. Brooks?

25 EXAMINER BROOKS: I have no questions.

1 This is your area.

2 EXAMINER GOETZE: That's being very
3 truthful.

4 CROSS-EXAMINATION

5 BY EXAMINER GOETZE:

6 Q. With regards to the AOR wells, did you compare
7 them against the previous application?

8 A. Updated the records, so --

9 Q. You did look at the previous --

10 A. Right.

11 Q. -- application?

12 And was there any significant difference
13 since the original?

14 A. No.

15 Q. You provided pictures -- well diagrams, but
16 those were P&A'd.

17 And we have water samples showing water
18 chemistry for the Devonian. Was any attempt made to
19 obtain a water sample from any of the water wells in the
20 area?

21 A. Yes. We've got that in there as well.

22 Q. So we've got that.

23 And an affirmation statement, is that in
24 here somewhere?

25 A. Oh, yeah. That would be --

1 Q. Would that be part of Mr. Cory's -- Cory Walk's
2 geologic?

3 A. Right.

4 Q. So we have that.

5 And given what we have here, I can see that
6 the C-108s do have all the information contained in
7 them. The Division has the right to review the well
8 completions to verify what has been found in the AOR
9 wells so that we do have a history of -- of making sure
10 what you said is true and what our records show.

11 EXAMINER GOETZE: So I have no more
12 questions for this witness.

13 MS. CALLAHAN: All right. I move for the
14 admission of Exhibits 1 through 7 then, please.

15 EXAMINER GOETZE: We should accept 1
16 through 7 as part of the record.

17 (Wishbone Texas Operating Co., LLC Exhibit
18 Numbers 1 through 7 are offered and
19 admitted into evidence.)

20 MS. CALLAHAN: I'll call my next witness,
21 Cory Walk.

22 CORY WALK,
23 after having been previously sworn under oath, was
24 questioned and testified as follows:

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DIRECT EXAMINATION

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BY MS. CALLAHAN:

Q. Mr. Walk, for the record, please state your name, identify by whom you're employed and in what capacity.

A. My name is Cory Walk. I'm employed by Permits West as a geologist.

Q. And what are your responsibilities as a geologist for Permits West?

A. So I do the geologic assessments or seismic risk analyses for any and all saltwater disposal and injection well permits that we do for our clients.

Q. Have you previously testified before the Division as an expert geologist?

A. No, I have not.

Q. Would you please outline your educational and professional background?

A. Sure. I have a Bachelor's Degree in Geology from Brigham Young University in Idaho, and I have a Master's Degree in Geology from the University of New Mexico here in Albuquerque. And after my master's, I started working with Permits West as their geologist for about a year now.

Q. For a year?

A. Yes.

1 Q. Okay. Do you hold any professional
2 certifications and professional affiliations?

3 A. I'm a member of the Geologic Society of
4 America, as well as the Association of Petroleum
5 Geologists.

6 Q. Does your area of expertise include the Permian
7 Basin of New Mexico?

8 A. Yes.

9 Q. Are you familiar with the geology involved in
10 this application?

11 A. Yes.

12 MS. CALLAHAN: I tender Mr. Walk as an
13 expert in petroleum geology.

14 (Examiner McMillan enters the room, 3:37
15 p.m.)

16 EXAMINER GOETZE: Seeing how Mr. Wood has
17 gotten tired of playing geologist, it is a very good
18 thing that he found someone.

19 I accept his credentials.

20 MS. CALLAHAN: Thank you.

21 Q. (BY MS. CALLAHAN) Mr. Walk, let's look at
22 Exhibit M, which is the last exhibit to the C-108. This
23 was exhibit prepared by you?

24 A. Yes, it was.

25 Q. Please explain Figure 1 --

1 A. Sure.

2 Q. -- on page 3?

3 A. Figure 1 is just a simple locator map also
4 showing all quaternary faults penetrating the surface.
5 It is mapped from the State of New Mexico geological
6 map, as well as the State of Texas geologic map. And it
7 shows the Pope and Mann wells are about 65 miles from
8 the nearest surface --

9 Q. And if we look at Figure 2 on page 4, what --

10 A. Sure. So Figure 2 is essentially the same
11 scale just showing Precambrian-penetrating faults,
12 showing the Pope and Mann wells lie about two miles east
13 of the nearest basement penetrating fault.

14 Q. And please explain Figure 3.

15 A. Sure. Figure 3 is just a general cross section
16 taken from Montgomery in 11997. Just with this figure,
17 trying to show that the basement -- or the Precambrian
18 faults don't penetrate all the way to the surface on the
19 east side in Lea County where our wells are located. So
20 there is no direct conduit for injected fluids to reach
21 the freshwater aquifers underneath the surface.

22 Q. And if we look at page 6, what does it tell us?

23 A. Sure. So this is essentially -- so as part of
24 this geologic assessment, I used the fault slip
25 potential model that was developed by researchers at

1 Stanford University where you're able to essentially put
2 in different parameters about the faults, the stress
3 orientations and the subsurface stress conditions, as
4 well as the hydrology and aquifer thicknesses. And it
5 is able to tell you of any potential fault slip on the
6 nearby Precambrian faults.

7 So here on this table, I've essentially
8 just listed the input parameters that I used in my
9 model. Of most importance in this model, I think, is
10 the stress conditions, specifically the maximum
11 horizontal stress direction, which I used directly from
12 research done by Snee and Zoback in 2018 where they used
13 this model to do large-scale research on the Permian
14 Basin.

15 Q. Looking at Figure 4, can you tell us what this
16 shows?

17 A. Sure. So this is the results of using that
18 fault slip potential model. If you look at right where
19 the kind of red bullseye where the Pope and Mann wells
20 are, you can see that using these input parameters, we
21 would get a probability of zero, essentially, of the
22 nearest deeply penetrated fault, which is in part due
23 to -- you see the faults right there close to the Pope
24 and Mann wells are primarily north-south oriented. And
25 as I mentioned before in the table, the maximum

1 horizontal stress direction is about 105 degrees, so
2 anything north-south isn't really -- won't really be
3 affected by an increase in pressure from these injection
4 wells.

5 Q. What conclusions have you drawn from your
6 geologic study?

7 A. A couple of things. First, understanding that
8 there is no direct conduit of injected fluids to
9 freshwater aquifer systems, as well as based on this
10 fault slip potential modeling, there is no major risk of
11 inducing seismicity on the nearby faults. And we are
12 far enough away from any fault that could be at risk
13 based on their orientation where these injection
14 pressures and amounts won't really affect induced
15 seismicity on those faults.

16 Q. Was Exhibit M in the C-108, which is our
17 Exhibit 7, prepared by you or under your supervision?

18 A. Yes.

19 Q. In your opinion, is the granting of this
20 application in the best interest of conservation, the
21 prevention of waste and the protection of correlative
22 rights?

23 A. Yes.

24 MS. CALLAHAN: Exhibit M is incorporated in
25 Exhibit 7, which has already been admitted to evidence.

1 I have no further questions of this
2 witness.

3 EXAMINER GOETZE: I don't have any
4 questions.

5 Mr. Brooks?

6 EXAMINER BROOKS: No.

7 EXAMINER GOETZE: Mr. McMillan?

8 EXAMINER McMILLAN: No questions.

9 EXAMINER GOETZE: Now we're going to get to
10 the nitty-gritty.

11 MS. CALLAHAN: I would ask Mr. Craig Clark
12 to come to the stand.

13 H. CRAIG CLARK,
14 after having been previously sworn under oath, was
15 questioned and testified as follows:

16 DIRECT EXAMINATION

17 BY MS. CALLAHAN:

18 Q. Mr. Clark, would you please state your name,
19 identify by whom you're employed and in what capacity?

20 A. H. Craig Clark. I'm employed by Wishbone Texas
21 Operating in Houston, Texas.

22 Q. And what are your responsibilities as petroleum
23 engineer of Wishbone?

24 A. Founder, CEO, operations, geology, probably
25 bottle washer.

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

3 A. Yes, but it was a long time ago.

4 Q. Okay. Well, then let's run through your
5 educational and professional background, please.

6 A. BSME from Texas A&M in 1979 and worked since
7 that time. I became an engineer in '79 and worked at
8 around the Permian North America, including public
9 company CEO for RDBP [sic] for Apache and Forest CEO and
10 now Wishbone CEO.

11 Q. Do you hold any professional certifications or
12 professional affiliations?

13 A. Site Petroleum Engineers -- Institute, chairman
14 of the Domestic Petroleum Council.

15 Q. And what are your responsibilities as engineer
16 for Wishbone?

17 A. As CEO, all the operations, production,
18 geology, engineering report to me.

19 Q. And does your area of responsibility include
20 the Permian Basin in New Mexico?

21 A. Yes. All our production is solely in the
22 Permian Basin, eastern Lea County, this field, and also
23 in the adjacent Yoakum County.

24 Q. And you're familiar with the C-108 that's been
25 submitted in this case?

1 A. Yes. And I also reviewed the Celero.

2 Q. And you helped prepare the C-108; did you not?

3 A. Yes, with Mr. Wood.

4 MS. CALLAHAN: I tender Mr. Clark as an
5 expert petroleum engineer.

6 EXAMINER GOETZE: So qualified.

7 Q. (BY MS. CALLAHAN) Mr. Clark, would you look at
8 Exhibit 7, please? This is the C-108 that we're looking
9 at, correct?

10 A. Yes.

11 Q. In particular, you prepared the aspects of the
12 C-108 that pertain to engineering, right?

13 A. Yes.

14 Q. Okay. Wishbone acquired this project from
15 Resolute Natural Resources in 2017?

16 A. Yes. We took over in April of '17.

17 Q. Would you give us a brief summary of the water
18 flood cooperative and include a history of the wells in
19 the project and their current status?

20 A. Sure. Initially, Celero filed as a pilot
21 waterflood, and it was approved. They drilled one well,
22 the Pope 36 10, brand-new, and they converted the Mann A
23 2 as injectors. They had four producers, and that was
24 on the 320-acre pilot. They did inject water -- it's in
25 one of the upcoming slides -- for a short period of time

1 and then for some reason stopped. And Wishbone has
2 maintained the wells for future utility, including the
3 shut-in wells because it looked like it was working.
4 And currently these four producers that we have just on
5 this pilot make around 75 barrels of oil and about 4,000
6 barrels of water.

7 Q. Would you go through the wellbore diagrams for
8 the two proposed injection wells, which are found at the
9 beginning of the C-108?

10 A. Sure. In order, the Mann A 2 was drilled -- in
11 1954, and it produced from the same Devonian interval.
12 And then in 2011, following the approval from the
13 Commission, they drilled the Pope Resolute -- excuse me.
14 Celero drilled and completed as an injector a brand-new
15 well, the Pope 36 10. And both wells have casing, as
16 Mr. Wood testified, cemented and pulled to surface at
17 350 feet roughly and an intermediate 470 feet cemented.
18 And then they drilled a 7-inch into the Devonian. In
19 the case of the Mann, they deepened it into the Devonian
20 with 4-1/2 liner, all cemented. And they did the same
21 thing when they drilled the Pope with a 4-1/2-inch liner
22 and the Pope 3 16. I should note that they're not
23 open-hole completions. They were all cased and cemented
24 and perforated, as shown on the schematics.

25 Working with the Hobbs District, they used

1 a liner packer completion for a packer. They also asked
2 them to have another packer as a backup to that right
3 above that liner top, so there was actually a regular
4 injection packer. One well has 3-1/2-inch tubing in it.
5 The other one has large 4-1/2-inch tubing. The reason
6 that is where it's at is you can't put that inside the
7 4-1/2, so it's completed with a two-packer arrangement
8 above both liner tops. And they did inject and test,
9 and Resolute and Wishbone has maintained the integrity
10 and test of those wells.

11 Q. And the injection intervals in the Devonian?

12 A. In the Pope, it's, I think, 12,277 to 504. In
13 the Mann, it's about 12,370 to 12,900. They're both in
14 the top of the Devonian interval. It's also called the
15 Silurian.

16 Q. Okay. And the only perforations are in the
17 Devonian?

18 A. That's correct.

19 Q. What's the average injection rate -- maximum
20 rate?

21 A. They put in about 10,000 barrels for their
22 short-lived injection. They took it on a vacuum in the
23 Devonian with a centrifugal pump. They permitted these
24 initially -- and we would do the same or did the same --
25 at 20,000 barrels per well max. That's with the large

1 tubing, was the maximum pressure. Using the .2 psi per
2 foot will get you around a 2,400-pound maximum, which is
3 far below on the injection records we found.

4 Q. Okay. And I think you said that the injection
5 pressures are --

6 A. They were on vacuum so zero. When they
7 injected into them, we tested those for injection, and
8 they're still in great shape.

9 Q. Okay. And what other producing zone lies above
10 the Devonian within the one-mile radius?

11 A. We produced primarily out of the Devonian in
12 the field -- Devonian-producer -- there was a shallow
13 Wolfcamp zone producing for another operator in the
14 field.

15 Q. What would the source of the injection water
16 be?

17 A. Primarily the Devonian. Our field currently
18 produces between 15- and 20,000 barrels of Devonian
19 water, but there is also Wolfcamp water. And we've
20 tested the compatibility for that and have not had any
21 issues with scale. Additionally, we do treat for scale,
22 but we have never had to acidize.

23 Q. And what is the driving mechanism in the
24 Devonian?

25 A. Clearly, it's for the -- weak water driver. It

1 was gas expansion. There is still some gas, and, of
2 course, we would hope to replenish that to some extent
3 with injection.

4 Q. If we look at Exhibit 8, can you tell us what
5 this exhibit shows?

6 A. It's a performance evaluation that includes the
7 current cumulative production through '18 of this pilot
8 area only and the reserves in place. It shows that the
9 reserves in place -- we agree with what Celero had --
10 are about 14.1 million barrels in place. And based on
11 the current recovery of 6.4 million barrels, there is a
12 45 percent recovery factor.

13 We project -- our third-party engineers
14 project that it would recover 6.5 million barrels, which
15 gets you up to 46.2 percent recovery factor, based on
16 the current projection and decline curve on an
17 exponential decline. We used our projections of the
18 water flood that would get it to roughly 6.7 million
19 barrels, which is only a 1.2 percent increase in
20 recovery factor, again the 14.1 million reserves in
21 place. It doesn't take much to move the needle.

22 Q. How long do you anticipate it will take to see
23 the results of injection?

24 A. We made an assumption that it would take two
25 years.

1 Q. Okay. And will the water -- let's look at
2 Exhibit 9. Can you tell us what this shows?

3 A. It's a plot of production of just this pilot
4 area, cumulative production for both gas and water.
5 There was a period there where they had inactivity on
6 these pilot wells in the '80s and '90s, and then Celero
7 got production up to around 500 barrels a day when they
8 took over in early 2002 or '3. That's in green. The
9 red is the gas. Also, we put on there in the color
10 purple -- you can see it; it defines itself from the
11 blue -- the actual injected water as reported to the
12 State. When they injected, they did see a pretty good
13 production increase right at the end of the 2011, and
14 that's our assumption. Since that time, there's been no
15 other injection. The only gap in the production is
16 where we couldn't find the records from Resolute, but it
17 was producing throughout this time.

18 (Examiner McMillan exits the room, 3:52
19 p.m.)

20 Q. Okay. So in your opinion, will the water flood
21 as proposed extend the life of this portion of the
22 reservoir?

23 A. Yes.

24 Q. What is the estimated cost -- your cost of the
25 project?

1 A. We assumed -- and all this work has been done,
2 tested, the facilities are there, the pipelines are
3 there, even the centrifugal pump. The service has been
4 maintained. We put about \$50,000 per well minimum.
5 They spent probably close to 5 to drill that well and
6 convert, and that would be to bring additional water for
7 makeup because clearly we need more water than we're
8 producing currently in this area.

9 Q. And so what is your estimated value of
10 incremental production?

11 A. We used pretty conservative numbers. We
12 ratioed it off of there, 25 percent incremental increase
13 that would exponentially decline off of this particular
14 plot on Exhibit 9. Would give us between 150- and
15 200,000 barrels of net recoverable oil, and that would
16 give you a value, at \$52 a barrel, of roughly 2.2-1/2
17 million or 2.3 million. That's a little different than
18 we first had because obviously the price of oil, since
19 we made the first filing, has come up substantially both
20 in -- differential. And so we used 52 in this analysis.

21 Q. If you have approval by the Division, when do
22 you anticipate beginning?

23 A. Almost immediately, probably this summer, bring
24 additional water to these specific wells.

25 Q. And how many additional barrels of oil do you

1 anticipate over the life of the project?

2 A. It's listed on Exhibit 8. But we had 150- to
3 200,000 barrels. I think the exact number was 165
4 barrels, again very conservative because they saw a
5 greater demand on their last attempt.

6 Q. Okay. And the estimated life of the project?

7 A. It's 22 years.

8 Q. Okay. So in your opinion, is the project
9 economic?

10 A. Yes. It's over 100 percent rate of return.

11 Q. And from an engineering standpoint, is this
12 portion of the pool suitable for a water flood project?

13 A. Yes. Based on the geology, it would be our
14 attempt to flood basically from a -- do a pilot from
15 pretty much southeast to northwest and flood accordingly
16 as we go forward with additional injectors if this
17 works.

18 Q. So in your opinion, it's prudent to apply an
19 enhanced recovery program?

20 A. Yes.

21 Q. And you believe it's technically and
22 economically feasible?

23 A. Yes.

24 Q. Will the value of the oil and gas recovered by
25 the project operations exceed the project cost plus a

1 reasonable profit?

2 A. Yes, substantially.

3 Q. Because of the estimated additional production,
4 will the wells in the project qualify for the recovered
5 oil tax rate?

6 A. Yes, we believe so.

7 Q. Have you anticipated that with the success of
8 this pilot project additional wells currently
9 temporarily abandoned might be brought back online?

10 A. Yes. We brought several of these back online
11 when we took over from Resolute. But yes would be the
12 answer. That's why we got the wells secured.

13 Q. Was that at least in part the reason why you
14 had several wells in temporary abandoned status?

15 A. Right. We want to use them for future utility,
16 either producers or injectors.

17 Q. Okay. And -- but to meet the Division's rule
18 limiting the number of temporary abandoned wells --

19 A. Uh-huh.

20 Q. -- you can have at any one time -- that have
21 been temporarily abandoned more than a year, you entered
22 into an agreed compliance order; is that right?

23 A. Right.

24 Q. And is that reflected in Exhibit 10?

25 A. Right.

1 Q. Okay. And what have you done since the entry
2 of that order to meet the requirements?

3 (Examiner McMillan enters the room, 3:56
4 p.m.)

5 A. Tested the wells, witnessed by Hobbs, and
6 secured them, and then we conveyed one of the wells, the
7 Pope 35 3, to a shallow operator because that's required
8 by the form. And then another well, we filed a C-103.
9 That's all included. So five of them.

10 Q. And those are found in Exhibit 11?

11 A. Right.

12 Q. And then Exhibit 12, is this the C-145 for the
13 Pope 35 03 well?

14 A. Right. That's per the farm-out. If we don't
15 use that well, we have to give it to the shallower
16 operator. Otherwise, we would have used it for this
17 water flood and conveyed it to them earlier.

18 Q. Okay. If Wishbone's application is approved,
19 are you requesting that any additional injection wells
20 be approved administratively?

21 A. Yes.

22 Q. Were Exhibits 8 through 12 either prepared by
23 you, under your supervision or compiled from company
24 business records?

25 A. Yes.

1 Q. In your opinion, is the granting of this
2 application in the best interest of conservation, the
3 prevention of waste and the protection of correlative
4 rights?

5 A. Yes.

6 MS. CALLAHAN: I move for the admission of
7 Exhibits 8 through 12.

8 EXAMINER GOETZE: Exhibits 8 through 12 are
9 so entered into the record.

10 (Wishbone Texas Operating Co, LLC Exhibit
11 Numbers 8 through 12 are offered and
12 admitted into evidence.)

13 MS. CALLAHAN: I have no further questions
14 for this witness.

15 EXAMINER GOETZE: Mr. Brooks?

16 EXAMINER BROOKS: No questions.

17 EXAMINER McMILLAN: Go ahead.

18 EXAMINER GOETZE: Thank you.

19 CROSS-EXAMINATION

20 BY EXAMINER GOETZE:

21 Q. Good afternoon.

22 First of all, do we have any type of
23 structural map for this feature, or what kind of a
24 reservoir are we looking at?

25 A. It's bounded by one of the regional faults from

1 the northwest side. It pretty much runs stratigraphic
2 north to south, so the flood would be constrained on the
3 west side but north and south, so that's why we're
4 flooding in that direction. It's a carbonate dolomite,
5 low porosity, pretty continuous, very continuous, in
6 fact, very thick, 600 foot. Most of the production has
7 been from the upper parts. We actually have found one
8 of the old cores, Celero did, and looked at it, and it
9 verifies Cory's analysis. It's -- you know, it's pretty
10 good rock for a water flood. Obviously, there's been no
11 stimulation done to it whatsoever. In terms of
12 hydraulic fracturing, we won't need that. Probably acid
13 may be required at some point on these injectors.

14 Q. Do we have any type of structural map, or did I
15 miss it?

16 A. He had -- Cory prepared one using the regional
17 data. I believe it's maybe M.

18 MS. CALLAHAN: Yes.

19 EXAMINER GOETZE: I would request that we
20 get something a little bigger scale.

21 MS. CALLAHAN: All right. We can do that.

22 THE WITNESS: I actually have one here, but
23 it will have to be reproduced. It's sheet size.

24 EXAMINER GOETZE: That's all fine. But
25 just submit it --

1 THE WITNESS: You got it.

2 EXAMINER GOETZE: -- so that we can have a
3 little more detail with respect to the leases, knowing
4 where you are as far as --

5 THE WITNESS: Okay.

6 MS. CALLAHAN: Okay.

7 Q. (BY EXAMINER GOETZE) Okay. So with that, we
8 have the dynamics of the feature.

9 Your proposal -- in the original
10 application, you are looking at what, 20,000 barrels a
11 day per well?

12 A. Yes. That's what they permitted, and that's
13 why they run the large tubing. And it'll -- it'll do
14 that. We don't anticipate getting in that range because
15 we'll have water production in the field. We have to
16 exceed 5,000 barrels a day initially just to reach
17 one-to-one injection to withdrawal.

18 Q. So you're proposing Wolfcamp as the makeup?

19 A. Makeup and also our other Devonian wells that
20 are over to the northwest of the field that go into
21 another injection well. And there is Wolfcamp and San
22 Andres and some Strawn in the area, but mainly San
23 Andres and Wolfcamp. Currently, our only production
24 that we produce is from the Wolfcamp in one or two
25 wells. It's all Devonian. And, of course, we could

1 still upsize the lift on that and get more Devonian for
2 makeup, but we'll have to have some more makeup water if
3 we want to exceed the field's current production, which
4 is 15- to 20,000 barrels per day. They put 10 in there,
5 average, through their duration in late 2011 and '12,
6 and it took on a vacuum.

7 Q. So what kind of a pattern are you describing?
8 Is this just --

9 A. This will initially be kind of a -- just a
10 pilot, line flood. Sooner or later they'll have to have
11 something from the periphery on the north and east side
12 because you have the Buckley lease and, of course,
13 infills. And that's why we want those TA'd wells, for
14 future converting. The field was originally permitted
15 and drilled somewhat on 40 acres, and so you'll take
16 advantage of those wellbores.

17 Q. Okay.

18 A. Like I say, it worked last time. It look to
19 us, it did, with the production pump they got in
20 mid-2011.

21 Q. So how do we know we're doing everything within
22 the leases and not impacting correlative rights?

23 A. Well, offset to -- we're the only Devonian
24 producer in the area, period.

25 Q. That doesn't just mean --

1 A. Right.

2 Q. -- correlative rights of other parties. Again,
3 I think with highlight, a structural map would give us a
4 feeling --

5 A. Right.

6 Q. -- of where your impact is going to be. So
7 let's get that to us for consideration.

8 A. Okay.

9 Q. And, of course, you raise the inactive well --
10 inactive well compliance. What has been the response
11 from the compliance officer? Have you talked to Daniel
12 Sanchez at this point, and we are in good standing, or
13 is this --

14 MS. CALLAHAN: Yeah. They have until
15 August.

16 THE WITNESS: August 1st for the first
17 five. We've already done them, and we submitted those
18 to him. We just had to wait for the new person at the
19 Hobbs District to come out and witness their testing.

20 Q. (BY EXAMINER GOETZE) Very good.

21 And financial assurance, we're in good
22 standing there?

23 A. (Indicating.)

24 MS. CALLAHAN: Yes.

25 EXAMINER GOETZE: I have no more questions

1 of this witness.

2 Mr. McMillan?

3 CROSS-EXAMINATION

4 BY EXAMINER McMILLAN:

5 Q. Okay. I'm just curious. I'm not clear. You
6 said this is a gas solution? I've never heard of that,
7 Devonian gas solution. I always thought of it as a
8 water drive reservoir.

9 A. Well, it is a water drive. I've seen a really
10 strong water drive. This one is certainly not that,
11 what I call a gas expansion. So you've got some
12 solution. We still make 100 mcf a day, a GOR of one to
13 one on the 75 -- 73 to 75 barrels of oil. We still have
14 gas, one to one. But we don't have any -- it's
15 obviously way past the bubble point in our lifetimes.
16 But in this case, we still do make some gas. But I
17 would say it's more of a partial water drive, if I had
18 to describe it as one mechanism.

19 Q. And are you injecting below the oil-water
20 contact?

21 A. Yes, they were. They produced the Mann A 2 and
22 3. Three's been plugged. When it finally played out,
23 they converted it, and then they drilled the 36 10 and
24 actually logged it, and it was wet. So yes, they are.

25 Q. Okay.

1 A. And that was a brand-new well drilled for just
2 injection.

3 Q. Do you have a detailed plot of what Celero did
4 with their initial water flood? I mean, I'm seeing
5 here -- I'm seeing on your Exhibit A, but do you have a
6 smaller scale, a finer scale?

7 A. If you look at -- well, if you look at Exhibit
8 9, there is a plot of when Celero took over and got
9 production up to 500 barrels a day. And then they put
10 water in -- and that's in the color purple there -- in
11 late '11 and '12.

12 EXAMINER GOETZE: May I suggest that you
13 give us an expanded scale for the Celero efforts so we
14 can see with a little bit better clarity?

15 THE WITNESS: Sure.

16 And I'm speculating that that's a water
17 flood response, but they do give 100 to 150 peak once
18 they put some injection in, and they saw an increase in
19 the flood of the field. I did not see any examples of
20 where they watered a well out. They didn't do anything
21 long enough, so I saw no breakthrough.

22 Q. (BY EXAMINER McMILLAN) How much makeup water
23 are you expecting?

24 A. I would like to have as much as I get. That
25 sounds -- but in our case, we make 15- to 20,000 barrels

1 of water from just our Devonian field, based on the
2 current lift in the Denton area, and then there is some
3 offset production. But I would hope to have at least --
4 our water, you know, would be, you know, 10- to 15,000
5 barrels additional water because we can handle that
6 currently in these wells, plus our existing disposal
7 well that's on the north side of the field that is not
8 involved in this water flood.

9 Q. And you said your makeup -- your makeup -- your
10 primary source is going to be your Devonian, Wolfcamp
11 and you said San Andres water?

12 A. Yes. There is some San Andres activity coming
13 to the east of us. We do blend that water for injection
14 or disposal on the Texas side, and we haven't any issues
15 with scaling there. Over here, it's mostly all Wolfcamp
16 and Devonian by either us or the other operators,
17 Stephens & Johnson, and we haven't any scaling issues.

18 Q. Okay. Do you have any water samples out of the
19 San Andres that you're going to --

20 A. I do not because we do not have -- it's not our
21 production currently. I do on the Texas side.

22 Q. Well, then you can supply that to us.

23 A. Sure.

24 And like I say, I do not have any San
25 Andres water currently. It's all Wolfcamp and Devonian,

1 which is in the exhibit.

2 RE CROSS EXAMINATION

3 BY EXAMINER GOETZE:

4 Q. Well, we can look at a pilot project and visit
5 you folks. Typically, when you have an operation like
6 this, state or federal involved, there is a filing of a
7 plan of operation, a performance. What we would
8 probably think about doing is that as you do this
9 project, we get sort of annual report to see how it's
10 turning out. The Division's main concern is that yes,
11 we have a lot of San Andres next door being developed
12 and we have people looking at a variety of ways to
13 dispose of it. You've presented a good argument that
14 you have a good future with this, but we need to balance
15 that out with our regulatory abilities to say that this
16 water flood is acting properly, and we're not giving you
17 a carte blanche to get rid of everybody else's water,
18 which is -- I know. Still, when we hear from the
19 attorneys, we also see. So considering the information
20 you have, we'll move forward, and if we do approve, we
21 will probably put some conditions such that you will be
22 able to report to us and we can see how this performs?

23 A. And we do have San Andres rights elsewhere in
24 the field, but currently, the Devonian is the producing
25 zone, so we're not going to plug back that. It's highly

1 economic.

2 Q. We'll consider it a pilot project at this point
3 and grant the experiment. You've made good faith to
4 resolve the inactive wells. And, of course, you
5 presided over one of the only cases of which someone's
6 done enhanced recovery, so it's a rare animal right now.

7 A. Yes, it is.

8 EXAMINER GOETZE: So, Mr. McMillan, any
9 more?

10 EXAMINER McMILLAN: What about -- are you
11 trying to get an EOR certificate for this?

12 MS. CALLAHAN: Yeah. Are you talking about
13 the tax certificate?

14 EXAMINER McMILLAN: Yes.

15 MS. CALLAHAN: Yeah.

16 EXAMINER GOETZE: Okay. Have you provided
17 enough information for us to make an evaluation? I
18 think you need to revisit the original application --

19 MS. CALLAHAN: Okay.

20 EXAMINER GOETZE: -- and see if the
21 information is still in good standing and meets our
22 criteria. It is kind of an old rule, and it's one of
23 these things that, again, we'll have to take a little
24 more detail in.

25 MS. CALLAHAN: Okay. And can I provide

1 that to you by email?

2 EXAMINER GOETZE: You want to revisit them
3 again, let them come in and -- I think we should
4 actually continue it and then have the opportunity for
5 us to further question. Go ahead and prepare that
6 information, submit it to us, and at that point, if we
7 have issues or questions about it, then let's continue
8 it such that we have that opportunity to talk with --

9 MS. CALLAHAN: If we would prefer to just
10 let go of that request, would you take the case under
11 advisement, subject to providing these additional items
12 that you've requested?

13 EXAMINER GOETZE: Well, I mean, that is the
14 opportunity. You could come back at a later time and go
15 for the tax credit. Even though the limits of that are
16 such that -- I forget now. I mean, it used to be 30
17 bucks a barrel or below that you qualify. Right now,
18 you're not even close to that. So the question gets to
19 be: What was historically filed still relevant, and
20 does it need to be updated? Again, you're asking for
21 something we haven't done in a while.

22 MS. CALLAHAN: Yeah.

23 EXAMINER GOETZE: So we -- if you wish, in
24 your application to withdraw at this time --

25 MS. CALLAHAN: Do a request for that?

1 EXAMINER GOETZE: Tax status and revisit it
2 at a later date once you have more performance data.
3 Certainly I think that would be beneficial.

4 MS. CALLAHAN: I think we'd probably prefer
5 to do that.

6 THE WITNESS: Sure. Again, we were being
7 able to utilize the initial.

8 MS. CALLAHAN: Yeah. I think we would
9 rather ask you to take it under advisement now, and I'll
10 withdraw the request for the EOR.

11 EXAMINER GOETZE: Okay. We'll go ahead
12 with the consideration.

13 Mr. Brooks, you were going to say?

14 EXAMINER BROOKS: I was just going to say
15 hopefully \$30 a barrel is not going to prospect anytime
16 soon.

17 EXAMINER GOETZE: Well, that's okay. It
18 gives you the opportunity to run in the door real fast
19 with the application.

20 MS. CALLAHAN: Yeah.

21 EXAMINER GOETZE: But yeah, let's do that,
22 and we will look at our history of the field and advise
23 you as to the tax issue. And we'll go forward with the
24 EOR project as a --

25 MS. CALLAHAN: So I ask that you take this

1 case under advisement subject to providing the expanded
2 structural map on the expanded scale of Celero's water
3 flood and the water samples of the San Andres.

4 EXAMINER GOETZE: At least an example of
5 what you're going to be using as far as compatibility so
6 we know -- we have a sense of what's coming over the
7 border, since we are sharing waters left and right. And
8 we do an EOR project, it's considered compatibility, an
9 important issue. I know you don't want to mess up your
10 own project, but it's one of these things that we do
11 wish to look over our shoulder to make sure you've got a
12 good project. Okay?

13 MS. CALLAHAN: Okay.

14 EXAMINER McMILLAN: Case Number 20406 shall
15 be taken under advisement.

16 Thank you.

17 (Case Number 20406 concludes, 4:12 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
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11 were reduced to printed form by me to the best of my
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13 I FURTHER CERTIFY that the Reporter's
14 Record of the proceedings truly and accurately reflects
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16 I FURTHER CERTIFY that I am neither
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20 DATED THIS 24th day of April 2019.

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