

CASE 4138: Appli. of ATLANTIC-
RICHFIELD for a waterflood proj.
and unorthodox injection well loc.

Case Number.

4138

Application

Transcripts.

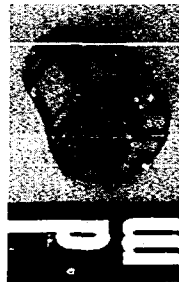
Small Exhibits

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SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

May 21, 1969

EXAMINER HEARING

IN THE MATTER OF:

Application of Atlantic
Richfield Company for a unit
agreement, Eddy County, New
Mexico.

Case 4137

Application of Atlantic
Richfield Company for a
waterflood project and
unorthodox injection well
location, Eddy County, New
Mexico.

Case 4138

BEFORE: ELVIS A. UTZ, Examiner

TRANSCRIPT OF HEARING

60000
JUL 14 1969

MR. UTZ: Case 4137, application of Atlantic Richfield Company for a unit agreement, Eddy County, New Mexico.

MR. HINKLE: I am Clarence Hinkle, attorney from Roswell appearing on behalf of the Atlantic Richfield Company. 4137 and 4138 are companion Cases and I would like to move that they be consolidated for purposes of testimony.

MR. UTZ: Case 4137 and 4138 will be consolidated for purposes of testimony.

MR. HINKLE: We have two witnesses, Mr. Biard and Mr. Tweed.

JACK BIARD

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

DIRECT EXAMINATION

BY MR. HINKLE:

Q Will you state your name, your residence, and by whom you are employed?

A My name is Jack Biard, Roswell, New Mexico. I am employed as District Landman for Atlantic Richfield Company.

Q What is your position with the Atlantic

Richfield Company?

A I am presently and have been for five years District Landman for Roswell Office.

Q Are you familiar with the Atlantic applications in these Cases?

A Yes, sir.

Q What is Atlantic Richfield seeking to accomplish?

A We seek the approval of the East Shugart Unit Area comprising 1359.40 acres, a Federal and State land in Township 18 and 19 South, Range 31 East, Eddy County, New Mexico. Also, the approval for a waterflood project co-extensive with the unit area for the purpose of secondary recovery for the Shugart Pool which includes the Yates, Seven Rivers, Grayburg, Queen formation. We, also, seek an exception to permit the drilling of injection wells at an unorthodox location 100 feet from the south line and 990 feet from the west line of Section 35, Township 18 South, Range 31 East.

Q Have you been in charge of the formation of this unit?

A Yes, sir, it has been done under my direction.

Q And getting it executed and all that?

A Yes, sir.

Q Have you prepared, or has there been prepared under your direction certain exhibits for this case?

A Yes, sir.

Q Refer to Applicant's Exhibit 1, and explain what it shows?

A Exhibit 1 is a plat of the proposed East Shugart Unit area, and gives the outline of the proposed unit. It also shows all the wells that have been drilled within the proposed unit area, and within a radius of two miles; as well as the formations from which they are producing, or have produced. Also, indicated on the plat, are the proposed injection wells within the unit area, and it is also an index map for the north, south, east, west cross sections which are later referred to. The plat also shows the ownership of the oil and gas leases surrounding the unit area.

Q What is the character of the land within the unit area.

A All the lands are Federal lands except 40 acres in Section 36 which is State land. The total acreage within the unit area amounts to some 1359.40 acres.

Q The acreage in 36 is 40 acres, is it not?

A That's right, sir.

Q That's the only State land?

A That is right.

Q What land or leases do Atlantic Richfield own in the area?

A We own all of the leases in the unit area, except southwest quarter, northwest quarter of Section 36, the State tract; also, except the south half, southeast quarter section 34, which is contributed by City Service, and also, except 80 acres in Section 3 of 19 South 31 East, being the northwest quarter southeast quarter and northeast quarter southeast quarter of Section 3.

Q Why do you show the last mentioned acreage in 35 as dotted lines rather than solid lines?

A In the original drafting of the unit plans, in the outline of the unit area, we included those two tracts which are owned by Texaco, because Texaco indicated a willingness to participate -- an interest in participating in the proposed unit, and the unit instruments are drafted with that in mind. Since that time, for reasons best known to the Texas Company, Texaco, they have changed their minds, and informed us that they do not wish to participate in the unit.

Q So these two tracts will not be committed to the --

A They will not be committed.

Q Has this area been designated by the USGS as an area suitable and proper for utilization under the provisions of Mineral Leasing Act?

A Yes, sir, it has.

Q Refer to Exhibit No. 2, and explain what that is.

A Exhibit No. 2 is a letter dated August 15, 1967, from the United States Geological Survey to Atlantic Richfield Company, advising that our unit outlined for the East Shugart unit, is acceptable as the logical unit area for the secondary operations which we proposed to carry on.

Q Does this letter also approve the form of unit agreement?

A Yes, sir, we have submitted for their review a form of the unit agreement. We have their preliminary approval.

Q Are you familiar with the form of unit agreement?

A Yes, sir.

Q Copies of this form have been filed with the application in this Case. Is Atlantic Richfield Company

designated as a unit operator?

A Yes, sir.

Q Is the proposed form substantially the same form as heretofore been approved by the USGS and by the Commission where Federal and Fee lands are involved?

A Yes, sir.

Q What is the present status of the execution of this unit?

A Besides Texaco Company, Texaco, which has indicated it will not execute, all other working interest owners have signed the unit agreement as well as the unit operating agreement. The only realty owners, of course, are the Federal Government and the State of New Mexico. The State will eventually not be a realty owner, because Texas Company is contributing the only State tract and, therefore, that tract will not be committed.

Q Outside of the Texaco acreage then, you anticipate a 100 percent --

A 100 percent of the royalty will be committed, yes sir.

Q That is the working interest, not the overriding royalty?

A Yes, sir. We anticipate 100 percent of the

overriding royalty interest, also. As of the present time, 96 percent in interest of the overriding royalty have signed.

Q Does the proposed unit cover all formations, or is it limited to certain formations?

A It is limited to certain formations, namely, Yates, Seven Rivers, Grayburg, and Queen formations in the Shugart Pool.

MR. HATCH: Injection will be in all those four in all those zones?

MR. HINKLE: We will go into that with Mr. Tweed, who is Petroleum Engineer, and will testify as to the formations that will be injected.

MR. UTZ: The units advertised here are all four of them?

MR. HINKLE: The unit covers, as I understand it, all four, but the testimony will later show they are going to inject into three of them.

MR. HATCH: I just wondered if I had misadvertised.

MR. HINKLE: No, no, I think you are right.

Q (By Mr. Hinkle) Do you have further statements to make?

A No, sir, that completes what I wish to present.

MR. HINKLE: That is all the direct examination.

MR. UTZ: Are there any questions of Mr. Biard?

You may be excused.

JERRY TWEED

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

DIRECT EXAMINATION

BY MR. HINKLE:

Q State your name, your residence, and by whom are you employed?

A Jerry Tweed. I live in Roswell, New Mexico. I am employed by Atlantic Richfield Company.

Q What is your present position with Atlantic Richfield Company?

A I am Petroleum Engineer.

Q Have you previously testified before the Commission?

A Yes, sir.

Q Your qualifications as a Petroleum Engineer are a matter of record with the Commission?

A Yes, they are.

Q Are you familiar with the proposed unit agreement

for the East Shugart unit area?

A Yes, I am.

Q Have you made a study of this area?

A Yes.

Q Of all the wells that have been drilled?

A I have.

Q Have you prepared, or has there been prepared under your direction certain exhibits in this Case?

A Yes, sir.

Q Refer to Exhibit No. 3, and explain what that shows.

A Exhibit No. 3 is a north to south cross section of the electric logs across the unit area. The designation of the zones in here are for our particular purpose, and don't have any geological significance. I might point out one thing, that the zone designated, Upper Queen 1, is actually the Seven Rivers zone. On this cross section, the major zones that are to be flooded, are shown. The three zones in the Yates are colored green. The Upper Queen in Seven Rivers, these three zones are colored orange, and then the Lower Queen, three zones, are colored yellow. This shows the continuity of the pay in this particular area. All of the Queen's and Seven Rivers zone are blanket

in nature in the unit area, and are continuous. The Yates zones are continuous over most of the areas, but they pinch out in certain locations, as might be noted in the Yates "D" zone on the cross section.

Q Do you propose to inject water into all these zones as shown?

A Yes. All these zones will be flooded.

Q I refer you to Exhibit 4, and ask you to explain this to the Commission.

A Exhibit 4 is a west to east cross section of the electric logs in the area crossing. And, again, these three Yates zones are shown on it. It also shows the continuity of these zones in this area.

Q Between these two exhibits, it shows the continuity north, south, east, and west?

A Yes, sir, across the unit. The location of the two cross sections are shown on Exhibit 1.

Q Now, refer to Exhibit 5, and explain what this shows.

A Exhibit 5 is our logs of the wells we planned to convert to injection. There are here nine logs. We planned to convert eleven wells. One well to be drilled,

and one well, the City Service well, did not have an electric log available.

Q I refer back to Exhibit 1. Does this show all the proposed wells?

A Yes. All the proposed eleven injections wells are shown on this exhibit.

Q Do you have any further comments with respect to Exhibit No. 5?

A No. The one well we planned to convert into injection, it does not have a log, is a East Shugart unit well No. 28. It does not have a log run on it.

Q Well, there is still one log that you do not have here, is that right?

A Yes.

Q That is the one to be drilled?

A Yes, that's the No. 28 Well.

Q Why do you not have the log for that well?

A The log was not available, and it is my understanding, that there was not a log run on the well.

Q Identify the injection well that you propose to drill at an unorthodox location on Exhibit 1.

A This well is located 100 feet from the South line parameter pattern in this particular area. The drilling of this well in this location is necessary in order to sweep most oil in this area -- it might be noted that that the wells to the south there are primarily Grayburg producers, and are not opened in this zone. Therefore, if we locate it on a normal spot, we would be sweeping oil to the south that would not be recovered.

Q In your opinion, with the location of the injection, at an unorthodox location, as you have indicated, tend to violate correlative rights.

A It would not violate correlative rights.

Q Would it militate against any of the interests to the south which are not within the unit area?

A No, it would not. If they choose to open the zones to be flooded, then they would benefit from the drilling of this well.

Q Does the unit agreement contain a participation formula?

A Yes, it does. A participation formula is two phases. Phase One consists of 50 percent current rate and 50 percent remaining primary. Phase One will be in effect until, from 7:00 A.M., May 1, 1969; from that time

until 667,317 barrels have been recovered. When, from May 1, that much oil have been recovered, then there will be a Phase Two participation, which amounts to 95 percent ultimate primary, and 5 percent acreage; and it will be in effect until cessation of the unit activity.

Q I refer to Exhibit 6, and I will ask you to explain what this shows.

A Exhibit 6 are schematic diagrams of the proposed eleven injection wells. Shown on these are the tubing setting depths, size, casing strings setting depths, amounts of cement, and tops of cement. It might be noted that there are essentially three types of completions that we are proposing here. The top well, East Shugart unit well No. 1, would be a dual completion with two strings of tubing. A dual packer set above the Yates, and a single packer set below it. The Yates would then be injected into, down one string of tubing, and then the Queen down the other string of tubing. The other type -- one of the other type would be East Shugart Well No. 16, which is a single completion, and this type of completion we plan to inject down to the packer set above the perforations for open-hole. One other type is East Shugart Well No. 19. This well is

equipped with 4 1/2 inch casing; therefore, we plan to set a packer between the Yates and the Queen, and yet injection down tubing into the Queen perforations, and down the annulus into the Yates.

Q How many wells do you have of this type, where you are going to inject in the annulus?

A We have two.

Q Does the unit agreement provide for the filing of a plan of development operation at the time you file for final approval?

A Yes, it does.

Q Have you formulated that plan?

A Yes, I have. It is attached.

Q Refer then to Exhibit No. 7.

A This is a plan for the development of the East Shugart unit. The unit consists of some 1,359.4 acres in the unit area. Texaco chose not to participate with their 120 acres; therefore, the remaining 1,239.4 acres will be developed for water flooding. The zones to be flooded, as previously stated, are the Yates, Seven Rivers, and Queen, as shown on the cross sections which we have reviewed. The Yates is found at approximately 2,700 feet, and the lowest Queen zone to be flooded is found to be

Approximately 1,000 acres of the Yates area is located in the three formations and this area is essentially stratigraphic in nature and all three formations are productive limits determined by sand pinch out. The only exception being the sand pinch out limits of production for the two lower Yates zones in this area, and they are controlled by the presence of an occipit. The producing mechanism in all cases was solution gas drive. There are now, within the producing boundary, 26 active producing wells, one shut in well and four injectors. Wells are presently producing some 164 barrels of oil per day, which is 6.3 barrels of oil per day per producing well. The area is in the latter stages of the primary depletion.

The cumulative production of the participating area is some 2,330,000 barrels, with the estimated remaining primary of 490,000 barrels. This is, as of March 1, 1969. The existing four injectors were converted May, 1966, and with new installations, it is planning to have a total of 11 injectors. The wells will eventually form two large parameter-type patterns. Those patterns include the drilling of one additional well to be located 100 feet from the south line of 99 West line, in Section 15. It is planned to inject separately into the Yates and to inject together

into the Seven Rivers-Queen formations. In the well that has 7 inch casing, there will be the two strings of 2 3/8 inch tubing. In the wells with 4 1/2 inch casing, injection will be down the tubing in the Seven Rivers-Queen and down the annulus into the Yates.

Q This also lifts all the injection wells, does it not?

A Yes, it lifts all the injection wells. We found that out. Approximately 7,000 barrels of water per day will be injected in the 11 wells. The supply of water will be purchased from Double Eagle Corporation, and the facilities for regathering and reinjecting for this water will be constructed. The water would be treated to assure a minimum amount of corrosion, and frequent checks will be made to insure that control is maintained. It is estimated that an additional 2,800,000 barrels of oil will be recovered due to waterflooding, and project will have a life of 13 years.

Q In your opinion, if this unit is approved, will it be in the interest of conservation and the prevention of waste.

A Yes, it will.

Q Will it tend to protect correlative rights.

A Yes, it will.

Q And promote the greatest ultimate recovery of unitized substances?

A Yes.

MR. HINKLE: We would like to offer in evidence Exhibits 1 through 7.

MR. UTZ: Without objection, Exhibits 1 through 7 will be entered into the record of this Case.

(Thereupon, Applicant's Exhibits 1 through 7 were admitted in evidence.)

Q (By Mr. Hinkle) Have you further comments to make Mr. Tweed?

A No, sir.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Tweed, will all the water -- the injection water, be fresh water?

A No, sir, it will not. We will reinject produced water.

Q Do you intend to line the tubing?

A No, we do not. We have injected -- reinjected produced clean water and supply water in a project approximately

two miles north of here for -- ever since December, 1965. And we, to date, have not had a failure in that project, due to an internal corrosion. It is our contention, that water properly treated, will not be sufficiently corrosive to warrant plastic coating. Also, the injection linings will not be plastic coated and there would be injection down the annulus, which would be bare steel; which requires for our operation that we may maintain that corrosion protection.

Q It's just the produced water that you will treat?

A No, sir, we also treat the supply water to remove the oxygen from it.

Q The reason for using the annulus to inject in the upper zones of these two wells is because of the small casings?

A Yes, sir, that is right.

Q There are three kinds of completions that you had, wasn't there? I can't find but two of them here, right now.

A One was a dual completion, and the other one, the one that we just mentioned, and the third type was just a single completion; such as East Shugart Unit Well

No. 29, which is second from the back. This is just a single completion. We will inject down tubing in the packer set above the perforations. We have, I believe, three of these.

Q That annulus could be loaded pretty handily, couldn't it?

A Yes, sir. It will be.

Q Any other questions?

MR. HINKLE: I might ask one further question. In your injection system, will this be a close system so as to prevent corrosion?

A Yes, it will be a close system.

MR. HINKLE: That's all.

Q (By Mr. Utz) Do you have any idea why they didn't log your Yates on the east-west cross section?

A No, I think possibly what happened in a lot of these wells is, they drill to the Yates earlier and made producing wells out of them, and later on they deepened to the Queen and probably, in these two wells, they had been Yates, but when they deepened to the Queen, they logged the same.

MR. UTZ: Any other questions of the witness? If not, you may be excused. Do you have anything further, Mr. Hinkle?

MR. HINKLE: No. That is all.

MR. UTZ: The Case will be taken under
advisement.

WITNESSESPAGE

JACK BIARD

Direct Examination by Mr. Hinkle

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JACK TWEED

Direct Examination by Mr. Hinkle

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Cross Examination by Mr. Utz

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EXHIBITSMARKEDADMITTED IN
EVIDENCEApplicant's Exhibits
1 through 7

19

STATE OF NEW MEXICO)
) SS.
COUNTY OF BERNALILLO)

I, KURLEEN McCUTCHEN, Court Reporter in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Gurleen MeCatcher
Notary Public

My Commission Expires May 22, 1973

I do hereby certify that the foregoing is
a complete record of the proceedings at
the Examiner hearing of Case No. 4137 + 38
heard by me on May 7, 1969.
[Signature] , Examiner
New Mexico Oil Conservation Commission

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

May 28, 1969

Mr. Clarence Hinkle
Hinkle, Bondurant & Christy
Attorneys at Law
Post Office Box 10
Roswell, New Mexico 88201

C Dear Sir:

O Enclosed herewith is Commission Order No. R-3769, entered in Case No. 4138, approving the Atlantic Richfield East Shugart Waterflood Project.

P Injection is to be through the 11 authorized water injection wells. Unit Wells Nos. 1, 3, 6, 15, 22, and 23 are to be dually-completed injection wells with water being injected through parallel strings of tubing into zones separated by a packer with an upper dual packer being set within 100 feet of the uppermost perforation. Unit wells Nos. 16, 28, and 29 are to be single injection wells with water being injected through tubing set in a packer located within 100 feet of the uppermost perforation or the casing shoe, in open hole completions. Unit well No. 32, to be drilled at an unorthodox location 100 feet from the South line and 990 feet from the West line of Section 35, Township 18 South, Range 31 East, and Unit Well No. 19 are to be dual injectors, with injection into the Queen formation through tubing and injection into the Yates formation down the casing-tubing annulus. Surface casing on the No. 32 shall be set at approximately 800 feet and cemented to the surface.

Y Injection water shall be treated to prevent corrosion and coupon corrosion tests continuously conducted on any well in which has injection down the casing. The casing tubing annulus in the other wells shall be loaded with a corrosion-inhibited fluid and equipped with a pressure gauge at the surface to facilitate detection of leakage in the packer, tubing, or casing.

As to allowable, our calculations indicate that when all of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 1260 barrels per day when the Southeast New Mexico normal unit allowable is 42 barrels per day or less.

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

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Mr. Clarence Hinkle
Hinkle, Bondurant & Christy
Roswell, New Mexico

May 28, 1969

Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the Commission and the appropriate district proration office.

C
O
P
Y
In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly notify both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

Your cooperation in keeping the Commission so informed as to the status of the project and the wells therein will be appreciated.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/DSN/ir

cc: Oil Conservation Commission offices in Hobbs and Artesia

Mr. D. E. Gray, State Engineer Office, Santa Fe, New Mexico

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 4138
Order No. R-3769

APPLICATION OF ATLANTIC RICHFIELD
COMPANY FOR A WATERFLOOD PROJECT
AND UNORTHODOX INJECTION WELL LOCA-
TION, EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 21, 1969,
at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 28th day of May, 1969, the Commission, a
quorum being present, having considered the testimony, the record,
and the recommendations of the Examiner, and being fully advised
in the premises,

FINDS:

(1) That due public notice having been given as required by
law, the Commission has jurisdiction of this cause and the subject
matter thereof.

(2) That the applicant, Atlantic Richfield Company, seeks
permission to institute a waterflood project in its East Shugart
Unit Area, Shugart Pool, by the injection of water into the Yates
and Queen formations through 10 injection wells in Sections 27,
34, and 35, Township 18 South, Range 31 East, NMPM, Eddy County,
New Mexico, and through the following-described well which is to
be drilled at an unorthodox location:

East Shugart Unit Well No. 32, to be located
100 feet from the South line and 990 feet from
the West line of said Section 35.

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CASE No. 4138

Order No. R-3769

(3) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

(4) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(5) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Atlantic Richfield Company, is hereby authorized to institute a waterflood project in its East Shugart Unit Area, Shugart Pool, by the injection of water into the Yates and Queen formations through the following-described wells in Township 18 South, Range 31 East, NMPM, Eddy County, New Mexico:

Well	No.	Unit	Section	New Unit Well No.
Atlantic Richfield Co. Hinkle "B"	3	P	27	1
Atlantic Richfield Co. Hinkle "A"	13	A	34	3
Atlantic Richfield Co. Hinkle "B"	5	F	34	15
Atlantic Richfield Co. Hinkle "A"	3	I	34	19
Atlantic Richfield Co. Hinkle "B"	6	L	34	16
Atlantic Richfield Co. Hinkle "B"	1	N	34	29
Cities Service Oil Co. Hinkle "A"	1	O	34	28
Atlantic Richfield Co. Hinkle "A"	12	C	35	6
Atlantic Richfield Co. Hinkle "B"	4	J	35	22
Atlantic Richfield Co. Hinkle "B"	7Y	O	35	23

East Shugart Unit Well No. 32 to be drilled
at an unorthodox location 100' FSL and 990' FWL - Section 35

(2) That the subject waterflood project is hereby designated the Atlantic Richfield East Shugart Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

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CASE No. 4138

Order No. R-3769

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION


DAVID F. CARGO, Chairman


ALEX J. ARMILLO, Member


A. L. PORTER, Jr., Member & Secretary


esr/

ROUGH DRAFT FOR WATERFLOOD LETTERS

Mr. Clarence Hinkle
Hinkle, Bondurant & Christy
Attorneys at Law
Post Office Box 10
Roswell, New Mexico 88201
Dear Sir:

enclosed herewith is Commission Order No. R-3769, entered in Case No. 4138, approving the *Atlantic Richfield East Shugart* Waterflood Project.

Injection is to be through the 11 authorized water injection wells. Unit wells Nos. 1, 3, 6, 15, 22, and 23 are to be dually-completed injection wells with water being injected through parallel strings of tubing into zones separated by a packer with an upper dual packer being set within 100 feet of the uppermost packer perforation. Unit wells Nos. 16, 28, and 29 are to be single injection wells with water being injected through tubing set in a packer located within 100 feet of the uppermost perforation.
As to allowable, our calculations indicate that when all of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 1260 barrels per day when the Southeast New Mexico normal unit allowable is 42 barrels per day or less.

Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the Commission and the appropriate district proration office.

In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly notify both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

Your cooperation in keeping the Commission so informed as to the status of the project and the wells therein will be appreciated.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

cc: OCC: Hobbs x
Artesia x
Aztec

USGS

~~Mr. Frank Leahy~~, State Engineer Office, Santa Fe, New Mexico

Mr. D. E. Gray

or the casing shoe, in open hole completions. Unit well no. 32, to be drilled at an unorthodox location 100 feet from the South line and 990 feet from the West line of Section 35, Township 18 South, Range 31 East, is to be a dual injector, with injection into the Queen formation through tubing and injection into the Yates formation down the casing-tubing over

Annulus. Surface casing on this well shall be set at approximately 800 feet and cemented to the surface.

~~All water being injected down~~
Injection water shall be treated to prevent corrosion and coupon corrosion tests continuously conducted on any well in which has injection down the casing. The casing tubing annulus in the other wells shall be loaded with a corrosion-inhibited fluid and equipped with a pressure gauge at the surface to facilitate detection of leakage in the packer, tubing, or casing.

4138,

Heard 5-23-69

Rec. 5-23-69

Grant. Atlantic permission
to connect 11 wells to
water injection.

The E. Shugart # 19 # $\frac{16}{2}$ a
dual injection well.

Gates & R. men. as well as
sh. # 22 & 19 Gates down cog.

2. The # 29, 28 are single
injection thru tubing & have
a packer. All others are
dual-tubing injection.

Names & locations can be
taken from the geologic
sketches.

The plastic tubing fresh.
welded

Justi

Docket No. 15-69

DOCKET: EXAMINER HEARING - WEDNESDAY - MAY 21, 1969

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM,
STATE LAND OFFICE BUILDING - SANTA FE, NEW MEXICO

The following cases will be heard before Elvis A. Utz, Examiner, or Daniel S. Nutter, Alternate Examiner:

CASE 3405: (Reopened) (Continued from the May 7, 1969 Examiner Hearing)

In the matter of Case No. 3405 being reopened pursuant to the provisions of Order No. R-3081, which order established 640-acre spacing for the North Indian Hills-Morrow Gas Pool, Eddy County, New Mexico, for a period of one year after first pipeline connection in the pool. All interested parties may appear and show cause why said pool should or should not be developed on 320-acre spacing units.

CASE 4131: Application of Gulf Oil Corporation for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle production from the Jalmat and South Eunice oil pools, Lea County, New Mexico, in the wellbores of six wells located as follows:

TOWNSHIP 21 SOUTH, RANGE 36 EAST

Arnott Ramsay (NCT-D) Well No. 6 - Unit K - Section 33
Arnott Ramsay (NCT-D) Well No. 7 - Unit M - Section 33
Arnott Ramsay (NCT-D) Well No. 8 - Unit N - Section 33
Arnott Ramsay (NCT-D) Well No. 9 - Unit L - Section 33
J. F. Janda (NCT-B) Well No. 4 - Unit O - Section 32

TOWNSHIP 22 SOUTH, RANGE 36 EAST

J. F. Janda (NCT-F) Well No. 8 - Unit C - Section 4

CASE 4132: Application of Pan American Petroleum Corporation for an exception to Order No. R-3221, as amended, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221, as amended, which order prohibits the disposal of water produced in conjunction with the production of oil on the surface of the ground in Lea, Eddy, Chaves, and Roosevelt Counties, New Mexico, after January 1, 1969. Said exception would be for three wells located in Unit D, E, and P of Section 27, Township 18 South, Range 31 East, Shugart Field, Eddy County, New Mexico. Applicant seeks authority to continue to dispose of salt water produced in two unlined surface pits located in the E/2 of said Section 27.

Examined hearing - May 21, 1969

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Docket No. 15-69

- CASE 4133: Application of Skelly Oil Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the West Dollarhide Drinkard Unit Area comprising 3,533.52 acres, more or less, of Fee, Federal, and State lands in Townships 24 and 25 South, Range 38 East, Lea County, New Mexico.
- CASE 4134: Application of Skelly Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its West Dollarhide Drinkard Unit Area by the injection of water into the Tubb-Drinkard formation through 43 wells located in Townships 24 and 25 South, Range 38 East, Dollarhide Tubb-Drinkard Pool, Lea County, New Mexico. Applicant further seeks a procedure whereby said project may be expanded administratively without a showing of well response.
- CASE 4135: Application of Roy E. Kimsey, Jr. for an exception to Order No. R-3221, as amended, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221, as amended, which order prohibits the disposal of water produced in conjunction with the production of oil or gas or both, on the surface of the ground in Lea, Eddy, Chaves, and Roosevelt Counties, New Mexico, after January 1, 1969. Said exception would be for the P. R. Bass-Federal Well No. 1 located in Unit F of Section 3, Township 16 South, Range 30 East, West Henshaw Pool, Eddy County, New Mexico. Applicant seeks authority to continue to dispose of produced salt water in an unlined surface pit located near said well.
- CASE 4136: Application of Mallard Petroleum, Inc. for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Yates formation in the interval from 3606 feet to 3627 feet in its Milner Federal Well No. 4 located in Unit C of Section 35, Township 20 South, Range 34 East, Lynch Pool, Lea County, New Mexico.
- CASE 4137: Application of Atlantic Richfield Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the East Shugart Unit Area comprising 1359.40 acres, more or less, of Federal and State lands in Townships 18 and 19 South, Range 31 East, Eddy County, New Mexico.

- CASE 4138: Application of Atlantic Richfield Company for a waterflood project and unorthodox injection well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Yates-Seven Rivers-Queen formations through 11 wells in Townships 18 and 19 South, Range 31 East, Shugart Pool, Eddy County, New Mexico. Applicant further seeks an exception to permit the drilling of one of said wells at an unorthodox location 100 feet from the South line and 990 feet from the West line of Section 35, Township 18 South, Range 31 East.
- CASE 4139: Application of Allied Chemical Corporation for a unit agreement, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Milnesand (San Andres) Unit Area comprising 5370.18 acres, more or less, of Federal and Fee lands in Township 8 South, Ranges 34 and 35 East, Roosevelt County, New Mexico.
- CASE 4140: Application of Allied Chemical Corporation for a waterflood project, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its Milnesand (San Andres) Unit Area by the injection of water into the San Andres formation through 33 wells located in Township 8 South, Ranges 34 and 35 East, Milnesand-San Andres Pool, Roosevelt County, New Mexico. Applicant further seeks a procedure whereby said project may be expanded administratively without a showing of well response.
- CASE 4141: Application of McCasland Disposal System for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Seven Rivers formation in the intervals from approximately 3756 feet to 3851 feet and from approximately 3918 feet to 3939 feet, respectively, in the Getty Oil Company J. H. Day Wells Nos. 1 and 2, both located in the NW/4 of Section 8, Township 22 South, Range 36 East, Jalmat Pool, Lea County, New Mexico.
- CASE 4142: Application of Tamarack Petroleum Corporation, Inc., for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water by injection into the Queen formation in the interval from 4946 feet to 5040 feet in its Cabot 15 State Well No. 2 located in Unit P of Section 15, Township 19 South, Range 35 East, Pearl-Queen Pool, Lea County, New Mexico.

Examiner Hearing - May 21, 1969

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Docket No. 15-69

CASE 4143: Application of Amerada Petroleum Corporation for downhole commingling and special gas-oil ratio limitation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle production from the Eumont Gas Pool and the Skaggs-Grayburg Pool in the wellbore of its Fred Turner, Jr., "A" Well No. 2, the Eumont completion of which is presently classified as a gas completion, located in Unit K of Section 18, Township 20 South, Range 38 East, Lea County, New Mexico. Applicant, further seeks the establishment of a special gas-oil ratio limitation for the subject well.

(Continued from the May 7, 1969 Examiner Hearing)

CASE 4121: Application of Roger C. Hanks for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the Bar U-Pennsylvanian Pool, Lea County, New Mexico, including a provision for 160-acre spacing and proration units and the assignment of 80-acre allowables.

BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

MAY 8 1969

APPLICATION OF ATLANTIC RICHFIELD COMPANY)
FOR APPROVAL OF A WATERFLOOD PROJECT FOR)
THE SHUGART POOL (YATES-SEVEN RIVERS-QUEEN-)
GRAYBURG) TO BE EMBRACED WITHIN THE EAST)
SHUGART UNIT AREA CONSISTING OF 1,359.40)
ACRES IN TOWNSHIPS 18 AND 19 SOUTH, RANGE)
31 EAST, EDDY COUNTY, NEW MEXICO, INCLUDING)
11 INJECTION WELLS, AND FOR APPROVAL OF AN)
UNORTHODOX LOCATION OF AN INJECTION WELL)
TO BE LOCATED 100 FEET FROM THE SOUTH LINE)
AND 990 FEET FROM THE WEST LINE OF SECTION)
35, TOWNSHIP 18 SOUTH, RANGE 31 EAST, AND)
FOR APPROVAL OF A PROJECT ALLOWABLE IN)
ACCORDANCE WITH RULE 701 OF THE COMMISSION)

Case 4128

Oil Conservation Commission
Box 2088
Santa Fe, New Mexico 87501

Comes Atlantic Richfield Company, acting by and through the undersigned attorneys, and hereby makes application for approval of a waterflood project for the Shugart Pool (Yates-Seven Rivers-Queen-Grayburg) to be embraced within the East Shugart Unit Area consisting of 1,359.40 acres in Townships 18 and 19 South, Range 31 East, Eddy County, New Mexico, including 11 injection wells, and for approval of an unorthodox location of an injection well to be located 100 feet from the south line and 990 feet from the west line of section 35, Township 18 South, Range 31 East, and for approval of a project allowable in accordance with Rule 701 of the Commission, and in support thereof respectfully shows.

1. That there is filed herewith a plat showing the location of the proposed injection wells and the location of all other wells within a radius of 2 miles from the proposed injection wells and the formation from which said wells are producing or have produced. The plat also shows the boundaries of the proposed East Shugart Unit Area and shows the owners of the oil and gas leases within an area of 2 miles of the proposed unit area.

DOCKET
5-9-69

2. As indicated by Exhibit "A" filed herewith, there are 11 proposed injection wells. Ten of the injection wells consist of presently producing wells to be converted to injection wells and one of the injection wells will be drilled and it is proposed that said well be drilled at an unorthodox location 100 feet from the south line and 990 feet from the west line of Section 35, Township 18 South, Range 31 East. All of said wells will be completed in such a way as to provide for the injection of water into the Shugart Pool which includes the Yates, Seven Rivers, Queen and Grayburg formations. There is filed herewith logs of all the wells except the injection well to be located upon Cities Service lease in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ Section 34, Township 18 South, Range 31 East which is not available and the unorthodox location which is to be drilled as an injection well. There are also filed herewith diagrammatic sketches of all the proposed injection wells, showing all casing strings including diameters and setting depth, quantities used and tops of cement, perforated or open hole intervals, tubing strings including diameters and setting depths, and types and location of packers to be used.

3. That the proposed waterflood project is within the boundaries of the proposed Unit Agreement for the East Shugart Unit Area and that application has been filed for approval of the unit agreement by the Commission.

4. It is proposed to inject water for secondary recovery purposes into the Shugart Pool which includes the Yates, Seven Rivers, Queen and Grayburg formations. The unit agreement identifies the top of the formations at 2,312 feet on the Lane Wells Radioactivity Log for the Atlantic Richfield Hinkle "A" No. 6 well located 2310 feet from the north line and 330 feet from the east line of Section 34, Township 18 South, Range 31 East and the bottom of the formation at a point 2,000 feet below the point at 2,312 feet on the log.

5. That applicant proposes to inject water purchased from the Double Eagle Water Company and that it is anticipated that approximately 7,000 barrels per day will be injected after all wells which are to be converted to injection wells have been converted and the new well drilled.

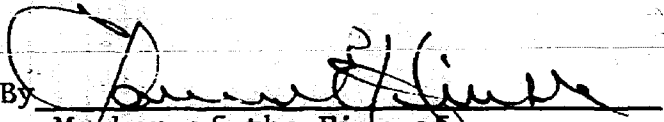
6. That applicant also desires a project allowable to be approved in accordance with Rule 701 of the rules of the Commission.

7. That in the opinion of applicant said waterflood project will be in the interest of conservation, prevention of waste, the protection of correlative rights and will tend to promote the greatest ultimate recovery of oil and gas from that portion of the Shugart Pool covered by the project.

8. Applicant requests that this matter be set down for hearing at the examiner's hearing to be held on May 21, 1969.

Respectfully submitted,

ATLANTIC RICHFIELD COMPANY

By 
Member of the Firm of
HINKLE, BONDURANT & CHRISTY
Attorneys for Applicant

DRAFT
GMH/esr

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 4138

Order No. R-2769

APPLICATION OF ATLANTIC RICHFIELD COMPANY
FOR A WATERFLOOD PROJECT AND UNORTHODOX
INJECTION WELL LOCATION, EDDY COUNTY, NEW
MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 21, 1969,
at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this day of May, 1969, the Commission, a
quorum being present, having considered the testimony, the record,
and the recommendations of the Examiner, and being fully advised
in the premises,

FINDS:

(1) That due public notice having been given as required by
law, the Commission has jurisdiction of this cause and the subject
matter thereof.

(2) That the applicant, Atlantic Richfield Company, seeks
permission to institute a waterflood project in its East Shugart
Unit Area, Shugart Pool, by the injection of water into the Yates and
~~Seven Rivers~~ Queen formations through 10 injection wells in Sec-
tions 27, 34, and 35, Township 18 South, Range 31 East, NMPM,
Eddy County, New Mexico, and through the following-described well
which is to be drilled at an unorthodox location:

East Shugart Unit Well No. 32, to be located
100 feet from the South line and 990 feet from
the West line of said Section 35.

(3) That the wells in the project area are in an advanced
state of depletion and should properly be classified as "stripper"
wells.

(4) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(5) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Atlantic Richfield Company, is hereby authorized to institute a waterflood project in its East Shugart Unit Area, Shugart Pool, by the injection of water into the Yates ~~and~~ ~~Seven Rivers~~ Queen formations through the following-described wells in Township 18 South, Range 31 East, NMPM, Eddy County, New Mexico:

Well	No
Atlantic Richfield Co. Hinkle "B"	3
" " " Hinkle "A"	13
" " " Hinkle "B"	5
" " " Hinkle "B"	6
" " " Hinkle "A"	3
" " " Hinkle "B"	6
" " " Hinkle "B"	1
Cities Service Oil Co. Hinkle "A"	1
Atlantic Richfield Co. Hinkle "A"	12
" " " Hinkle "B"	4
" " " Hinkle "B"	74
East Shugart Unit	32
East Shugart Unit Well No. 32 to be drilled at an unorthodox location	100' FSL

under → the Atlantic Richfield East Shugart Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.