

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
State Land Office Building
Santa Fe, New Mexico
2 August 1978

EXAMINER HEARING

IN THE MATTER OF:

Application of Barber Oil, Inc.,
for a waterflood project, Eddy
County, New Mexico.

CASE 6226

6238

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation
Division:

Lynn Teschendorf, Esq.
Legal Counsel for the Division
State Land Office Building
Santa Fe, New Mexico 87501

For the Applicant:

George H. Hunker, Jr., Esq.
HUNKER, FEDRJC, P.A.
P. O. Box 1837
Roswell, New Mexico 88201

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
730 Bishop's Lodge Road • Phone (505) 888-3404
Santa Fe, New Mexico 87501

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ROBERT LIGHT

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 CERTIFIED SHORTHAND REPORTER
 730 Bishop's Lodge Road • Phone (202) 988-3404
 Santa Fe, New Mexico 87501

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
730 Bishop's Lodge Road • Phone (505) 988-3404
Santa Fe, New Mexico 87501

1 MR. NUTTER: The hearing will come to order.

2 Call first Case Number 6238.

3 MS. TESCHENDORF: Case 6238. Application of
4 Barber Oil, Inc., for a unit agreement, Eddy County, New
5 Mexico.

6 MR. HUNKER: If the Examiner please, we would
7 like to have Case 6238 consolidated with Case 6226 and
8 have a joint hearing with regard to the matter. It's the
9 same property that's involved and it's the same project.

10 MR. NUTTER: We will at this time call Case
11 Number 6226.

12 MS. TESCHENDORF: Case 6226. Application of
13 Barber Oil, Inc., for a waterflood project, Eddy County,
14 New Mexico.

15 MR. NUTTER: Cases 6238 and 6226 will be con-
16 solidated for the purpose of hearing.

17 Will you proceed, Mr. Hunker?

18 MR. HUNKER: My name is George H. Hunker, Junior.
19 I'm an attorney, Roswell, New Mexico, and I represent
20 Barber Oil Company, Incorporated. Barber Oil, Inc., of
21 Carlsbad, New Mexico. We have one witness and six exhibits.

22 I'd like to call at this time my witness, Mr.
23 Robert S. Light.

24 (Witness sworn.)
25

ROBERT S. LIGHT

being called as a witness and having been duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. HUNKER:

Q. Will you identify yourself for the record, please?

A. My name is Robert S. Light. I'm president of Barber Oil, Inc., a Carlsbad corporation -- New Mexico corporation operating in Carlsbad, New Mexico.

Q. What's your educational background, Mr. Light?

A. Well, I'm a graduate electrical engineer from the University of Kansas and for three years after graduation I worked for Continental Oil Company in the Geophysical Department. After that I went to work for Barber Oil in Carlsbad, New Mexico, and have been with them for twenty-one years in Carlsbad.

Q. Have you testified before the Commission previously?

A. I have.

Q. And have your qualifications as a practical oil man been accepted by the Commission?

A. They were accepted on a prior hearing concerning the Russell waterflood project which is similar

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1 to the one presented here today.

2 Q. Barber Oil has filed an application with the
3 Commission for the approval of a waterflood project. Have
4 you prepared or caused to be prepared several exhibits in
5 connection with this matter?

6 A. We have.

7 Q. Referring to the exhibit marked Number One,
8 will you identify and explain what it shows, please/

9 A. Exhibit Number One is nothing more than an
10 oil and gas map of Township 20 South, Range 28 East, Eddy
11 County, showing in yellow the 240 acres comprising the
12 waterflood proposed project.

13 Q. Referring to Exhibit Number Two, what does
14 that exhibit show?

15 A. Exhibit Number Two is an enlargement of that
16 area in Section 33, 20 South, 28 East, showing the property
17 outlined with a hatched section here which Barber Oil now
18 operates, stripper production.

19 Q. And what do you propose to do, Mr. Light, in
20 this particular area?

21 A. Well, we want to put this project together
22 under a unit plan and inject water into five of the present
23 wells, one into the Malco lease, three into the Hughes
24 lease, and one into the Mayfield lease. There are three
25 separate leases involved in the project.

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1 Q. And are those leases marked with the -- are
2 those wells marked with the diamond on this Exhibit Number
3 Two?

4 A. Right. If you'll refer to the legend, the
5 water injection wells are a black dot which have been pro-
6 ducing wells with a triangle around them, and there's at
7 least one injection well on each tract, Tracts One, Two,
8 and Three, so marked.

9 Q. Referring to Exhibit Number Three, tell the
10 Examiner, if you will, what the typical proposed water
11 injection well schematic plan is.

12 A. Well, just taking the first one, there are
13 five in the exhibit. All five injection wells are shown
14 here. They're all cased. All the casing is cemented, not
15 necessarily to the surface. The plan is to go into the
16 casing that's in the well, set a packer on 2-inch tubing
17 approximately 50 feet in each case above the bottom of
18 the casing, and inject water down the tubing into the
19 producing zone. Some of these wells have been frac'd,
20 some have been shot.

21 Q. Do you anticipate any difficulty in accom-
22 plishing this?

23 A. We anticipate no difficulty at all. We --
24 it looks like a fairly simple operation and similar to what
25 we've been doing for twenty-five years in the Russell area.

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
733 Bishop's Lodge Road • Phone (505) 988-3404
Santa Fe, New Mexico 87501

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
730 Bishop's Lodge Road • Phone (505) 986-3404
Santa Fe, New Mexico 87501

1 Q. Referring to Exhibit Number Four, the pipeline
2 summary, what does this exhibit show, Mr. Light?

3 A. All right. This shows the summary of sales on
4 the three various leases, the three leases involved, from
5 inception, from the time they first started producing in
6 1956, and the Mayfield in 1958. It shows each separate
7 lease and then the field total for the Saladar Field.

8 If you'll look closely at the production decline
9 you'll see that it's in an advanced state of decline and
10 all wells involved are stripper and at the present, in
11 1977, it produced a field total of about ¹⁴⁰⁰~~1700~~ barrels of
12 oil, which is an advanced state of decline.

13 All wells are stripper or less.

14 Q. Have you prepared another exhibit with regard
15 to this matter of depletion, referring to Exhibit Number
16 Five?

17 A. All right. We do have as Exhibit Number Five
18 four decline curves, one for the field total, and it gives
19 from 1956 through 1977, the decline of the Saladar Field,
20 and thereafter breaks this down into each separate lease,
21 the Hughes lease, the Malco lease, and the Mayfield lease.

22 MR. NUTTER: This is graphic depiction of the
23 information --

24 A. Right.

25 MR. NUTTER: -- that was shown on the previous

1 exhibit?

2 A. Right. This is nothing more than the sales,
3 the pipeline summary of sales, put on a graph, and it's
4 averaged for the monthly average rather than each month
5 plotted. It's a monthly average plot.

6 MR. NUTTER: For that year.

7 A. For the year, right. They took the entire
8 year production and then divide it by twelve and plot it.
9 That's what it is.

10 Q. Is Barber, Inc., an interest owner in the
11 project area leases?

12 A. Barber Oil, Inc., is a one-fourth interested
13 party in all three leases.

14 Q. Has it been agreed that Barber would operate
15 the project?

16 A. Barber would become the project operator and
17 all parties have signed the unit plan as well as the unit
18 plan of operation.

19 Q. In other words, this is a voluntary unitiza-
20 tion?

21 A. That is correct. All parties of interest are
22 involved except the royalty owners.

23 Q. Do you anticipate that the overriding royalty
24 owners will join or ratify the unit agreement?

25 A. Well, the largest one of all is George D.

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
730 Bishop's Lodge Road • Phone (505) 688-3404
Santa Fe, New Mexico 87501

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CERTIFIED SHORTHAND REPORTER
730 Bishop's Lodge Road • Phone (505) 968-3404
Santa Fe, New Mexico 87501

1 Riggs, who's already indicated he will and has not yet
2 signed it, but all of them we expect to sign with no pro-
3 blem.

4 Q. Have you submitted to the United States Geolo-
5 gical Survey a form of unit agreement under which these
6 project operations will be conducted?

7 A. That is true. We have submitted to the USGS
8 a form unit plan and unit operations and we have -- do
9 you want me to go further -- a letter from them.

10 Q. I'll ask you the question.

11 A. Okay.

12 Q. Has the United States Geological Survey approved
13 the area as being a logical unit area?

14 A. I have in front of me their letter dated July
15 7, whereby they approve the unit area and the allocation
16 of production as set forth in the unit plan.

17 Q. Is this Exhibit Number Six?

18 A. This would be Exhibit Number Six.

19 Q. In connection with the lands in the unit area
20 tell me what type lands are involved.

21 A. By type, there are various leases involved,
22 two Federal leases, Tract One is a 160-acre Federal lease
23 called our Hughes Federal. Tract Number Two is a 40-acre
24 Federal lease called the Mayfield Federal, and Tract Three
25 is a fee lease called the Malco fee.

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730 Blanco's Lodge Road - Phone (505) 963-3404
Santa Fe, New Mexico 87501

1 Q. So you have 200 acres of Federal land and 40
2 acres of fee land, is that correct?

3 A. That's correct.

4 Q. Do you believe that this proposed area contains
5 all or substantially all of the geological features that's
6 involved?

7 A. The oil is trapped stratigraphically in this
8 area, and we feel that the entire -- the project as shown
9 would cover the entire geological structure under this
10 particular zone of production, which is about 660 feet
11 deep; fairly shallow.

12 Q. In your opinion, Mr. Light, will the alloca-
13 tion of production as provided for in the unit be reason-
14 able and afford the owner or owners of each tract the
15 opportunity to recover and receive without unnecessary
16 expense his just and fair share of the oil and gas pro-
17 duced under unitization?

18 A. We believe this to be true. The -- all the
19 leases are in an advanced state of decline and in order
20 to allocate production we took the total throughout their
21 lifetime to date and divided each lease total into that
22 total for their percentage of the unit participation.

23 We feel that's the fairest way to evaluate
24 the future use of -- to pay the royalties in the future.

25 Q. And the USGS has approved this type of allo-

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CERTIFIED SHORTHAND REPORTER
700 Bishop's Lodge Road • Phone (505) 968-3404
Santa Fe, New Mexico 87501

1 cation, is that correct?

2 A. They have.

3 Q. Is it your wish that the Oil Conservation Divi-
4 sion designate Barber Oil, Inc., as the operator of this
5 unit?

6 A. That's our intent.

7 Q. Is it your opinion that the approval of the
8 unit agreement will be in the public interest, protect
9 correlative rights, prevent waste, and result in the con-
10 servation of oil and gas?

11 A. I certainly do.

12 MR. HUNKER: I have no other questions, Mr.
13 Examiner. I'm sure you will probably have one or two.

14 MR. NUTTER: Yes, sir.

16 CROSS EXAMINATION

17 BY MR. NUTTER:

18 Q. Mr. Light, it's been some time since you ap-
19 peared here in connection with the Russell Pool waterflood
20 project.

21 The Commission, or the Division, in the past
22 year or two has adopted some new regulations and some new
23 requirements with respect to waterflood projects. This
24 is all in accordance with the anticipated underground in-
25 jection control program that the Federal government is

1 authoring and will impose upon the states, and for one
2 thing, we have sent out memorandum numbered 3-77, dated
3 August 24th, 1977, which requires certain things to be
4 submitted with an application or at the hearing for approval
5 of injection wells in waterflood projects.

6 Included here as item number three is a schematic
7 of all plugged and abandoned wells within the one-half mile
8 radius of any injection well in a project.

9 Now I note under Exhibit Number Two that there
10 are a number of abandoned wells, so it will be necessary
11 for you to submit some schematic diagrams of these plugged
12 wells and show the manner in which those wells were plugged.
13 Now this could be done after you get home. We'll just
14 have to withhold approval of the project until the require-
15 ments of Memo Number 3-77 have been met with.

16 Now, what is your anticipated volume of in-
17 jection in this project, Mr. Light?

18 A We anticipate about 75 barrels of water per
19 day to be injected with a pump, with a triplex pump at
20 about approximately 500 pounds pressure.

21 Q Is that per well?

22 A No, that would be total.

23 Q That would be total?

24 A Yes, sir.

25 Q In other words, it would average about 15

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1 barrels per day per well.

2 A. Right, it's a small project. It could be in-
3 creased at a later time. We may want to do some additional
4 drilling at a later time.

5 Q. Well, do you have any idea as to what kind of
6 injection pressures will be required?

7 A. 500 pounds pressures is what's anticipated.
8 The Russell Pool is being flooded at 700 pounds surface
9 pressure.

10 Q. Now, that's another thing. Memo Number 3-77
11 reads as follows in Item Number One: "No surface injection
12 pressure greater than .2 psi per foot of depth to the top
13 of the injection zone will be permitted unless there's
14 strong evidence that the strata confining the injection
15 fluid has a fracture gradient that would support a higher
16 pressure."

17 Now, your average -- your typical --

18 A. 660 feet deep.

19 Q. Right, .2 of that will give you 120 ---

20 A. 120 pounds.

21 Q. 120, 125 pounds pressure, so we would have to
22 have some evidence that the strata here would support a
23 higher pressure than 120 or 125 pounds prior to authorizing
24 any 500 pound injection pressure.

25 A. In what manner would you like to have that

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CERTIFIED SHORTHAND REPORTER
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1 presented? I'm not just sure how to present that to you.

2 Q Well, instantaneous shut-ins on frac jobs,
3 step rate injection tests; there's a number of different
4 ways in which operators have demonstrated formation can
5 sustain a higher pressure than the .2.

6 A Well, would the fact that our past performance
7 in Russell with no problems at all at 700 pounds, and it's
8 only 300 feet deep, substantiate that?

9 Q Well, I think that would help.

10 A I mean that would be a field that's three
11 miles distant.

12 Q Yeah. If you -- if you can show that there
13 hasn't been any fracturing in that.

14 A Well, we've been doing it for twenty-five
15 years and never been --

16 Q Twenty-five years?

17 A Twenty-five years. And it's the same -- almost
18 exactly the same zone with the dip taken out.

19 Q Now, I'm having a little bit of difficulty on
20 these schematic diagrams of the injection wells.

21 A All right.

22 Q Is there any surface pipe in these wells?

23 A Well, the surface pipe is shown there, which
24 is -- like on Exhibit Three, Well No. 1-3, that's Tract
25 One and that's the Hughes Well No. 3 and there's 5-1/2

1 inch casing at 642. That's it.

2 Q There's one string of casing. There's no
3 surface casing per se; this is the production casing.

4 A Well, the surface casing was probably pulled
5 at the time they ran the casing, production string.

6 Q Are there fresh waters in this area?

7 A I would say nothing but brackish water in the
8 area. There's no fresh drinking water, no; never has been
9 and I would say in this entire township.

10 I know there's none around Russell. We do
11 have a 50-foot water well which we plan to supply the water
12 for this project with, and it's brackish, and I do have
13 a water analysis, if you'd like to see it.

14 Q I think that would be pertinent if we could
15 have the information on that -- on that water analysis.

16 A Would you like to have -- I just have one copy.
17 I would need to copy it for you.

18 Q Well, you can send that in with the other
19 material, if you'd like to send a copy of that.

20 A But I can give you a water analysis of the
21 surface water there, which is brackish and has some salt
22 in it, that's satisfactory for flooding. We can use it.

23 Q Yeah. And in each of these wells you would
24 run a string of tubing, or you'd have a packer in them?

25 A The packer would be set -- according to our

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730 Bishop's Lodge Road • Phone (505) 988-3404
Santa Fe, New Mexico 87501

1 diagram the packer would be set inside the casing in each
2 case.

3 Q Are all of these wells open hole?

4 A Uh-huh, they all produce open hole.

5 Four of the injection wells have been fraced and
6 one has been shot with nitro.

7 Q And the packer in each instance would be set
8 from 30 to 50 feet --

9 A Above the bottom of the casing.

10 Q --- above the casing.

11 Now, the annulus presumably would be loaded
12 with an inert fluid.

13 A Well, that's the general practice.

14 Q Yes, sir. And the annulus either left open or
15 equipped with a pressure gauge so that if there's any
16 leakage through the packer or through the tubing it can be
17 detected at the surface.

18 A Right. I understand that portion of it, even
19 though that doesn't state that in the diagram, why, that's
20 the way it would be done, in order to detect leaks.

21 Q Yes, sir.

22 MR. NUTTER: Ms. Teschendorf?

24 CROSS EXAMINATION

25 BY MS. TESCHENDORF:

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1 Q My question refers back to the unit agreement,
2 which I guess you sent in with the application.

3 Articles Eight and Nine refer to removal of
4 and appointment of a successor unit operator. The Division
5 does not necessarily want to have to approve either one of
6 those things, but we certainly would like to be notified
7 of them and just from skimming this, I didn't see any re-
8 ference to the Division in those sections, and I don't
9 think it would necessarily need amendment of the agreement,
10 but our order will probably --

11 A. Require notification of any change of unit
12 operator?

13 Q Right. Could that be done?

14 A. Oh, yes.

15 MR. NUTTER: Is there anything else regarding
16 the unit?

17 MS. TESCHENDORF: No, I think I've covered
18 everything there. Uh-huh.

19
20 RECROSS EXAMINATION

21 BY MR. NUTTER:

22 Q Now, Mr. Light, one more question. You said
23 that the biggest royalty owner had indicated that he would
24 sign, Mr. Riggs. Is he a royalty owner on the fee lease
25 or is he an overriding royalty owner on some of the other

1 lease?

2 A He's the overriding royalty owner on the Hughes
3 Federal lease only, which when spread out throughout the --
4 he has 6-1/4 percent in the Hughes Federal lease as an
5 overriding royalty owner.

6 Q Uh-huh, how about the royalty owner on the fee
7 lease? Has he agreed to come in?

8 A There are a number of them and, of course, the
9 fee lease is a 40-acre lease and becomes a rather small
10 part of the thing, but we have not --- we have not gotten
11 their signatures, but we anticipate no problem.

12 George Riggs is the only person that is in the
13 area. The rest of them are dispersed long distances.

14 Q Now that fee lease won't have a producing well
15 on it after you've converted the No. 1 to an injection
16 well.

17 A That's true.

18 Q But they will be --- that lease and the owners
19 of that lease, will be participating in the production.

20 A They will be participating according to their
21 portion of the present depleted property over the total
22 of all property.

23 Q And this allocation formula is covered in the
24 unit operating agreement.

25 A That is true. And it's set forth in the --- in

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1 the exhibit -- I'm not sure it's Exhibit A -- that's ex-
2 hibited at the end of the unit plan.

3 Q Okay.

4 A Their interests are all protected, and the al-
5 location has been based on prior production.

6 It would be Exhibit C to the unit agreement.
7 The participation percentage there is based on strictly --
8 on the past production of the three depleted properties.

9 Q I see, based on primary production.

10 A Right, on primary production. That's the only
11 fair basis of doing it. We have no -- nothing but driller's
12 logs on the wells when they were drilled. We have no
13 idea of depth of formation or anything in the producing zone.

14 It's the only really fair, just way of allo-
15 cating production.

16 MR. HUNKER: Mr. Nutter, I'd like to announce
17 to the Commission that when the USGS approved the form of
18 unit agreement, they transposed the words "supervisor"
19 and "Commission" so that the word "supervisor" appears
20 first and the "Commission" appears second, in that order,
21 and they have asked us to add at the end of Article Eight
22 on page eight, a sentence which reads, "Nothing herein
23 contained shall be construed to relieve or discharge any
24 unit operator or unit manager who resigns or is removed
25 hereunder from any liability or duties accruing or per-

1 formable by it prior to the effective date of such resig-
2 nation or removal."

3 This is probably responsive to your question,
4 Ms. Teschendorf?

5 MR. NUTTER: You mean all that took the place
6 of this one little, short sentence that was the last sen-
7 tence there?

8 MR. HUNKER: Well, they add that additional
9 sentence there.

10 A. In addition.

11 MR. HUNKER: To that paragraph.

12 MR. NUTTER: Oh, I see. Are there any further
13 questions of Mr. Light? He may be excused.

14 MR. HUNKER: I'd like to offer at this time
15 Exhibits One through Six.

16 MR. NUTTER: Applicant's Exhibits One through
17 Six will be admitted in evidence.

18 Does anyone have anything they wish to offer
19 in Case Number 6238 or 6226?

20 If not, we'll take the cases under advisement.

21 (Hearing concluded.)
22
23
24
25

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
730 Bishop's Lodge Road • Phone (505) 988-3404
Santa Fe, New Mexico 87501

REPORTER'S CERTIFICATE

I, SALLY WALTON BOYD, a Court Reporter, DO HEREBY
 CERTIFY that the foregoing and attached Transcript of
 Hearing before the Oil Conservation Division was reported
 by me; that said transcript is a full, true, and correct
 record of the hearing, prepared by me to the best of my
 ability, knowledge, and skill from my notes taken at the
 time of the hearing.

Sally Walton Boyd CSR
 Sally Walton Boyd, C.S.R.

I do hereby certify that the foregoing is
 a complete record of the proceedings in
 the Examiner hearing of Case No. 6226-6238
 heard by me on Aug 2, 1978.

[Signature] Examiner
 New Mexico Oil Conservation Commission

SALLY WALTON BOYD
 CERTIFIED SHORTHAND REPORTER
 730 Bishop's Lodge Road • Phone (505) 868-3404
 Santa Fe, New Mexico 87501