

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

APPLICATION OF MARBOB ENERGY CORPORATION
CORPORATION FOR SPECIAL RULES, EDDY COUNTY,
NEW MEXICO

CASE NOS. 14419, 14420

TRANSCRIPT OF PROCEEDINGS
Examiner Hearing
February 4, 2010
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BEFORE: RICHARD EZEANYIM, HEARING EXAMINER
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21 I N D E X

22 EXAMINATION OF ROSS DUNCAN	PAGE
23 By Ms. Munds-Dry	7
24 EXAMINATION OF BRENT MAY	
25 By Ms. Munds-Dry	14
By Mr. Bruce	24
26 EXAMINATION OF GEORGE FREEMAN	
27 By Ms. Munds-Dry	26
28 By Mr. Bruce	53

1	Court Reporter's Certificate	68
2	EXHIBITS	ADMITTED
3	1. Form 104	13
4	2. Affidavit, Affected Interest Owners, Affidavit of Publication	13
5		
6	3. Stratigraphic Cross-Section	24
7	4. Avalon Shale Gross Isopach	24
8	5. PI/Dwights PLUS on CD Map Reports	53
9	6. Gravy St Com #1 Daily Production History	53
10	7. Showstopper 7 Fed Com #1 Daily Production History	53
11		
12	8. SRO St Unit 2H Daily Production History	53
13	9. MYOX 28 St Com 6H Daily Production History	53
14	10. Hawg Fed #1 Daily Production History	53
15	11. Pressure-Volume Relation Gravy State Com No 1H	53
16		
17	12. Pressure-Volume Relation Banjo BNO Federal No. 1	53
18		
19	13. Rotary Sidewall Core Analysis Showstopper 7 Federal Com #1H	53
20		
21	14. Rotary Sidewall Core Analysis Basashi Federal #1	53
22		
23	15. Banjo BNO Federal #1 Test	53
24	16. PLU Pierce Canyon 17 Fed #1H Monthly Production History	53
25		

1	17.	PLU Pierce Canyon 32 Fed #1H Monthly Production History	53
2			
3	18.	PLU Ross Ranch 6 Fed #1H Monthly Production History	53
4			
5	19.	PLU Ross Ranch 31 Fed #1H Monthly Production History	53
6			
7	20.	Banjo BNO Fed #1 Monthly Production History	53
8	21.	East Pierce Crossing Bone Spring Pool Production Statistics by Well	53
9			
10	22.	Southeast Willow Lake Bone Spring Pool Production Statistics by Well	53
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

1 MR. EZEANYIM: At this point on page
2 2 still, I call Case Number 14419, and this is the
3 Application of Marbob Energy Corporation for special
4 rules, Eddy County, New Mexico. Call for
5 appearances.

6 MS. MUNDS-DRY: Good morning,
7 Mr. Examiner. Ocean Munds-Dry with the law firm of
8 Holland & Hart representing Marbob Energy Corporation
9 this morning, and I am also entering my appearance
10 for Chesapeake Energy Corporation as well.

11 MR. EZEANYIM: Any witnesses?

12 MS. MUNDS-DRY: I have three
13 witnesses.

14 MR. EZEANYIM: You have three
15 witnesses. On behalf of who?

16 MS. MUNDS-DRY: On behalf of Marbob.

17 MR. EZEANYIM: Okay. Because you're
18 appearing twice so I don't know. I want to make sure
19 which one --

20 MS. MUNDS-DRY: No witnesses for
21 Chesapeake Energy --

22 MR. EZEANYIM: Okay. So the record
23 will reflect that. Any other appearances?

24 MR. BRUCE: Mr. Examiner, Jim Bruce
25 of Santa Fe entering an appearance or appearances for

1 Mewbourne Oil Company and for XTO Energy, Inc. I do
2 not have any witnesses.

3 MR. EZEANYIM: Okay.

4 MR. HALL: Mr. Examiner, Scott Hall.
5 I'm from Montgomery & Andrews Law Firm. I'm
6 appearing on behalf OXY USA, Incorporated. No
7 witnesses.

8 MS. MUNDS-DRY: Mr. Examiner, we
9 would move to consolidate Case Number 14419 and case
10 14420. It is the same witnesses and the same
11 evidence.

12 MR. EZEANYIM: Okay. If there are no
13 objections, those two cases, Case Number 14419 and
14 14420, will be consolidated for purposes of
15 testimony.

16 MS. MUNDS-DRY: And I would like to
17 call my first witness.

18 MR. EZEANYIM: First of all, all the
19 witnesses have to stand and be sworn. State your
20 name first. Stand up, state your name and be sworn.

21 (Note: The witnesses were duly sworn.)

22 MR. EZEANYIM: Call your first
23 witness.

24 MS. MUNDS-DRY: I would like to call
25 Ross Duncan.

1 ROSS DUNCAN

2 After having been first duly sworn under oath,
3 was questioned and testified as follows:

4 EXAMINATION

5 BY MS. MUNDS-DRY:

6 Q Good morning. Would you state your name
7 for the record, please?

8 A Ross Duncan, Marbob Energy Corporation,
9 petroleum landman, and I reside in Artesia, New
10 Mexico.

11 MS. MUNDS-DRY: Mr. Duncan has
12 obviously done this before since he summed that up
13 for us.

14 Q (By Ms. Munds-Dry) Mr. Duncan, are you
15 familiar with the application filed by Marbob in this
16 case?

17 A Yes.

18 Q And have you previously testified before
19 the division, and were your credentials made a matter
20 of record?

21 A Yes.

22 Q Are you familiar with the status of the
23 land in the subject portions of the East Pierce
24 Crossing Bone Spring Pool and the Southeast Willow
25 Lake Bone Spring Pool?

1 A Yes.

2 MS. MUNDS-DRY: Mr. Examiner, we
3 tender Mr. Duncan as an expert in petroleum land
4 matters.

5 MR. EZEANYIM: Mr. Duncan is so
6 qualified.

7 Q (By Ms. Munds-Dry) Mr. Duncan, would you
8 briefly summarize what Marbob seeks in both Case
9 14419 and Case 14420?

10 A Sure. Marbob seeks to -- seeks an order
11 ~~establishing special rules to increase the GOR for~~
12 ~~the Southeast Willow Lake Bone Spring Pool and the~~
13 ~~East Pierce Crossing Bone Spring Pool.~~

14 Q And what increase does Marbob seek?

15 A We're seeking the ~~increase from 2,000 to 1~~
16 ~~to 5,000 to 1.~~

17 Q Mr. Duncan, are you generally familiar
18 with the applicable rules for both pools in terms of
19 spacing and acreage dedication?

20 A Yes, I am.

21 Q What is the spacing in both of these
22 pools?

23 A 40-acre.

24 Q And what is the current GOR in depth
25 brackets allowable for each pool?

1 A For the East Pierce Crossing Bone Spring
2 Pool, the GOR is 2,000 to 1 with a depth bracket
3 allowable of 187 barrels of oil a day. For the
4 Southeast Willow Lake, the GOR is 2,000 to 1 with a
5 depth bracket allowable of 230 barrels a day.

6 Q Mr. Duncan, would you please turn to what
7 has been marked as Exhibit Number 1 and review this
8 plat for the examiner?

9 A Exhibit Number 1 outlines the pool
10 boundary and the location of Marbob's wells within
11 each pool.

12 Q So the orange color on here, does that
13 represent the East Pierce Crossing Bone Spring Pool?

14 A Yes, it does.

15 Q And what does the blue on here indicate?

16 A The blue is the Southeast Willow Lake Bone
17 Spring Pool. The yellow Section 7 of 25, 29 shows
18 the spacing unit for Marbob Energy Corporation's
19 Showstopper 7 Federal Com Number 1H, and over in 25,
20 30 starting on Section 8 in the northeast of the
21 northwest quarter going over into the northwest of
22 the northeast quarter of Section 7, we've got our
23 Gravy State Com Number 1H Unit.

24 Q And I believe we've also shown on here,
25 just to show proximity, the Willow Lake Bone Spring

1 and the Pierce Crossing Bone Spring; is that correct?

2 A Yes.

3 MR. EZEANYIM: Yeah, before you
4 continue, let's get the delineation. Okay. Now,
5 how -- on Exhibit Number 1, Case Number 14419, is
6 that the -- is that blue down here? Is that the blue
7 shaded area down here? On Case Number 14419?

8 THE WITNESS: Yes, it is the
9 Southeast Willow Lake Bone Spring.

10 MR. EZEANYIM: Does it include
11 Section 10? I thought it included Section 10 in your
12 application. Here I see 8, 9 -- I have 8, 9 and then
13 16 and 21, but when I read your application it
14 included 8, 9, 10, 16, 21. Is that what you're
15 asking, or is this what you're asking? Because it's
16 different from what I have. I can read your
17 application.

18 MS. MUNDS-DRY: We will have to look
19 and make sure that that is correct here. Let's see.

20 THE WITNESS: 8, 9, 16, and 21 on the
21 application is what I have.

22 MS. MUNDS-DRY: We failed to color
23 that in, Mr. Examiner.

24 MR. EZEANYIM: What did you say?

25 MS. MUNDS-DRY: We may not have

1 colored the right boundaries in.

2 MR. EZEANYIM: Yeah, let me see if
3 I -- I'm just reading from your application.

4 THE WITNESS: Yes.

5 MS. MUNDS-DRY: I'm sure the
6 application is correct, Mr. Examiner. I am sure the
7 exhibit is incorrect.

8 MR. EZEANYIM: Yeah, okay. Go ahead.
9 It doesn't really matter, but I just wanted to see.
10 The green by the right of that yellow, what is that?
11 Are you asking for something on that one?

12 THE WITNESS: No. That is just
13 showing you the relation of the Pierce Crossing Bone
14 Spring Pool to the East Pierce Crossing Bone Spring
15 Pool. It is just -- we're not asking for anything.

16 MR. EZEANYIM: Okay. Very good.
17 Continue.

18 MS. MUNDS-DRY: Thank you,
19 Mr. Examiner.

20 Q (By Ms. Munds-Dry) Now, Marbob plans to
21 call a geologist and an engineer to discuss the
22 specific status of each of the wells and the pools;
23 is that correct?

24 A That's correct.

25 Q And if you would turn to what has been

1 marked as Marbob Exhibit Number 2. Is this the
2 affidavit showing proper notice was given of this
3 application in accordance with the division rules,
4 along with the notice list, the letter to interest
5 owners, and the affidavit of publication along with
6 the green cards?

7 A Yes, it is.

8 Q This is for both Case 14419 and Case
9 14420?

10 A Yes.

11 Q And who did Marbob notice of this
12 application?

13 A We notified all the operators within the
14 pool and every operator within one mile of each pool.

15 Q And Mr. Duncan, are you aware of any
16 objections to this application, both the
17 applications?

18 A No.

19 Q Were Marbob's Exhibits 1 through 2 either
20 prepared by you or prepared under your direct
21 supervision?

22 A Yes, they were.

23 MS. MUNDS-DRY: That concludes my
24 examination of Mr. Duncan.

25 MR. EZEANYIM: Okay. Thank you.

1 Any -- want to cross-examine?

2 MR. BRUCE: No, sir.

3 MR. EZEANYIM: Hall?

4 MR. HALL: No questions for Mr.

5 Duncan. Before I forget, let me enter an appearance
6 for OXY USA WTP Limited Partnership at this point.

7 MR. EZEANYIM: Oh, you want to enter
8 an appearance for OXY?

9 MR. HALL: It's an additional OXY.

10 MR. EZEANYIM: Okay. Do you have any
11 questions for the witness?

12 MR. HALL: No, sir.

13 MR. BROOKS: No questions.

14 MR. EZEANYIM: Thank you. You may be
15 excused.

16 MS. MUNDS-DRY: Mr. Ezeanyim, I move
17 the admission of Marbob Exhibits 1 and 2 into
18 evidence.

19 MR. EZEANYIM: Exhibits 1 and 2 will
20 be admitted into evidence.

21 (Exhibits 1 and 2 admitted.)

22 MS. MUNDS-DRY: And with that, I call
23 my next witness.

24 BRENT MAY

25 After having been first duly sworn under oath,

1 was questioned and testified as follows:

2 EXAMINATION

3 BY MS. MUNDS-DRY:

4 Q Mr. May, would you please state your full
5 name for the record?

6 A Brent May.

7 Q And where do you reside?

8 A Artesia, New Mexico.

9 Q And by whom are you employed?

10 A Marbob Energy Corp.

11 Q And what is your position with Marbob?

12 A I am a geologist.

13 Q Have you previously testified before the
14 division and were your credentials made a matter of
15 record?

16 A Yes.

17 Q Are you familiar with the geology in the
18 subject portions of both the East Pierce Crossing
19 Bone Spring Pool and the Southeast Willow Lake Bone
20 Spring Pool?

21 A Yes.

22 Q And you're familiar with the application
23 that Marbob has filed in this case?

24 A Yes, I am.

25 MS. MUNDS-DRY: Mr. Examiner, we

1 tender Mr. May as an expert in petroleum geology.

2 MR. EZEANYIM: Mr. May is so
3 qualified.

4 Q (By Ms. Munds-Dry) Mr. May, would you
5 please turn to what has been marked as Marbob Exhibit
6 Number 3 and identify and review that for the
7 examiner.

8 A This is a stratigraphic cross-section.
9 It's a west to the east cross-section. The west is
10 on the left-hand side of the cross-section. The east
11 is on the right-hand side. There is a location map
12 on the bottom right-hand corner. Starting on the
13 left-hand side, the first log is the Marbob Energy
14 Showstopper 7 Com Number 1.

15 It moves over then to the Devon Energy
16 Chimayo Number 1. And then Section 8 of 25, 29. The
17 middle well is OXY Corral Fly State Number 1, 25, 29,
18 Section 11. And it moves over to the Marbob Energy
19 Gravy State Com Number 1 in Section 8 of 25, 30. And
20 then the log on the far right-hand side of the
21 cross-section is the Chesapeake Pierce Canyon 17
22 Federal Number 1 of 17 of 25, 30.

23 MR. EZEANYIM: And this is only in
24 the Bone Spring, right?

25 THE WITNESS: Yes, sir. It is a

1 stratigraphic cross-section. The datum is marked.
2 It is the top of the Bone Spring formation. I also
3 have marked the top of what I call the Avalon Shale
4 section, the base of the Avalon Shale and also the
5 top of the first Bone Spring sand. There is three
6 wells on this cross-section that are producing from
7 this Avalon Shale section, and those three wells are
8 horizontal wells within that section.

9 Now, I want to state the logs I have
10 on this cross-section are from pilot holes that were
11 drilled before the bid was taken horizontal, so
12 that's what the logs are from. And I have denoted on
13 those three logs with red arrows that shows where the
14 horizontal leg of the well was placed on all three of
15 those wells, which is the -- both Marbob wells and
16 the Chesapeake well.

17 The Avalon Shale section is over on
18 the left-hand side, on the Marbob Showstopper well,
19 you will note that it is a little bit thinner on the
20 west side of the cross-section, and it thickens on
21 the east. And basically, what is going on here is
22 you will look down on the Showstopper well between
23 the base of the Avalon Shale and the first Bone
24 Springs sand, the shale is not present there. There
25 was limestone deposited. And with that said, you

1 might jump to the conclusion that maybe the shale
2 thickens to the east and thins to the west, but this
3 is only a local occurrence. You can move further to
4 the west, and it will thicken again.

5 One thing I might point out on the
6 logs on this cross-section, each one on the
7 right-hand side has a neutron density curve. Through
8 the Avalon Shale, you might note on average, the
9 neutron density porosity is running around 20 percent
10 porosity. The other thing I might point out on the
11 neutron density responses is that normally in most
12 shales, you see a neutron density response where the
13 neutron curve is much higher than the density. Most
14 of these in general the neutron density curves are
15 close to tracking each other.

16 And what that is telling -- what I am
17 interpreting that as is that there is a lot of silica
18 in the shale in the form of chert, which makes the
19 shale a little bit harder, a little bit more brittle,
20 easier to fracture, stimulate. That's it.

21 Q If you could just spend a little time
22 talking about what you see here in terms of the depth
23 of the Avalon Shale and these wells.

24 A Over on the Showstopper on the west side
25 of the cross-section, the top of the shale is about

1 6840 in that general area. And if you move over to
2 the west side on the Chesapeake well, the top of the
3 shale is below 7700 feet. So you're dropping -- and
4 of course, those are just depths, but if you map the
5 structure on the top of the shale, you probably drop
6 about 500 feet across this cross-section. But you
7 might note that the Chesapeake well and the Marbob
8 Gravy well are way down dip producers and the
9 Showstopper is a producer. So from what I have seen,
10 this structure is not influencing the production out
11 of this zone.

12 Q Thank you, Mr. May. Let's now turn to
13 your next exhibit.

14 MR. EZEANYIM: What is the production
15 from these wells? What is the production?

16 THE WITNESS: The production is from
17 the horizontal leg that I've shown with the red arrow
18 because these logs are from a pilot hole. What we
19 did, Marbob and Chesapeake drilled down below this
20 Avalon Shale quite a ways. In fact, Marbob drilled
21 all the way to the bottom of the Bone Spring. Logged
22 that vertical hole, plugged back, and then kicked off
23 of the horizontal leg inside of this Avalon Shale
24 unit.

25 MR. EZEANYIM: I'm trying to

1 determine how you come up with your depth bracket
2 allowable on these horizontal wells.

3 THE WITNESS: From what I understand,
4 it was based off the true vertical depth of the
5 horizontal leg. Well, no, I take that back. It was
6 determined from the pool or it was established from
7 the original pool.

8 MR. EZEANYIM: I know that is on the
9 pool, of course. The depth bracket is based on the
10 pool. But some of your wells are horizontal wells,
11 right? Some of the wells you're asking for this are
12 horizontal wells, right?

13 THE WITNESS: Yes.

14 MR. EZEANYIM: Are you going to
15 answer that question or somebody else can answer that
16 for me?

17 THE WITNESS: Could you --

18 MR. EZEANYIM: Can you answer that
19 question for me?

20 THE WITNESS: Could you restate the
21 question, please?

22 MR. EZEANYIM: I said some of the
23 wells you're asking for these exceptions, special
24 pool rules are horizontal wells, right?

25 THE WITNESS: Yes, they are

1 horizontal.

2 MR. EZEANYIM: Covering how many
3 units?

4 THE WITNESS: They are covering --
5 the wells that Marbob has drilled that we are asking
6 for the higher GOR covers four 40s.

7 MR. EZEANYIM: Okay. So 160?

8 THE WITNESS: Yes, sir.

9 MR. EZEANYIM: You're not asking any
10 allowable on the oil production? Just the increases
11 in the gas oil ratio?

12 THE WITNESS: Yes.

13 MR. EZEANYIM: Okay. Go ahead.

14 MS. MUNDS-DRY: Mr. Ezeanyim, did you
15 have any other questions on this cross-section?

16 MR. EZEANYIM: No.

17 MS. MUNDS-DRY: Before I fold it up?

18 MR. EZEANYIM: Do you?

19 MR. BROOKS: No.

20 Q (By Ms. Munds-Dry) Mr. May, could you turn
21 to what has been marked as Exhibit Number 4 and
22 review this for Mr. Ezeanyim and Mr. Brooks.

23 A This is a gross isopach on the Avalon
24 Shale. On the far left-hand side in Section 7 of 25,
25 29, it's shown in green, is the location of the

1 Showstopper, the Marbob Energy Showstopper #1. It is
2 a horizontal well. The surface location is located
3 in the northeast corner of the section, and the
4 bottom hole location is in the northwest of the
5 section.

6 Over on the right-hand side of the map
7 also shown in green is the Marbob Energy Gravy State
8 Com #1. The surface location is in Section 8. The
9 bottom hole location is in Section 7. There's some
10 red numbers on this map. Those are the isopach
11 values, and again, these are gross isopach values,
12 not net.

13 There are other wells shown on this map.
14 In fact, many other horizontals. The only
15 horizontals that I'm aware of that are currently
16 producing out of this Avalon Shale are the
17 Showstopper, the Gravy, a Chesapeake well in Section
18 17 of 25, 30 on the east side of the section. I
19 think that is their Pierce Canyon well. They also
20 have another Avalon producer up in 32 to the north,
21 another Chesapeake well, also another Pierce Canyon
22 well. It's also along the east side of that section.

23 The other wells that are shown on the map
24 are either Delaware producers or Bone Spring
25 producers. And if they're Bone Spring producers, in

1 general they are producing out of the first or second
2 sands, not the Avalon Shale. The isopach in general
3 is showing a thick over on the east side of the map
4 and thinning back over to the west, just like the
5 cross-section showed, the previous exhibit. We might
6 note over on the west -- on the eastern side of the
7 map, I'm sorry, the values range around 700 feet in
8 thickness, gross thickness, and in the middle of the
9 map around 600 feet, and then over on the western
10 side about 500 feet..

11 What I want to show with this map is that
12 that Avalon Shale unit is continuous through this
13 area, and I might even state it is continuous outside
14 of this map. In fact, the East Pierce Crossing Pool
15 is actually just -- the main body of that pool is
16 just off the north edge of this map. The shale does
17 continue on up that way. It continues east and west
18 several townships. It covers a very large area.

19 Q And that would appear to be the case also
20 for the Southeast Willow Lake Bone Spring Pool?

21 A Yes. That pool is actually on this map.
22 It is in 25, 29, and again, the Avalon Shale appears
23 in that pool, and it is continuous between the pools
24 and to a great extent outside of the pools. Again, I
25 would like to state that I did not make a structure

1 map because it appears at this time structure is not
2 affecting the production in this unit.

3 Q And after reviewing the geology in this
4 area, Mr. May, what are your geologic conclusions?

5 A The shale is continuous over a large area.
6 It is definitely separate from the traditional pays
7 in the pools, which were the first and second Bone
8 Spring sands. It is stratigraphically higher than
9 those pays. Structure has no effect it appears at
10 the time. And since the Avalon Shale is above the
11 traditional pays, the first and second Bone Spring
12 sand, at this time, I don't think we will see any
13 effect on the old wells versus the new wells.

14 Q And were Exhibits 3 and 4 prepared by you
15 or compiled under your direct supervision?

16 A Yes.

17 MS. MUNDS-DRY: With that, that
18 concludes my direct examination of Mr. May.

19 MR. EZEANYIM: Okay. Do you want
20 this --

21 MS. MUNDS-DRY: We move the admission
22 of Exhibits 3 and 4 into evidence.

23 MR. EZEANYIM: Any objection?

24 MR. BRUCE: No, sir.

25 MR. EZEANYIM: Exhibits 3 and 4 will

1 be admitted into evidence.

2 (Exhibits 3 and 4 admitted.)

3 MR. EZEANYIM: Do you have any
4 questions?

5 MR. BROOKS: No questions.

6 MR. EZEANYIM: Do you have anything
7 for this witness?

8 MR. BRUCE: Yeah, a couple of
9 questions.

10 EXAMINATION

11 BY MR. BRUCE:

12 Q Mr. May, you said that Marbob drilled
13 vertically to the base of the Bone Spring?

14 A The Showstopper and the Gravy, that's
15 correct, with the pilot hole and plugged back and
16 went horizontal.

17 Q Now, these pools cover the entire Bone
18 Spring interval, correct?


19 A That's what I understand, yes.

20 Q And you said that most of the production
21 was from the existing vertical wells, from the first
22 or second Bone Spring?

23 A Yes.

24 Q And the two Marbob wells are the first
25 horizontal wells within a mile of these pools?

1 A I'm not sure if the Chesapeake wells
2 replaced them or have been placed in this pool or
3 not, and they were -- actually, the one in 17 was
4 drilled before the two Marbob wells, but I couldn't
5 tell you if that is actually in the East Pierce
6 Crossing Pool or not.

7 Q Oh, okay. One of them looks like it is
8 more than a mile away from the pool. Getting back to
9 my other question, were any of the vertical wells
10 completed in the Avalon Shale? 

11 A Not that I'm aware of.

12 MR. BRUCE: That's all I have.

13 MR. EZEANYIM: Mr. Hall?

14 MR. HALL: I have no questions.

15 MR. EZEANYIM: Any questions?

16 MR. BROOKS: No questions.

17 MR. EZEANYIM: Okay. You may step
18 down.

19 THE WITNESS: Thank you. 

20 MS. MUNDS-DRY: Thank you. I would
21 like to call my next witness.

22 GEORGE FREEMAN

23 After having been first duly sworn under oath,
24 was questioned and testified as follows:

25 EXAMINATION

1 BY MS. MUNDS-DRY:

2 Q Would you please state your name for the
3 record?

4 A George Freeman.

5 Q Where do you reside?

6 A Artesia, New Mexico.

7 Q By whom are you employed?

8 A Marbob Energy.

9 Q And how are you employed with Marbob?

10 A I am an engineer.

11 Q And have you testified previously before
12 the division and were your credentials made a matter
13 of record?

14 A Yes.

15 Q Are you familiar with the reservoirs in
16 both the East Pierce Crossing Bone Spring Pool and
17 the Southeast Willow Lake Pool?

18 A Yes.

19 Q Are you familiar with the application that
20 Marbob has filed in both cases?

21 A Yes.

22 MS. MUNDS-DRY: We would tender Mr.
23 Freeman as expert in petroleum engineering.

24 MR. EZEANYIM: Have you ever
25 testified before the division?

1 THE WITNESS: Yes, I have.

2 MR. EZEANYIM: And your credentials
3 were accepted?

4 THE WITNESS: Yes, they were.

5 MR. EZEANYIM: Okay. Are you a
6 petroleum engineer by education? Background?

7 THE WITNESS: Yes. My degree is in
8 chemical engineering. I have been working as a
9 petroleum engineer since 1979. And I have also been
10 in graduate school in petroleum engineering but
11 didn't finish the degree.

12 MR. EZEANYIM: Mr. Freeman is so
13 qualified.

14 MS. MUNDS-DRY: Thank you,
15 Mr. Examiner.

16 Q (By Ms. Munds-Dry) Mr. Freeman, would you
17 please turn to your first two exhibits marked Exhibit
18 5. They are those two plats. Would you review those
19 for the examiners?

20 A Yes. First one exhibit -- the first map
21 in Exhibit 5 shows well spots for wells that are
22 included inside the East Pierce Crossing Bone Spring
23 Pool. There is 62 wells by my count. Green dots are
24 active wells and black dots are inactive wells. Then
25 the blue shading shows my understanding of the pool

1 boundaries as it's defined. And there are also red
2 dots showing horizontal wells that produce from the
3 Avalon Shale.

4 The Gravy State Com 1H is a Marbob well
5 and the Pierce Canyon 32 Fed 1H is a Chesapeake well.
6 Both of those are included in the East Pierce
7 Crossing Pool. And then the southern red dot is the
8 Pierce Canyon 17 Fed 1H, and I believe that is a
9 wildcat pool well.

10 MR. EZEANYIM: Yeah, it is more than
11 one mile from that pool?

12 THE WITNESS: Yes.

13 MR. EZEANYIM: So is that a wildcat?

14 THE WITNESS: I believe it is --

15 MR. EZEANYIM: Pierce Canyon 17 Fed
16 1H, who owns that well?

17 THE WITNESS: Chesapeake.

18 MR. EZEANYIM: Okay.

19 Q (By Ms. Munds-Dry) And let's review your
20 next map under Exhibit 5.

21 A The next page is the same type of map for
22 the Southeast Willow Lake Bone Spring Pool. I am
23 showing six previous wells that are in that pool, and
24 of course, the pool boundaries are shaded in blue.
25 And then the Showstopper 7 Fed Com 1H is a Marbob

1 well that is included in the Southeast Willow Lake
2 Bone Spring Pool.

3 Q And, again, you have the green dots to
4 denote active wells?

5 A Yes. In this case, the green dots are
6 classified as oil wells, and the small red dots are
7 classified as gas wells.

8 Q Okay.

9 A According to PI/Dwight's database.

10 MR. BROOKS: And that's -- which
11 exhibit are you talking about now?

12 THE WITNESS: The second page of
13 Exhibit 5.

14 MR. EZEANYIM: The second page of the
15 exhibit.

16 MR. BROOKS: Thank you, sir.

17 Q (By Ms. Munds-Dry) Now that we have given
18 the examiner an overview of what wells are in these
19 pools, if you could please turn to your next group of
20 exhibits. Exhibit Number 6 --

21 A Yes.

22 Q -- could you review that for the examiner?

23 A Okay. This and the next several exhibits
24 are showing daily production data from Marbob
25 operated wells that produce from the Avalon Shale.

1 First plat is for the Gravy State Com #1, and it
2 shows daily production history. The bold red line is
3 the daily gas production according -- and it is on
4 the scale on the left. It is in MCF per day.

5 The bold blue line is the water rate,
6 barrels per day. Bold green line is the oil rate,
7 barrels per day. And then also there is a thin
8 orange line towards the bottom of the plat, which is
9 the gas oil ratio in MCF per barrel of oil, 1,000
10 cubic feet per barrel of oil.

11 This plat shows that the well started
12 producing on line in October. There is actually some
13 test production in August, and then we had some
14 problems with the well. We had a fish stuck in the
15 hole, and so we didn't produce it for a long time,
16 and then it started producing steadily in October.

17 The initial gas rate is about 4 million
18 cubic feet per day declining to 1.8 million cubic
19 feet per day in January. The initial oil rate was
20 about 1100 barrels per day and declining to
21 90 barrels per day in January. Water rate was
22 1100 barrels per day initially, declining to 170.

23 The initial gas oil ratio on this plat is about 3.5
24 thousand cubic feet per barrel of oil, and that has
25 increased to 20,000 cubic feet per barrel of oil.

Initial
GO R 23500 - 20,000

1 MR. EZEANYIM: Can you repeat that?

2 THE WITNESS: Initially, it was 3.5
3 MCF per barrel, and the current gas oil ratio is 20
4 MCF per barrel.

5 MR. EZEANYIM: 20,000?

6 THE WITNESS: 20,000.

7 MR. EZEANYIM: You're talking about
8 gas oil ratio?

9 THE WITNESS: Yes.

10 MR. EZEANYIM: What type of reservoir
11 is this?

12 THE WITNESS: Well, I will show you
13 some PVT data, but it is nearly a retrograde
14 condensate reservoir. However, it is not a -- there
15 is free oil in the reservoir, so it's a volatile oil
16 and gas condensate type of reservoir.

17 MS. MUNDS-DRY: And you will have
18 some exhibits later on, Mr. Freeman, that will
19 discuss that in more detail for the examiner, so I'm
20 sure he will be keenly interested in that.

21 MR. EZEANYIM: Yeah, okay.

22 Q (By Ms. Munds-Dry) Mr. Freeman, with this
23 and then perhaps you can review this also with the
24 Showstopper, but if you could explain a little bit
25 for the examiner why we are asking for a 5,000 to 1

1 GOR --

2 A Yes.

3 Q -- on this exhibit.

4 A Right. In this well, it includes four
5 40-acre areas in the project area.

6 MR. EZEANYIM: This well is a
7 horizontal well?

8 THE WITNESS: Sorry?

9 MR. EZEANYIM: This well is --

10 THE WITNESS: Yes, this is a
11 horizontal well.

12 MR. EZEANYIM: Covering four units?

13 THE WITNESS: Yes.

14 MR. EZEANYIM: Okay. And this is in
15 the Bone Springs?

16 THE WITNESS: Yes.

17 MR. EZEANYIM: Okay.

18 THE WITNESS: It's in the Avalon
19 Shale of the Bone Spring.

20 MR. EZEANYIM: Okay.

21 THE WITNESS: And top allowable for a
22 40-acre unit is 187 barrels of oil per day, and so we
23 multiply that times four and get our oil allowable of
24 748 barrels per day.

25 MR. EZEANYIM: And you are making

1 what a day now?

2 THE WITNESS: We are currently at 90.

3 MR. EZEANYIM: 90? Okay.

4 THE WITNESS: And with the 2,000 GOR
5 limit, that makes the top gas allowable of 1,496 MCF
6 per day, and we're currently producing more than
7 that. If we increase the GOR limit to 5,000, then
8 that would make the top gas allowable at 3,740 MCF
9 per day which would probably be high enough that we
10 would not be restricted on our production after the
11 initial production period.

12 MR. EZEANYIM: Okay. How much would
13 production increase by increasing that 5,000? Do you
14 know how much oil production will increase? Because
15 I know it is going to increase. Can you calculate
16 how much it is going to increase? Because that's why
17 you are here today.

18 THE WITNESS: Right. Well, the rate
19 that we're producing now is as much as we can make
20 right now if we are not restricted.

21 MR. EZEANYIM: If you increase to
22 5,000 you're asking, how much more --

23 THE WITNESS: We can make 3.7 million
24 per day over -- instead of 1.496 thousand cubic feet
25 per day.

1 MR. EZEANYIM: Then how much oil is
2 that?

3 THE WITNESS: The increase would be
4 about 2,244,000 -- per day

5 MR. EZEANYIM: Yeah, I wanted to know
6 how much --

7 THE WITNESS: 2,244 per day.

8 MR. EZEANYIM: Yeah, that was
9 translating for 90 barrels a day to how much -- how
10 many barrels a day?

11 THE WITNESS: Well, it wouldn't
12 increase the oil allowable because we're not asking
13 to change that from -- the pool allowable is 187
14 barrels per day for the single 40, and it is
15 748 barrels per day for four 40s, and we would leave
16 that.

17 MR. EZEANYIM: So you are asking for
18 5,000 to increase the amount of gas you produce,
19 right?

20 THE WITNESS: Yes.

21 MR. EZEANYIM: Okay. Not the amount
22 of oil you produce, because you know, you can't
23 squeeze it out. This is reservoir oil. Okay. Go
24 ahead.

25 Q (By Ms. Munds-Dry) And Mr. Freeman, maybe

1 this would be a good time -- I know you will talk
2 about this a little bit more later, but just showing
3 on this graph how much water is being produced --

4 A Yes.

5 Q -- why it is important to keep production.

6 A Yes. Well, as you can see there, we make
7 a high rate of water starting at 1,100 barrels of
8 water per day and currently 170 barrels of water per
9 day. The well is flowing, but we're kind of reaching
10 the limit that we can flow. We need to produce these
11 at a high rate to clear the reservoir and the
12 wellbore of liquid, both oil and water.

13 Also, we need a high rate to pay for the
14 well because these horizontal wells are very
15 expensive, and they require large fracture
16 treatments.

17 Q Mr. Freeman, attached to your graph here,
18 you have some tabular data. Are these just
19 reports --

20 A Yes, there's tabular data for all the
21 plats that are included here, which comes after this
22 set of plats. It is a daily production history for
23 the wells.

24 Q Thank you. Could you now turn to Exhibit
25 7 for the Showstopper daily production history.

1 A The Showstopper 7 Fed Com 1H is in the
2 Southeast Willow Lake Bone Spring Unit -- Pool, I
3 mean, excuse me, and it is similar data to what we
4 saw on the previous graph. We're showing daily
5 production rate. The bold red line is the gas rate.
6 The bold blue line is the water rate, and the bold
7 green line is the oil rate, and the thin orange line
8 is the gas oil ratio.

9 MR. EZEANYIM: Which one is gas oil
10 ratio? Which line --

11 THE WITNESS: It's the thin orange
12 line.

13 MR. EZEANYIM: Thin orange line?

14 THE WITNESS: Yes.

15 MR. EZEANYIM: What is average gas
16 oil ratio right now?

17 THE WITNESS: It is about 20 MCF per
18 barrel, also.

19 Q (By Ms. Munds-Dry) Similar to the Gravy?

20 A Yes. Yes, very similar. Started out
21 about 3.9 MCF per barrel of oil. Increased to 20 MCF
22 per barrel of oil.

23 Q And, again, you have the tabular data
24 attached here to your plat?

25 A Yes. The gas started at about 3.5 million

1 cubic feet per day and decreased to 1.8 million cubic
2 feet per day over the time of this chart. Water
3 started at 1,200 barrels per day and decreased to
4 250 barrels per day. The oil started at 930 barrels
5 per day and decreased to 90 barrels per day. And,
6 also, this well is in the Southeast Willow Lake Pool,
7 and the top allowable for a 40-acre unit is
8 230 barrels of oil per day. And this is a horizontal
9 well. It also covers four 40-acre units. And so the
10 allowable for it is 920 barrels of oil per day. With
11 a 2,000 GOR limit, it makes the top gas allowable of
12 1,840 MCF per day. If we increase the GOR limit to
13 5,000, that would make the top gas allowable 4,600
14 MCF per day. We didn't actually achieve that with
15 this well, but hopefully, the next one we will.

16 Q So an increase of 5,000 to 1 also on this
17 well for this pool would also give you -- you'd be
18 allowed to produce --

19 A Yes.

20 Q -- at a full rate?

21 A That's right.

22 Q Okay. Would you please turn now to the
23 next exhibit, Number 8, and explain this to the
24 examiner.

25 A Okay. I have included production data for

1 all the wells that Marbob operates that are producing
2 from the Avalon Shale. The next chart on Exhibit 8
3 is production history for the SRO State Unit #2H.
4 Another horizontal well that covers four 40-acre
5 units. This is in a different pool. It's in the
6 Delaware River Bone Spring Pool. It's located in
7 Section 32 of Township 25 South, runs 28 East. It's
8 about seven miles southwest of the Showstopper.

9 And this well initially started producing
10 four million cubic feet of gas per day, 2,600 barrels
11 of water, 566 barrels of oil. The initial gas oil
12 ratio was about 7 MCF per barrel. You can see there
13 is a big interruption in the production history.
14 This is a well that we completed half of the lateral
15 and tested it and then came back and killed the well
16 to complete the second half of the lateral.

17 And since then, we have been having a hard
18 time reestablishing production with it. Killing the
19 well seems to have been harmful, and we're trying to
20 pump the water off of it now to get it to flow again,
21 so we're still working on this one. But similar to
22 the other Avalon Shale wells, this one had an initial
23 gas oil ratio of about 7 MCF per barrel and has
24 increased most recently to 21 MCF per barrel.

25 Q Okay. Please turn to the next exhibit,

1 Number 9.

2 A Exhibit 9 is for another well, the MYOX 28
3 State Com 6H. This is a vertical well that has been
4 tested in the Avalon Shale along with several other
5 parts of the Bone Spring formation. It is in Section
6 28 of 25 South, 28 East. It is about five miles
7 southwest of the Showstopper #1. And during two
8 separate periods from May 19 to June 17 of 2009, and
9 then from June 24 to July 23, it was completed and
10 produced from the Avalon Shale, and just during those
11 periods was it only an Avalon Shale. And at the end
12 of that test time, it was making about 244 MCF per
13 day, 58 barrels of water per day, and 6 barrels of
14 oil per day, and gas oil ratio was about 40 MCF per
15 barrel of oil.

16 This plat is a little bit different than
17 the previous ones I showed because the -- well, the
18 gas, the oil, and the water curves are the same, but
19 instead of gas oil ratio, this one shows oil gas
20 ratio. So it's inverse, and that is the thin green
21 line down at the bottom.

22 MR. EZEANYIM: Why did you do that?

23 THE WITNESS: It was a plat that I
24 already had, and at the time, I was interested in the
25 amount of oil that was getting out of the gas. Sorry

1 I did not revise the plat --

2 MR. EZEANYIM: That's all right.

3 THE WITNESS: -- but I just used the
4 one I had. And this well is in the Red Bluff Bone
5 Spring Pool. It's about five miles southwest of the
6 Showstopper. And there is also tabular data for it.

7 Q (By Ms. Munds-Dry) Great. Now if you will
8 turn to Exhibit Number 10 and review that for the
9 examiners.

10 A Exhibit 10 shows a plat for another well,
11 the Hawg Federal #1. This is also a vertical well
12 that is currently producing from the Avalon Shale.
13 It has been completed in several other parts of the
14 Bone Spring and is now testing the Avalon Shale.
15 This is in Section 25 of Township 19 South, Range 34
16 East, and it is in the lead Bone Spring Pool. It is
17 about 40 miles northeast of the Gravy.

18 And during this test, gas initially -- or
19 the high point of the gas production was 127 MCF per
20 day. That has declined to 91. The oil was initially
21 89 barrels of oil, and that's declined to 14. The
22 water has declined from 170 barrels per day to 3.
23 Gas oil ratio increased from about 3 MCF per barrel
24 to 9.2. There is also tabular data for this,
25 attached to it.

1 Q Thank you, Mr. Freeman. Now, if you will
2 turn to your PVT analysis and discuss what you think
3 you see here in the reservoir for the examiner.

4 A Yes, this is on Exhibit Number 11, and it
5 is pressure volume relationship for recombined gas
6 and oil samples from the Gravy State Com #1H. And
7 this is what I was talking about earlier. We were
8 expecting this to be a condensate reservoir, but when
9 we tried to get a dew point for it, it had to go to
10 9,200 PSI, which is far above the actual reservoir
11 pressure.

12 The initial pressure was estimated at
13 3,400 PSI, and I conclude from this that we have free
14 liquid and gas in the reservoir simultaneously. I
15 can't tell you how it is distributed in the reservoir
16 because we can't really see it in the logs, and we
17 can't test the reservoir without fracking it, so that
18 we really are not able to selectively produce
19 different depths in the shale. So it all comes out
20 together. Anyway, the point of this is just to show
21 that we have free oil in the reservoir, along with
22 gas condensate.

23 Q And you have a similar analysis on Exhibit
24 Number 12?

25 A Yes. Exhibit Number 12 is the same type

1 of data from the Yates Petroleum Banjo BNO Federal #1
2 well, and this well is about five miles south of the
3 Gravy. It's in a different pool. And this one, they
4 also tried to get a dew point and found the dew point
5 at 10,713 PSI, and they estimated the reservoir
6 pressure at 3,940. So same conclusion from this one,
7 that we have oil and gas simultaneously in the
8 reservoir.

9 MR. EZEANYIM: What are the current
10 pressures now? Do you know?

11 THE WITNESS: No, I don't know.

12 Q (By Ms. Munds-Dry) Okay. Let's turn then
13 next to Exhibits 13 and 14.

14 A Okay.

15 Q Review those for the examiners.

16 A Exhibit 13 is some core analysis data from
17 sidewall cores taken from the Showstopper 7 Fed Com
18 #1H well. And I have drawn horizontal lines to
19 separate the Avalon Shale data from other formations,
20 and then I have highlighted in yellow permeability
21 that was measured from these core plugs. You can see
22 that these are uniformly very low permeabilities,
23 mostly less than .0001 millidarcy. And this is the
24 reason why we can't produce the well or test it
25 without fracking it.

1 Q And Exhibit 14, what does that show?

2 A Exhibit 14 is the same type of data from
3 the Basashi Fed #1 well, and this well is 20 miles
4 southwest of the Showstopper. I have also separated
5 the Avalon Shale data by the horizontal lines. And
6 in this case, they reported the permeabilities as
7 less than .001 millidarcy.

8 Q Thank you. If you would now turn to what
9 has been marked as Marbob Exhibit Number 15 and
10 review that for the examiner.

11 A Okay. This is actually something that I
12 did not produce myself, but this is a report from a
13 build up test that Yates Petroleum did on their Banjo
14 BNO Fed #1 well, which is completed in the Avalon
15 Shale. And the point of this is just to show that
16 with the build up test, they measured permeability of
17 .01 millidarcy. So, you know, the affected
18 permeability of the reservoir is also very low.

19 Q And, again, this would indicate to you
20 that you can't test the well without fracking?

21 A That's right.

22 Q Okay. Turn to Exhibit 16, please, and
23 review this.

24 A Okay. Exhibit 16 is data from nonMarbob
25 operated wells that produced from the Avalon Shale,

1 and so I listed all of the wells that I know about.
2 The first well is the PLU Pierce Canyon 17 Fed #1H.
3 This is a Chesapeake operated well. And I believe it
4 is the earliest well that produced from the Avalon
5 Shale.

6 Q So it gives us the longest history?

7 A Yes. I got this from -- public production
8 data from IHS Energy, and it is monthly production,
9 but the monthly production data is expressed as an
10 average daily rate just by dividing the monthly
11 production by the number of days in the month. In
12 this case, the maximum monthly rate for the well was
13 3.9 million cubic feet per day, and water is 713
14 barrels per day, and the oil is 293 barrels per day.
15 The initial gas oil ratio was 2.9 MCF per barrel, and
16 this has increased to 20 MCF per barrel.

17 MR. EZEANYIM: Are you talking about
18 PLU Pierce Canyon 17 Federal #1?

19 THE WITNESS: Yes.

20 MR. EZEANYIM: It's not -- it's clear
21 it's not there. How are you reading those numbers?

22 THE WITNESS: I'm sorry?

23 MR. EZEANYIM: I can't read those
24 numbers you are reading from this graph.

25 THE WITNESS: Well, there is tabular

1 data attached to the back of it.

2 MR. EZEANYIM: Oh, okay.

3 THE WITNESS: I just know what the
4 numbers are. I am not reading them from the plat.

5 MR. EZEANYIM: You should have put it
6 on the plat, so when you read, I get lost.

7 THE WITNESS: Okay. I'm sorry.

8 MR. EZEANYIM: Okay. You have it on
9 the back. Okay. Go ahead. You should put it on the
10 scale here, so it would be easy to read.

11 THE WITNESS: Yes. Okay. The
12 production from this well is very similar to the
13 production from our Gravy. They pretty much overlay.

14 Q (By Ms. Munds-Dry) And how does it compare
15 to the Showstopper?

16 A Well, Showstopper and Gravy produce almost
17 identical rates and the Pierce Canyon 17 does, also.

18 Q Okay. Let's go to our next exhibit. What
19 does Number 17 show?

20 A Number 17 is for another Chesapeake well,
21 the PLU Pierce Canyon 32 Fed 1H, and this well is
22 about one mile north of the Gravy in Section 32 of 24
23 South, 30 East. It has the same scale, and also
24 average daily production by month. And in this case,
25 the well produced the maximum of 2.2 MCF per day,

1 385 barrels of water per day, 157 barrels of oil.

2 The gas oil ratio was initially 6.3 and increased to
3 19.6 MCF per barrel.

4 Q And, again, the tabular data is attached
5 to --

6 A Yes, the tabular data is on the back.

7 Q What is Exhibit Number 18?

8 A Okay. This is another Chesapeake well
9 that I believe produces from the Avalon Shale. It is
10 the PLU Ross Ranch 6 Fed #1H. This well is in
11 Section 6 of 26 South, 30 East. It's about five
12 miles south of the Gravy. This one produced maximum
13 gas rate of about 1,553 MCF per day and has declined
14 to 1,216 MCF per day. Initial water rate was 1,191.
15 Initial oil rate was 141. The initial gas oil ratio
16 was 6.7, and that has increased to 28 MCF per barrel
17 of oil. And the tabular data is also attached for
18 this well.

19 Q And what is Exhibit Number 19?

20 A This is another Chesapeake well. It is
21 the PLU Ross Ranch 31 Fed #1H, and it is Section 31
22 of 25 South, 30 East about four miles south of the
23 Gravy, and its production history is very similar.
24 Produced the maximum of 1,974 MCF per day and
25 413 barrels of water and 143 barrels of oil per day.

1 The initial gas oil ratio in this one was about 13.8
2 MCF per day, and it has increased to 21 MCF -- I'm
3 sorry, 21 MCF per barrel of oil.

4 Q And what is Exhibit Number 20?

5 A Exhibit Number 20 is the same plat for the
6 Yates Petroleum Banjo BNO Fed #1. This is a vertical
7 well, I think. And it produced a maximum of 369 MCF
8 per day and has declined to 110 MCF per day. Oil
9 rate has gone from 21 barrels per day to 5, and the
10 gas oil ratio has increased from 17.8 to 23.3 MCF per
11 barrel of oil.

12 Q After comparing all of these wells in the
13 graphs that we have gone through, what do you see?

14 A Well, I see that we're getting lots of
15 good wells that have very interesting gas and oil
16 production rates, especially horizontal wells. They
17 make a lot of gas and oil. Our gas oil ratio is
18 starting out something higher than 2,000 MCF per
19 barrel or 2,000 standard cubic feet per barrel of
20 oil. In a lot of these wells, it is increasing or
21 has increased to the neighborhood of 20 MCF per
22 barrel of oil. It is a fairly common gas oil ratio
23 now.

24 So we're getting rates that are attractive
25 enough that we want to drill more wells like this,

1 but we are seeing a high gas oil ratio. And if we
2 have to operate under the same gas oil ratio limit,
3 we will have to restrict production from the wells in
4 order to stay below the allowable.

5 Q Would you please identify and review for
6 the examiner Exhibit Number 21?

7 A Yes. Exhibit Number 21 is a table I
8 prepared to summarize production from other wells in
9 the East Pierce Crossing Bone Spring Pool. I counted
10 62 wells, and I got this data from IHS Energy and
11 also from the OCD online web page. So I list the
12 well name, an API number, and approximate location.
13 Then I give an area that is from the OCD web page,
14 and it is the -- basically gives the area that the
15 well is assigned for the purposes of its allowable
16 within its project area, I guess.

17 So you can see that there are several
18 horizontal wells in the list. The 40s are vertical
19 wells, and the horizontal wells are multiples of 40
20 up to 160. I think that's the biggest one we have
21 there. Then I have the date that production started
22 and the date that it stopped, and then the last month
23 average daily production oil, gas, and water and gas
24 oil ratio. And then I give the cumulative oil gas
25 and water and the cumulative gas oil ratio, and then

1 I give the cumulative average daily oil.

2 That's just taking the cum oil and
3 dividing it by the number of days between the
4 production start date and the production stop date,
5 so it's an average daily oil rate. And then
6 basically that's to see where these wells stand
7 against their allowable. So I have the average daily
8 oil gas and water, and then I have the estimated oil
9 allowable and gas allowable, which is just
10 multiplying the top oil allowable by the number of
11 40-acre units for the well and then multiplying the
12 oil allowable by 2,000, the 2,000 GOR limit.

13 And then I summarize by just counting how
14 many months each of these wells exceeded that
15 allowable that I estimated. And just skip to the
16 bottom, there are our totals for the pool. And there
17 are only three months in all of this history where
18 the wells actually exceeded their oil allowable. And
19 there were 103 months where wells exceeded the gas
20 allowable. So you can see that the gas oil ratio
21 limit is much more restrictive here than the oil
22 allowable is.

23 Like Brent said, most of these wells
24 produce from the first or second Bone Spring sand,
25 and also most of them have been around for a few

1 years, so their current rate is well below the
2 allowable. And actually none of these wells is over
3 their allowable now. There is probably a bust in my
4 data because on the second -- excuse me a second --
5 on the second page, I had the Poker Lake Unit 265H,
6 and that is about halfway down the second page, and
7 that is showing an area of 40 acres.

8 However, I am pretty sure that is actually
9 a horizontal well. I just put the acreage that was
10 listed on the OCD web page, but that is probably an
11 error. And so I have estimated a lower allowable for
12 that well, but it looks like it might be a 160-acre
13 well based on what it is producing. So, you know,
14 going by that, it looks like it's overproduced, but
15 I'm sure it actually has a higher allowable than what
16 I've estimated there.

17 So anyway, the conclusion from this table
18 is that these wells, the older wells are not going to
19 be affected by an increase in the GOR limit because
20 they are already producing under the allowable
21 anyway, so.

22 Q Okay. Turn now to Exhibit Number 22 and
23 review that for the examiner. A similar thing here?

24 A A similar table for the Southeast Willow
25 Lake Bone Spring Pool, and there is six other wells

1 in this pool besides the Showstopper. And you can
2 see that the last month's average daily rates are far
3 below the allowable, and none of these wells is
4 anywhere close to being overproduced because they
5 can't make close to the allowable.

6 Q And would you come to the same conclusion
7 that you did for the East Pierce Crossing Bone Spring
8 Pool?

9 A Yes. These wells won't be affected by an
10 increase in the GOR limit.

11 Q Mr. Freeman, after reviewing this
12 information, what are your engineering conclusions?

13 A Well, my conclusions are that the gas oil
14 ratio limit needs to be increased because the 2,000
15 gas oil ratio limit is not really appropriate for the
16 Avalon Shale Reservoir. All the wells that have been
17 completed in it so far have produced more than 2,000
18 gas oil ratio from their first production, and most
19 of them have increased the oil gas ratio up to the
20 vicinity of 20,000 cubic feet per barrel, so the
21 2,000 gas oil ratio limit is unnecessarily
22 restrictive on these wells.

23 Q Would a 5,000 to 1 limit give you the
24 appropriate increase that you need to recover
25 reserves from this reservoir?

1 A Yes. I believe that a 5,000 GOR limit
2 would allow us to produce additional horizontal wells
3 at the maximum rate and would help make them
4 economical.

5 Q And it addresses the issue of lifting
6 water you're seeing --

7 A That's right. It will help us to keep
8 water and liquid hydrocarbon cleaned out of the well.

9 Q Mr. Freeman, will an increase in the GOR
10 limit to 5,000 to 1 cause any harm to the reservoir?

11 A No, it won't. These wells are easily able
12 to produce these rates without doing that.

13 Q And will the approval of this application
14 be in the best interest of conservation, the
15 prevention of waste, and the protection of
16 correlative rights?

17 A Yes.

18 Q And were Exhibits Number 5 through 22
19 prepared by you or compiled under your direct
20 supervision?

21 A Yes. They all were with the exception of
22 the pressure build up summary sheet, which was a
23 Yates Petroleum. That is Exhibit Number 15. I
24 didn't actually prepare that. I did look it over and
25 make an exhibit out of it.

1 MS. MUNDS-DRY: Okay. Mr. Ezeanyim,
2 that concludes my direct examination of Mr. Freeman,
3 and we would move the admission of Exhibits Number 5
4 through 22 into evidence.

5 MR. EZEANYIM: Any objection?

6 MR. BRUCE: No objection.

7 MR. EZEANYIM: Exhibits 5 through 22
8 will be admitted.

9 (Exhibits 5 through 22 admitted.)

10 MR. EZEANYIM: Mr. Bruce?

11 MR. BRUCE: Yeah, just a few
12 questions.

13 EXAMINATION

14 BY MR. BRUCE:

15 Q Mr. Freeman, if you could look at your
16 Exhibit 6 and 7 of the production plats for the
17 horizontal wells.

18 A Yes.

19 Q And the first exhibit, Exhibit 6, just a
20 question out of curiosity, if you go to pages -- your
21 summary of the daily producing rates in mid November,
22 it went to zero, and then about a week later, it
23 floated back up to 400 barrels a day. What happened
24 there?

25 MS. MUNDS-DRY: Mr. Bruce, you're

1 looking at Exhibit 6? I'm sorry.

2 MR. BRUCE: Exhibit 6, yes. I'm
3 sorry.

4 A Yes, we shut the well in to hook up a gas
5 line.

6 Q (By Mr. Bruce) Okay.

7 MR. EZEANYIM: Why did you shut it
8 in?

9 THE WITNESS: Well, actually, I don't
10 know. I can't answer that. The producing department
11 thought it was necessary to shut it in.

12 Q (By Mr. Bruce) And then on Exhibit 7,
13 really the only question, if you compare the first
14 page of Exhibit 6 to the first page of Exhibit 7, the
15 production from this well, from the Showstopper seems
16 to be a lot more erratic.

17 A Yes. There have been issues with our gas
18 purchaser, and they have shut us in a few times.

19 Q Okay. Now, early on in your testimony,
20 you said that you expected these Avalon producers to
21 be -- you expected it to be a retrograde condensate
22 reservoir?

23 A I initially did based on the gas oil
24 ratios that we were seeing from the wells.

25 Q And you said you've kind of backed off on

1 that a little bit or --

2 A Yes. We took fluid samples and sent them
3 to the laboratory, and they did an analysis which
4 showed that while they are close to being retrograde
5 condensate reservoirs, there is actually an excess of
6 liquid present.

7 Q What is the gravity of the oil?

8 A It is about 50 APR.

9 Q Do you know what the vertical producers,
10 the ones that are in the first and second Bone
11 Spring, do you know what the gravity of those
12 producers are?

13 A I don't know exactly. We produce high 40s
14 to around 50 of our Bone Springs.

15 Q The first and second Bone Spring
16 Reservoirs, they are not retrograde condensate, are
17 they?

18 A Not to my knowledge, no. Now, those are
19 actual oil reservoirs that we can see oil stains and
20 oil shows when we drill through them.

21 MR. BRUCE: Okay. That's all I have,
22 Mr. Examiner.

23 MR. EZEANYIM: Thank you. Mr. Hall?

24 MR. HALL: I have no questions.

25 MR. BROOKS: No questions.

1 MR. EZEANYIM: Okay. On the
2 horizontal wells, how do you determine the depth
3 bracket allowable? Are you using the TVD or major *measured*
4 depth? What depth do you use?

5 THE WITNESS: We went by the
6 published allowable for the pool.

7 MR. EZEANYIM: Yeah, I know but --

8 THE WITNESS: They were set by
9 previous pool rules and got it out of a proration
10 schedule.

11 MR. EZEANYIM: I know, but how did
12 you determine the depth so they can apply the
13 allowable?

14 THE WITNESS: Well, since we are in
15 that pool, we didn't calculate a new one. I mean, we
16 could have taken the depth of the lateral and
17 estimated, or you know, 50 -- the depth bracket
18 allowable from that, but I felt like the depth -- the
19 allowable that has been assigned to the pool would
20 apply to all wells in the pool.

21 MR. EZEANYIM: Okay. You don't use
22 your major depth? You use maybe the entry point on
23 the pool?

24 THE WITNESS: Yes.

25 MR. EZEANYIM: I wanted to see what

1 you do to get this allowable because it's very
2 important in our decisions here.

3 THE WITNESS: Yes.

4 MR. EZEANYIM: Okay. If I go back to
5 your -- one of the exhibits, it is Number 6 -- Number
6 16 actually.

7 THE WITNESS: 16?

8 MR. EZEANYIM: Yeah, Number 16. That
9 PLU Pierce Canyon 17 Fed #1H.

10 THE WITNESS: Yes.

11 MR. EZEANYIM: If I look at the graph
12 and the data the way it is presented, I can't make
13 anything out of it because I am very meticulous about
14 these things. I don't know what the units are. It's
15 not shown on the graph and it's not shown on the
16 table. And then it becomes guesswork, so I don't
17 know whether it is MM standard feet or MM cubic feet
18 or whatever.

19 THE WITNESS: I'm sorry. I will tell
20 you.

21 MR. EZEANYIM: Like gas oil ratio,
22 for example, daily gas, daily oil, is that M stock
23 tank barrel or just stock tank barrel? Daily gas, is
24 that MCF or MM or, you know, something like that? So
25 if I go back to my office and start looking at them,

1 I would be guessing. I mean, or is that correct,
2 like daily gas -- which it's not for that month, so I
3 thought you mean maybe MCF.

4 THE WITNESS: Yes, that's MCF per
5 day.

6 MR. EZEANYIM: If it was shown on the
7 graph, I wouldn't be asking, but it is not shown
8 there, so I don't know. So I wanted to make sure I
9 identify this.

10 THE WITNESS: I apologize for the
11 oversight.

12 MR. EZEANYIM: On your last column on
13 those, I assume that MCF, I wrote in there MCF, but
14 you might be meaning MMCF or you might be meaning no
15 MCF or just, you know --

16 THE WITNESS: Yes.

17 MR. EZEANYIM: -- picked up a number.

18 THE WITNESS: That is MCF per stock
19 tank barrel.

20 MR. EZEANYIM: Okay. Very good.
21 That is the case now. So that well in most cases
22 have been producing over the gas oil ratio, right?

23 THE WITNESS: Sorry?

24 MR. EZEANYIM: If we take that well,
25 for example, as most of the wells you've presented,

1 they have been producing over the limit?

2 THE WITNESS: Yes.

3 MR. EZEANYIM: Yeah, producing over
4 the limit and for several months. On your last
5 exhibit here, you said gas produced over allowable
6 for 103 months, right? Do you know you're producing
7 over the allowable on this?

8 THE WITNESS: Well, this of course is
9 a Chesapeake operated well, so I can't comment on
10 what they are doing with that.

11 MR. EZEANYIM: Yeah, that's true.

12 THE WITNESS: On our wells, the
13 90-day test allowable I think expired on October --
14 I'm sorry, on December 21 -- no, let's see --
15 January 21 for the Gravy and January 29, I think, for
16 the Showstopper, and the Showstopper actually has not
17 overproduced, but the Gravy, I think, has
18 overproduced by about 200 MCF of gas. It had some
19 down days at the end of the month, and so it has
20 overproduced a little bit.

21 MR. EZEANYIM: Okay. Before I go
22 further, on this Exhibits 16, 17, 18 that have these
23 graphs, I am going to assume with your permission
24 that it is MCF?

25 THE WITNESS: That is correct.

1 MR. EZEANYIM: Okay. Yeah, because
2 if I don't do that, I use the numbers there, maybe to
3 give me a different outcome, but with your
4 permission, you said it is MCF, right?

5 THE WITNESS: Yes, that's correct.

6 MR. EZEANYIM: Okay. Now, for the
7 wells operated by Marbob, how many times have you
8 ever produced in violation of the -- I don't want to
9 use the word "violation." How much did you produce
10 above 2,000 in most of your wells?

11 THE WITNESS: We produced 212 MCF
12 over the allowable for the month of January after the
13 test allowable expired, so it would just be January
14 that would be subject to the 2,000 GOR limit.

15 MR. EZEANYIM: What January? Last
16 year?

17 THE WITNESS: January 2009.

18 MR. EZEANYIM: Okay. For January
19 2009, you have been overproducing above the 2,000
20 allowable, right?

21 THE WITNESS: Yes.

22 MS. MUNDS-DRY: Do you mean 2010?

23 THE WITNESS: Yeah, I'm sorry. 2010.

24 MR. EZEANYIM: Yeah, we're in 2010.

25 I still write my checks 2009 or something. Okay.

1 Well, so you have only -- you are producing 2010 --

2 THE WITNESS: We started producing
3 steadily in October, and we had a 90-day test
4 allowable that I think allowed us to produce as much
5 as we could.

6 MR. EZEANYIM: Okay.

7 THE WITNESS: And then the limit
8 would apply after January 23 --

9 MR. EZEANYIM: Okay. So you --

10 THE WITNESS: -- 21, excuse me.

11 MR. EZEANYIM: So you got an approval
12 from the district office for test allowable?

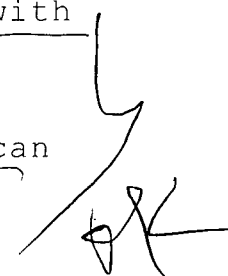
13 THE WITNESS: Yes.

14 MR. EZEANYIM: So that allowed you to
15 produce it then for you to be able to determine how
16 much gas oil ratio you need?

17 THE WITNESS: Yes.

18 MR. EZEANYIM: How did you come up
19 with 5,000?

20 THE WITNESS: Well, it is actually --
21 it is a lower number than the true GOR of the
22 reservoir, but if we applied the 5,000 GOR limit with
23 the existing depth bracket allowable for the oil,
24 that would allow us to produce as much gas as we can
25 make.



1 MR. EZEANYIM: Suppose I want to give
2 you 10,000?

3 THE WITNESS: That would be okay. We
4 would take that.

5 MR. EZEANYIM: Why didn't you ask for
6 that?

7 THE WITNESS: Well, we wanted to ask
8 for something that would be approved.

9 MR. EZEANYIM: Well, remember now
10 what we're trying to do here. What we're trying to
11 do here is to prevent waste, right?

12 THE WITNESS: Yes.

13 MR. EZEANYIM: Protect correlative
14 rights. If you determine that there's no correlative
15 right issue, if I were you and I saw that there is no
16 correlative right issue, you can look at this for
17 20,000.

18 THE WITNESS: Yes.

19 MR. EZEANYIM: Well, I could come
20 here and show I can obtain 20,000 as long as his
21 clients or his clients are not affected so we can
22 withdraw those hydrocarbons more -- I am not asking,
23 you know -- I'm just asking why you're asking for
24 5,000. You know, just being liberal. It is not that
25 I'm going to give you 20,000 or 10,000, but why

1 didn't you ask for those?

2 THE WITNESS: Well, we were worried
3 that it would be more difficult to get a large change
4 approved than a smaller change. ✓

5 MR. EZEANYIM: That is fair. That
6 is fair, but you know, as you know because the oil is
7 not affected. If the oil is affected, I would be
8 more worried you are trying to squeeze more gas out
9 of there, you know. That's why I'm asking you these
10 questions. If the oil is affected, I wouldn't be
11 asking you these questions because you told me you
12 want to get out more gas, which is true, and then you
13 empirically determined that 5,000 is what the OCD
14 would give you.

15 I'm not trying to make a long
16 statement here, but if you could squeeze in more than
17 5,000, I mean, and then say, "Yeah, I can do that,
18 let me go back there and prove it," you know, we're
19 not -- it is not if you come and ask for 5,000, I
20 say, "Okay. That is reasonable," but you might be
21 reasonable if you ask for 10 or 20.

22 THE WITNESS: Yes. It would be a
23 realistic limit. It would --

24 MR. EZEANYIM: Well, actually you're
25 asking for 5?

1 THE WITNESS: Yes.

2 MR. EZEANYIM: Okay. That won't be
3 the end of my questions yet. I still have more. Do
4 you think you have produced your wells in violation
5 of OCD rules?

6 THE WITNESS: No, we are not above
7 the tolerance that is allowed for a month's
8 production.

9 MR. EZEANYIM: Okay. So let's go to
10 Exhibit Number 21. On 21, there on the -- I like
11 that analysis there on the Exhibit 21. 21 is the
12 Bone Springs, and then 22 is the Willow Lake
13 Southeast, right?

14 THE WITNESS: Yes, that's correct.

15 MR. EZEANYIM: Okay. In the Bone
16 Springs, you listed -- all those wells have been --
17 for about -- for the gas below producing by one or
18 three months, right?

19 THE WITNESS: Sorry?

20 MR. EZEANYIM: On the second page,
21 103 months is the number of months they overproduce
22 their allowable?

23 THE WITNESS: Yes.

24 MR. EZEANYIM: And then three months
25 above the oil allowable, but these are not related to

1 your wells? They are related to the wells in that
2 pool?

3 THE WITNESS: Yes. Yes, sir, they
4 are other wells in the pool.

5 MR. EZEANYIM: Okay. So I have to
6 find that, and then on 22, there are no oil
7 production. Where did you get this data?

8 THE WITNESS: I got the production
9 data from the IHS Energy Production database, and I
10 got the area that dedicates each well from the OCD
11 web page.

12 MR. EZEANYIM: Yeah. Okay. Could
13 you tell me again why you are increasing the oil and
14 gas ratio instead of gas oil ratio?

15 THE WITNESS: Oh, that one well?

16 MR. EZEANYIM: Well, yeah.

17 THE WITNESS: I was looking at -- I
18 think possibly I did that because I had a lot of
19 zeros in the oil, and I didn't want to divide by zero
20 and so I inverted it so that zero oil would show up
21 as a zero oil gas ratio. But like I said, that was
22 an existing plat that I didn't prepare for this
23 hearing in the first place.

24 MR. EZEANYIM: Oh, okay. So sometime
25 you have zero oil production?

1 THE WITNESS: Yes.

2 MR. EZEANYIM: So you don't want to
3 divide by infinity. If you divide by infinity, you
4 get infinity?

5 THE WITNESS: Yes.

6 MR. EZEANYIM: Okay, I see. And is
7 there another thing you use that for? Do you use
8 that for -- any other -- not just because it is zero?

9 THE WITNESS: Yeah.

10 MR. EZEANYIM: Do you have any other
11 information you want to get out of that? Because I
12 am curious. I am curious to see why you do that.

13 THE WITNESS: Well, you can look at
14 it either way. It was just convenient -- it was a
15 matter of convenience to use the oil gas ratio.

16 MR. EZEANYIM: Okay. Did you receive
17 any objection to any of this public notice or
18 something? Did you receive any objection for doing
19 this in both cases?

20 THE WITNESS: I have not received any
21 objection.

22 MR. EZEANYIM: You have not received
23 any, okay.

24 MS. MUNDS-DRY: We're not aware of
25 any objections.

1 MR. EZEANYIM: Mr. Hall and Mr.
2 Bruce, do you have any further comments?

3 MR. BRUCE: No, sir.

4 MR. HALL: Nothing further.

5 MR. BROOKS: Nothing further.

6 MR. EZEANYIM: You may be excused.

7 THE WITNESS: Thank you.

8 MS. MUNDS-DRY: That concludes our
9 cases for both 14419 and 14420.

10 MR. EZEANYIM: Thanks, Ms. Munds-Dry.
11 At this point, Case Number 14419 and 14420 will be
12 taken under advisement.

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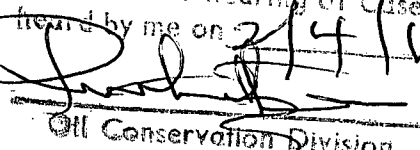
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I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case No. 14419 & 1
heard by me on 3/4/60 14420

Oil Conservation Division, Examiner

1 REPORTER'S CERTIFICATE

2
3 I, CONNIE JURADO, do hereby certify that I
4 reported the foregoing case in stenographic shorthand
5 and
6 transcribed, or had the same transcribed under my
7 supervision and direction, the foregoing matter and
8 that the same is a true and correct record of the
9 proceedings had at the time and place.

10 I FURTHER CERTIFY that I am neither
11 employed by nor related to any of the parties or
12 attorneys in this case, and that I have no interest
13 whatsoever in the final disposition of this case in
14 any court.

15 WITNESS MY HAND this 4th day of February,
16 2010.

17
18
19
20 Connie Jurado
21 Connie Jurado, CCR, RPR
22 New Mexico CCR No. 254
23 Expires: December 31, 2010
24
25