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BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
January 6, 1971

EXAMINER HEARING

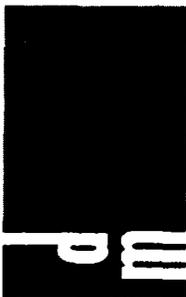
IN THE MATTER OF:

Application of Gulf Oil Corporation)
for a waterflood expansion, Lea County,)
New Mexico. Applicant, in the above-)
styled cause, seeks authority to ex-)
pand its northwest Eumont Unit Water-)
flood project, Eumont Pool, by the con-)
version to water injection of 13 addi-)
tional wells in Sections 26, 27, 33,)
and 34, Township 19 south, Range 36,)
East, Lea County, New Mexico.)

Case No.
4477

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING



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23
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25I N D E X

	<u>Page</u>
<u>DON BILBREY</u>	
DIRECT EXAMINATION by Mr. Kastler	3
CROSS EXAMINATION by Mr. Nutter	14

E X H I B I T S

	<u>Marked</u>	<u>Offered and Admitted</u>
Applicant's Exhibits Nos. 1 through 8	3	3

1 MR. NUTTER: The next case will be Case No. 4477.

2 MR. HATCH: Case No. 4477, the Applicant is the
3 Gulf Oil Corporation, for a waterflood expansion in Lea
4 County, New Mexico.

5 MR. KASTLER: I am William V. Kastler, and I
6 am employed by the Gulf Oil Company, and I am appearing
7 on behalf of Gulf, and our witness will be Don Bilbrey.

8 DON BILBREY

9 called as a witness, having been first duly sworn, was
10 examined and testified as follows:

11 DIRECT EXAMINATION

12 MR. KASTLER: Here is a copy of the questions
13 and answers, and I have three copies of all of the
14 exhibits which are numbered 1 through 8, with the ex-
15 ception of Exhibit No. 5 and Exhibit No. 7, which are
16 logs, of which, we have only one copy, and I would like
17 to move at this time that all of the Exhibits be stamped
18 and marked on the Exhibits, themselves.

19 (Whereupon, Applicant's Exhibits
20 Nos. 1 through 8 were marked for
21 identification.)

22 BY MR. KASTLER:

23 Q Mr. Bilbrey, please state your name and by
24 whom you are employed, and in what position?

25 A My name is Don G. Bilbrey, and I work for Gulf

1 in Roswell, New Mexico. I am employed as a senior petro-
2 leum engineer.

3 Q As a senior petroleum engineer, have you prev-
4 ously appeared before the New Mexico Oil Conservation
5 Commission and qualified as an expert and given testi-
6 mony?

7 A Yes, I have.

8 Q Are you familiar with Gulf's application in
9 Case No. 4477?

10 A Yes, I am.

11 Q What is Gulf requesting?

12 A In brief, Gulf, who is a Unit Operator, is
13 seeking permission to expand the Northwest Eumont Unit
14 Waterflood Project to include the south half of the Unit
15 Area.

16 Q When was the north half put under flood?

17 A The northwest unit was authorized by the Com-
18 mission under Order No. R-2657, dated March 4th, 1964,
19 the Waterflood Project, which was initially confined to
20 the north part of the Unit, was authorized under Com-
21 mission Order No. R-2659, also dated March 4th, 1964.
22 The Unit became effective April 1, 1964 and initial
23 water injection occurred January 7th, 1965.

24 Q What pattern was used?

25 A An 80-Acre, 5-Spot Pattern. The approved

1 injection wells are circled in blue on the plat marked
2 "Exhibit No. L," along with W.I.W. No. 163 on the south
3 end of the Unit. This injection well was approved adminis-
4 tratively by the Commission on January 2nd, 1968.

5 Q That was No. 163?

6 A That was 163, the south line there, and there are
7 15 wells circled as the original 15 authorized for this
8 Waterflood Project.

9 Q What was the water supply?

10 A A Gulf well, B.V. Culp, NCT-A, located in Section
11 19-19 South-37 East, about 2 miles east of the Unit, was
12 re-completed in 1964 as a San Andres Water Supply Well.
13 This well, along with the produced water, is the current
14 water supply for the Northwest Eumont Unit Waterflood
15 Project. The Culp NCT-A, No. 8, alone is capable of
16 supplying all the injection water necessary for the
17 expanded project.

18 Q Why was only half the Unit put under flood
19 initially?

20 A At the time of utilization there was some
21 question as to the floodability of the Queen formation
22 in this area. It was therefore decided to "pilot" the
23 Waterflood Project by putting only half the Unit Area
24 under flood at the time.

25 Q How has the flood project performed to date?

1 Q How has the flood project performed to date?

2 A Well, I am sorry to say, not quite as well as
3 we had hoped, but oil production has been increased, as
4 shown on the performance curve for the flood area, which
5 is marked, "Exhibit No. 2." Additional reserves have been
6 realized as a result of the project and the initial water-
7 flood development costs have been paid out. The project
8 will give the Working Interest Owners a moderate but
9 profitable return on their investment.

10 Q Do you feel expansion of the project is now
11 justified?

12 A Yes. I would say that after observing the
13 flood for six years, we have concluded that expansion
14 costs can be recovered with a reasonable return on
15 investment, assuming the south half performs as well
16 as the north half or as well as Continental's Reed-
17 Sanderson Flood, which adjoins the Northwest Eumont
18 Unit on the south. Expansion investment costs will not
19 be too great since the injection plant and water-supply
20 costs, two major investment items, have already been
21 absorbed by the Working Interest Owners with the instal-
22 lation of the waterflood in the north half of the Unit.

23 Q Has Working-Interest-Owner approval for this
24 expansion been obtained?

25 A Yes, approval has been obtained for the conversion

1 of 13 water injection wells covered in our application for
2 this hearing.

3 Q Will you, now, give the Commission the major
4 points of Gulf's proposal to expand the waterflood pro-
5 ject?

6 A We will expand waterflood operations to the south
7 half to the Unit in the same 80-acre, 5-spot pattern that
8 is now being used in the north part of the Unit. The in-
9 jection wells are circled in yellow on Exhibit No. 1. This
10 pattern will also tie-in with Continental's pattern in
11 their Reed-Sanderson Unit, which borders the Northwest
12 Eumont Unit on the south. Thirteen wells will be con-
13 verted to water injection status, and all will be equipped
14 as shown on Exhibit No. 3, which is a diagramatic sketch
15 of a typical injection well. Exhibit No. 4 is a tabulation
16 giving pertinent completion information on each of the 13
17 water injection wells covered in our application. Little
18 or no well work will be performed on wells in the expansion
19 area, as this proved to be of little benefit to the north
20 half of the Unit. Injection and production will, therefore,
21 be into and from zones currently open to the well bore.

22 We will inject produced water and San Adres water
23 from the unit water supply well into the Queen formation
24 at the depth of approximately 3900 feet. The initial in-
25 jection rate will be about 350 BWPD per injection well,

1 and the maximum injection pressure will be 2,000 psi at
2 the well head.

3 Exhibit No. 5 consists of small-scale logs on
4 12 of 13 wells covered in our application. A log on Well
5 No. 139 is not available.

6 Q Exhibit No. 5 is a group of logs for which you
7 only have one copy, is that correct?

8 A That is correct, one log for each proposed
9 injection well.

10 Q Except which well number?

11 A No. 139, we have no log available for that.

12 Q Thank you. My next question is: Have Charm
13 Oil Company and Resler and Sheldon, operators of 280-
14 acre tracts, partially or entirely surrounded by the
15 Northwest Eumont Unit, been approached about cooperating
16 with this waterflood expansion?

17 A Mr. Vilas P. Sheldon, of Artesia, was notified
18 of our plans to expand the waterflood project. He operates
19 the two tracts mentioned under the name of Resler and
20 Sheldon and Charm Oil Company. These leases are the
21 cross-hatched areas on Exhibit No. 1. Mr. Sheldon said
22 he had no objection to our expanding the flood to offset
23 the tracts he operates, but that for various reasons he
24 would not be able to cooperate with us even though we offer-
25 ed to sell pressured water to him. Mr. Sheldon indicated

1 that cooperative injection might be possible at a later
2 date on at least one of the tracts.

3 Q In view of the lack of cooperation, does Gulf
4 plan to offset these two tracts with injection wells?

5 A Yes. The location of these two tracts, as shown
6 on the platt, makes it virtually impossible to adequately
7 flood the south half of the Unit without offsetting them,
8 since 8 of the 13 injection wells either directly or diago-
9 nally offset the Resler and Sheldon and Charm tracts.

10 Q What is the significance of this red triangle
11 in the northeast corner of Section 34 of 19 South, Range
12 36 East, as shown on Exhibit No. 1?

13 A This is Northwest Eumont Unit Well No. 153, which
14 has been TA in the Eumont Pool since April, 1967. In pre-
15 liminary discussion with the Working Interest Owners con-
16 cerning expansion of the waterflood project, it was recom-
17 mended by Gulf, and tentatively agreed to by the Working
18 Interest Owners, that all wells in the south half of the
19 Unit on the injection pattern should be converted to water
20 injection. Thus, the Northwest Eumont Unit Well, No. 153,
21 was to have been included as an injection well. However,
22 in our design work for expansion of the flood, and in our
23 application to the Commission calling for this hearing, Gulf,
24 through an oversight, omitted the No. 153, a proposed
25 water injection well. To rectify this mistake, we are

1 now asking the Commission to amend our application and
 2 improve the conversion of this well, also. This would
 3 make a total of 14 water injection wells in the expan-
 4 sion area, instead of the 13 as originally requested.

5 Q Do you believe, then, that the No. 153 should
 6 be included as a water injection well in this expansion?

7 A Yes. As previously mentioned, the well is
 8 temporarily abandoned now; however, it is perforated
 9 in the flood interval and can be readily converted to
 10 water injection status. In addition, this will complete
 11 an 80-acre 5-Spot, giving a 4-way push to Unit Well No.152.

12 Q Would Well No. 153 be equipped similarly to the
 13 other 13 proposed water injection wells?

14 A Yes. Exhibit No. 6 is a schematic diagram of
 15 Well No. 153 equipped as a water injection well. It
 16 shows the casing strings, cement used, Queen perforations
 17 and proposed tubing and packer setting depths.

18 The well would be connected to the expanded
 19 injection system along with the 13 wells covered in our
 20 letter of application to the Oil Conservation Commission.
 21 The initial injection rate anticipated for the well would be
 22 about 350 GWPD, the same as the other injection wells.
 23 Exhibit No. 7 is a small scale gamma ray-neutron log for
 24 the Northwest Eumont Unit Well No. 153.

25 Q Is that the second log of which you have only one

1 copy?

2 A Yes, that is correct.

3 Q Have the Working Interest Owners been notified
4 concerning the conversion of Well No. 153?

5 A Yes, they have been. When we discovered that
6 Well No. 153 had been overlooked as a possible water
7 injection well, we wrote the Working Interest Owners
8 explaining our error, and asked them to approve the
9 conversion of the well by approving an AFE to cover
10 the cost to do the work. Our letter with the AFE
11 didn't go out until December 24th, 1970, and we have
12 not yet received sufficient Working-Interest-Owner
13 approval to convert the well; however, we believe
14 the AFE will be approved. Therefore, we are seeking
15 the Commission's approval at this time for conversion
16 of Well No. 153, along with the 13 included in our
17 application, so that work can be commenced as soon
18 as possible after Working-Interest-Owner approval is
19 obtained.

20 Q Have offset operators to Well No. 153 been
21 informed of your plans to convert the well to water
22 injection?

23 A Yes, they have. As shown on the plat, Exhibit
24 No. 1, there are only three operators offsetting this loca-
25 tion. We sent letters to Amerada and Continental, both of

1 whom are Working Interest Owners in the Northwest Eumont
2 Area, informing them of our plans to convert 153 to water
3 injection. These letters were mailed December 24th, 1970,
4 and in them we asked for waivers if they had no objection
5 to the conversion. A copy of the letter and attached
6 waiver are marked as Exhibit No. 8. Gulf is the other
7 offsetting operator to the south, and we certainly have
8 no objection to the diversion.

9 Q To the best of your knowledge and information,
10 and believe, at this time, have either Amerada or Contin-
11 ental returned the waiver?

12 A Gulf has not received any executed waivers from
13 either company and, however, I talked to representatives
14 of both companies by telephone on Monday afternoon, January
15 4th, and I was told that neither Amerada nor Continental
16 had any objection to our converting Well No. 153 to water
17 injection. Both parties indicated their waiver had been
18 either mailed or would be in the mail within a day or two.
19 The Commission, as well as Gulf, should receive copies of
20 both waivers very soon.

21 Q Would you briefly summarize Gulf's request in
22 this case?

23 A Gulf, as Unit operator, seeks permission from
24 the Commission to expand waterflood operations in the
25 Northwest Eumont Unit to include the south half of the

1 Unit. In this expansion, 13 wells described in our appli-
2 cation would be converted to water injection along with the
3 14th well, the Northwest Eumont Unit No. 153, which was
4 inadvertently omitted from the application. Working-
5 Interest-Owner approval has been obtained for expansion
6 of the project, and conversion of 13 producing wells to
7 injection status. Gulf is now awaiting approval from the
8 Working Interest Owners to convert Well No. 153 to in-
9 jection status also. We believe expansion of the flood
10 project is economically justified, and will result in
11 increased oil recovery with a reasonable return on
12 investment for the Working Interest Owners.

13 Q This application, in your opinion, then, is in
14 the interest of conservation and the prevention of waste?

15 A Yes, it is.

16 Q Assuming this expansion is authorized, what would
17 be the maximum project allowable?

18 A If these 14 new injection wells, including Well
19 No. 153, are approved and placed on active injection along
20 with the 16 previously authorized, the maximum project
21 allowable under Rule 701-E-3 would be the product of 65
22 proration units times the basic-area-allowable factor
23 in effect at the time for wells less than 5,000 feet in
24 depth. The 65 proration units in the expanded project
25 ~~area result from a total of 30 injection wells and 35~~

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1 producing wells, which directly or diagonally offset
2 the injection wells.

3 Q Now, Mr. Bilbrey, were Exhibits Nos. 1 through
4 7 prepared by you under your direction or under your
5 supervision?

6 A Yes, they were.

7 Q Is Exhibit No. 8 from a copy of a letter which
8 Gulf sent the offset operator, offsetting this maverick
9 well, No. 153?

10 A That is correct.

11 Q Which was inadvertently omitted from the
12 Gulf advertisement?

13 A That is right.

14 Q And application?

15 A Yes.

16 Q And this was discovered by oral application
17 to the Commission?

18 A That is true.

19 MR. KASTLER: I move at this time that Exhibits
20 No. 1 through 8 be introduced in evidence.

21 MR. NUTTER: Exhibits 1 through 8 will be ad-
22 mitted into evidence.

23 (Whereupon, a discussion was held
24 off the record.)

25 CROSS EXAMINATION

1 BY MR. NUTTER:

2 Q Mr. Bilbrey, with respect to Well No. 153, as
3 I interpret it on Exhibit No. 1, Amerada-Hess owns the
4 Northwest quarter of Section 39, is that correct?

5 A That is correct.

6 Q That would be the offset operator to the east?

7 A That is correct.

8 Q Continental owns the lease to the west half
9 of Section 26?

10 A That is correct.

11 Q Their unit operations are to the northwest and
12 the southwest, is that correct?

13 A That is correct.

14 Q The 40 acres directly south, Well No. 153, is
15 part of the lease which is in the unit?

16 A Right.

17 Q So the only offset operator other than Gulf,
18 that would be Continental or Amerada?

19 A That is correct.

20 Q Now, with respect to Exhibit No. 4, Mr. Bilbrey,
21 are Wells No. 39 and 49, has any cement been circulated
22 in those?

23 A I can tell you that our records in the Hobb's
24 office are delinquent in that respect. The information
25 is just not available in our files.

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Q Well, Well No. 139 was cemented with 255 sacks and Well No. 149 was cemented with 250 sacks. Would you be able to make calculations when you return to your office, and advise us, please?

A Would by phone be sufficient?

Q I would rather have something in writing for the record.

MR. NUTTER: Is there any further discussion with Mr. Bilbrey? Mr. Bilbrey may be excused.

Do you have any other witnesses, Mr. Kastler?

MR. KASTLER: Nobody.

MR. NUTTER: There being nothing further in Case 4477, we will take this case under advisement.

