CASE 6428: MOBIL OIL CORPORATION FOR AMENDMENT OF ORDER NO. R-5801, LEA COUNTY, NEW MEXICO

CASE NO.

6428

APPLICATION,
TRANSCRIPTS,
SMALL EXHIBITS,

ETC.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
State Land Office Building
Santa Fe, New Mexico
31 January 1979

EXAMINER HEARING

IN THE MATTER OF:

Application of Mobil Oil Corporation for the amendment of Order No. R-5801, Lea County, New Mexico.

CASE 6428

BEFORE: Richard L. Stamets

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 Bldg.
Santa Fe, New Mexico 87503

For the Applicant: J. E. SPERLING, Esq.
MODRALL, SPERLING, ROEHL, HARRIS & SISK
Albuquerque, New Mexico

I N D E X

IRA S. REAVIS

Direct Examination by Mr. Sperling 4

Cross Examination by Mr. Stamets 10

E X H I B I T S

Applicant Exhibit One, Table 10

MR. STAMETS: We'll call next Case 6428.

MS. TESCHENDORF: Case 6428. Application of Mobil Oil Corporation for amendment of ORder R-5801, Lea County, New Mexico.

MR. SPERLING: James E. Sperling of Modrall, Sperling, Roehl, Harris & Sisk, Albuquerque, New Mexico, appearing for the Applicant, Mobil Oil Corporation. We have one witness, Mr. Reavis.

MR. STAMETS: Any other appearances in this case? I'd like to have the witness stand and be sworn, please.

MR. SPERLING: For the record, Mr. Examiner, I would like to explain what Mobil seeks by this application.

The original hearing in this matter was in Case Number 6248, which resulted in Order Number 5801, and the only relief which is sought is to remove by deletion the reference to lined tubing in connection with the injection for the purposes of the pressure maintenance system.

The inclusion of the requirement of lined tubing was at the request of Mobil at the original hearing; however, experience in the North Vacuum Abo Unit, as well as the East Abo Unit, as well as other projects, has shown that lined tubing is not necessary and it is an unnecessary expense.

We expect to show through the testimony of the witness that he has been familiar with not only this system but other systems and that by the elimination of oxygen in fresh water, which is used for injection, the corrosion problems are controlled.

We specifically are asking that in paragraph numbered two in the finding portion -- I mean in the order portion of Order 5801, in paragraph numbered two, that the words in the second line "corrosion resistant line" be removed and that the sentence would then read that "injection into each of the aforesaid wells should be accomplished through tubing set in a packer" and so forth. In other words, elimination only of the requirement of the use of corrosion resistant lined tubing.

With that explanation, we'll proceed with the testimony.

IRA S. REAVIS

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

DIRECT EXAMINATION

BY MR. SPERLING:

Q. Would you state your name, please?

A. Ira S. Reavis.

Q. Where do you live?

A. I live at 2811 Hampton Drive, Missouri City, Texas, with offices in Houston.

Q. By whom are you employed?

A. Mobil Oil Corporation.

Q. And in what capacity?

A. I'm Staff Process Engineer.

Q. And would you describe with a view toward the relevance of the matter which is the subject of this hearing, your background in educational qualifications, as well as experience qualifications, and the particular duties that you perform relevant to this hearing?

A. I am a Staff Process Engineer for Mobil Oil, as I say. I've been with Mobil Oil for twenty-nine years. I worked in the corrosion field for twenty-five of those twenty-nine years. I work with gas treating and water treating problems, corrosion problems. I am recognized by the National Association of Corrosion Engineers as a corrosion specialist. We've designed corrosion systems for all of our waterfloods and evaluated corrosion treatments as they are submitted.

Q. Do you belong to any societies which relate to corrosion control problems?

A. I'm a mamber of the National Association of Corrosion Engineers.

Q. Okay. Now, are you through your employment with Mobil and the performance of the duties that you described, are you familiar with the pressure maintenance project from the standpoint of corrosion control which is in process now in the North Vacuum Abo East Unit area?

A. Yes, I am.

We designed a system so it would be using injection water for the unit, for the pressure maintenance to be fresh water from the Ogallala aquifer.

T his water contains from 20 to 60 parts per million cholorides and 345 to 462 parts per million total dissolved solids with 6 to 8 parts per million dissolved oxygen.

The water will be treated for oxygen removal for corrosion control using a gas stripping tower. The gas from the stripping tower will be fuel gas for the engines that drive the injection pumps.

The stripping tower will reduce the oxygen content in the water down to 35 to 60 parts per billion. That's .035 to .06 parts per million, which is very low.

The water will be produced and processed from the water supply wells for the North Vacuum Abo Unit through the oxygen stripping tower that's located there and it will be transferred by pump to the Vacuum Abo East Unit.

The system will be constructed, equpped, and maintained to exclude the oxygen and to monitor the oxygen, should any enter into the system.

All the tanks will be equipped with gas blankets. We'll use galvanic probes with recorders to sense any oxygen entry into the system. These galvanic probes will be located on the discharge of the gas stripping tower, on the discharge of the water transfer pumps, and on the discharge of the high pressure discharge pumps.

The galvanic probes will sense any oxygen entry into the system by increasing the current output to the recorder. This recorder will give us 24-hour record of any oxygen entry into the system. The gas blankets will maintain a positive pressure, one to two ounces of pressure on the tanks, and prevent oxygen entry from the atmosphere.

In addition, we will routinely check the injection system for oxygen entry with an oxygen meter that will measure down in parts per billion. Corrosion control will be monitored -- or corrosion will be monitored using corrosion coupons installed at the wellhead and removed on sixty to ninety day intervals.

Removal of oxygen will minimize the corrosivity of the water and get the coupon corrosion rates down to a half mil to one mil a year. This is a realistic num-

ber that we've experienced in several waterfloods and this allows us to use conventional standard materials of construction throughout the system where other considerations permit.

We submit a table here of data from three operating systems.

Q. Excuse me, Mr. Reavis. Is that the exhibit that has been marked Mobil's Exhibit One in this matter?

A. It is, yes.

Q. You may continue.

A. These three systems are -- two of them are using gas stripping for oxygen removal and one system, which includes several different smaller systems, uses sulphur dioxide for oxygen scavenging.

The first system we're looking at there is the North Vacuum Abo Unit where our water will be treated for the East Vacuum Unit, located in Lea County, New Mexico, and this system was started up in 1973.

This system uses Ogallala water. We strip oxygen with a gas stripping tower. The fuel gas -- the gas coming off the tower goes to the engines for fuel gas.

This system is presently injecting about 7300 barrels of water a day. It has 39 injection wells. We've had an opportunity to look at three injection strings recently for reasons other than corrosion, and find no cor-

rosion whatsoever in the tubing.

As you look at the table, you see that corrosion rates on the corrator probe that we use indicate from 2/10ths to 1 mil per year corrosion rate.

The Russell Clearfork Unit in Gaines County was started in 1971. It also has a gas stripping tower and has Ogallala water as water supply to it.

The corrosion coupons -- the corrator readings on it were somewhat higher than the North Vacuum Abo Unit, but we had some bug problems and bacterial problems at that time and they are now under control and these are down to much lower content.

The Slaughter San Andres waterfloods that I show on the last page, are also Ogallala systems, but we use sulphur dioxide to remove the oxygen in the water there.

These are corrosion coupon rates and you will note that the rates indicated there vary from 9/10ths of a mil per year up to 2 mils per year.

These are all time-weighted average rates and are representative. This particular system has been in operation since 1966. There has not been one corrosion failure in the tubing due to oxygen corrosion.

With this particular data we're submitting, we are requesting that the phrase "corrosion resistant lined

be deleted from paragraph two, page three, of Order Number R-5801.

This will make the sentence to subsequently read that "injection into each of the aforesaid wells should be accomplished through tubing set in a packer as close as is practical to the uppermost Abo perforation."

Q. To your knowledge, is corrosion lined tubing required in the North Vacuum Abo Unit?

A. No, it is not, as far as we're concerned.

Q. And is not used?

A. And it is not used.

Q. Do you have anything further?

A. No, I haven't. I'll be glad to answer any questions, if anybody has anything.

MR. SPERLING: That's all we have on direct, Mr. Examiner. I'll offer Exhibit One in evidence.

MR. STAMETS: Exhibit One will be admitted.

CROSS EXAMINATION

BY MR. STAMETS:

Q. Mr. Reavis, is the corrosion control equipment already installed at this time?

A. It is.

Q. So that at this time --

A. Everything but the galvanic probes and those will be installed when the system is installed.

Q. Okay, and the people that you have there to operate the system are fully conversant with it and they know how it all works?

A. Right, if that needle goes up they know to holler and they do.

Q. Okay. Now, on your corrosion coupon testing, what rate would alarm them?

A. If they get above 3 mils per year we'd be concerned that the oxygen control was not effective.

That's 3/1000ths of an inch.

The reason I said a number like this is because usually the coupon as you install it is a bright, shiny metal, and it actually will corrode faster than the bare tubing that's been in there for so long, so it will have a higher corrosion rate than will the bare tubing that is there.

Q. And in waterflood systems what are your other causes of corrosion besides the oxygen?

A. In a fresh water system, none, basically. Now, if you get a high CO_2 content, you would, and in mixed water systems, of course, if you get your -- chlorides are high, you get a high conductivity and your electrolyte is high, total solids, or hydrogen sulphide, for instance, if we've got sulphate reducing bacteria to the point that we

started making hydrogen sulphide, we would also have a corrosion problem, but we -- we routinely watch for sulphate reducing bacteria to make sure we don't sour up a system.

Q. And on Exhibit Number One you've given us three systems and these systems operate essentially the same?

A. Yes, they do.

Q. And have you had a failure of an injection well resulting from corrosion in any of these systems?

A. No.

Q. The first one was 1966.

A. Right.

Q. Through '73?

A. Yes, sir.

Q. Would Mobil have any objection to the removal of this requirement with the proviso so long as no significant corrosion problems and tubing failures occur?

A. No, sir, we have no objection.

MR. STAMETS: Any other questions of the witness? He may be excused.

Anything further in this case?

MR. SPERLING: No, sir.

MR. STAMETS: We'll take the case under advisement. (Hearing concluded.)

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 W. Boyd CSR
Sally W. 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. 6126 heard by me on 1-31 1979.

Richard L. Stamets, Examiner
Oil Conservation Division

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
2010 Plaza Blanca (505) 471-2462
Santa Fe, New Mexico 87501

STATE OF NEW MEXICO
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OIL CONSERVATION DIVISION
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EXAMINER HEARING

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MR. STAMETS: Any other questions of the witness? He may be excused.

Anything further in this case?

MR. SPERLING: No, sir.

MR. STAMETS: We'll take the case under advisement. (Hearing concluded.)

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 W. 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. 6425, heard by me on 1-3, 1979.

Richard L. Stamets, Examiner
Oil Conservation Division

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

JERRY APODACA
GOVERNOR

NICK FRANKLIN
SECRETARY

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STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

March 5, 1979

Mr. James E. Sperling
Modrall, Sperling, Roehl,
Harris & Sisk
Attorneys at Law
Post Office Box 2168
Albuquerque, New Mexico 87103

Re: CASE NO. 6428
ORDER NO. ~~R-5801-A~~

Applicant:

Mobil Oil Corporation

Dear Sir:

Enclosed herewith are two copies of the above-referenced Division order recently entered in the subject case.

Yours very truly,

Joe D. Ramey

JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCC x
Artesia OCC x
Aztec OCC

Other

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

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

CASE NO. 6428
Order No. R-5801-A

APPLICATION OF MOBIL OIL CORPORATION
FOR THE AMENDMENT OF ORDER NO. R-5801,
LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on January 31, 1979, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 28th day of February, 1979, the Division Director, 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 Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Mobil Oil Corporation, seeks the amendment of Order No. R-5801 to delete the requirements for lined tubing in injection wells in applicant's North Vacuum Abo East Pressure Maintenance Project, Lea County, New Mexico.

(3) That the applicant is utilizing an oxygen removal process on the waters to be injected into wells in said project.

(4) That applicant has utilized said process in other projects in the area and in other areas.

(5) That said process has resulted in the elimination of significant corrosion in the tubing of injection wells subject to such process.

(6) That the applicant will monitor for oxygen entry into the system with 24-hour recording devices and for corrosion by means of corrosion coupons.

(7) That the applicant should notify the supervisor of the Division's district office at Hobbs any time a corrosion rate exceeding 3 mils per year is detected or of the failure of any well injection equipment resulting from corrosion.

(8) That the Director of the Division should be authorized to administratively require the use of lined tubing in injection wells in said pressure maintenance project if it should appear that such requirement is necessary to maintain the integrity of the injection tubing.

(9) That subject to the monitoring, reporting, and administrative authority provisions of Findings Nos. (6), (7) and (8) above, the subject application should be approved.

IT IS THEREFORE ORDERED:

(1) That Order (2) of Order No. R-5801 is hereby amended to read in its entirety as follows:

"(2) That injection into each of the aforesaid wells should be accomplished through tubing set in a packer as close as is practicable to the uppermost Abo perforation. The casing-tubing annulus in each injection well shall be loaded with an inert fluid and a pressure gauge installed to facilitate detection of leakage in the casing, tubing, or packer."

IT IS FURTHER ORDERED:

(2) That the operator of the North Vacuum-Abo East Unit Pressure Maintenance Project shall install and maintain treatment and monitoring facilities or equipment to:

(a) remove oxygen from the water to be injected into wells in said project;

(b) provide for 24-hour monitoring for oxygen entry into such injection water; and,

(c) provide for corrosion coupon monitoring of the injection water.

(3) That said operator shall immediately notify the supervisor of the Division's district office at Hobbs anytime a corrosion rate exceeding 3 mils per year shall be detected or of the failure of any injection well equipment in said project resulting from corrosion.

(4) That the Director of the Division may administratively require the use of lined tubing in injection wells in said pressure maintenance project if it should appear that such requirement is necessary to maintain the integrity of the injection tubing.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY
Director

S E A L

fd/

NORTH VACUUM ABO UNIT
LEA COUNTY, N.M.
Started 1973

System - Ogallala Water - Gas Stripping
Corrosion Probe Type: Corrator
Date Installed: October 26, 1978

Date	Avg. Corr. Rate MPY	Pitting Rate MPY	O_2 Content PPB
11/1/78	0.5	0.0	40
11/2/78	0.2	0.0	--
11/3/78	0.2	0.0	--
11/6/78	0.4	0.0	50
11/14/78	0.6	0.0	40
11/17/78	0.5	0.0	80
11/20/78	1	0.0	--
11/22/78	0.4	0.0	60
11/27/78	.55	0.0	41
11/30/78			30
12/5/78	.5	0.0	35

RUSSELL CLEARFORK UNIT
GAINES COUNTY, TEXAS
Started 1971

System - Ogallala Water - Gas Stripping
Corrosion Probe Type: Corrator
Date Installed: November 13, 1978

Date	Avg. Corr. Rate MPY	Pitting Rate MPY	O_2 Content PPB
11/17/78	2.5	0.0	35
11/20/78	2.0	0.0	35
11/21/78	1.6		39
11/27/78	1.5	1.7	37
11/30/78	1.7	0.3	40

SLAUGHTER SAN ANDRES
HOCKLEY & COCHRAN COUNTY, TEXAS
Started 1966

No corrosion
Induced
failure

System - Ogallala Water - SO_2 Scvenged
Probe Type: Corrosion Coupon

Exposure	Location	Avg. MPY	O_2 Content PPB
235 Days	Tr. 1-1	0.9	10-40
235 Days	Tr. 1-3	1.5	10-40
235 Days	Tr. 2	0.5	10-20
235 Days	Tr. 7	1.6	10-30
352 Days	Tr. 1-1	0.96	10-20
352 Days	Tr. 7	2.0	20-30
352 Days	Tr. 1-3	0.81	10-20

NORTH VACUUM ABO UNIT
LEA COUNTY, N.M.
Started 1973

System - Ogallala Water - Gas Stripping
Corrosion Probe Type: Corrator
Date Installed: October 26, 1978

Date	Avg. Corr. Rate MPY	Pitting Rate MPY	O_2 Content PPB
11/1/78	0.5	0.0	40
11/2/78	0.2	0.0	--
11/3/78	0.2	0.0	--
11/6/78	0.4	0.0	50
11/14/78	0.6	0.0	40
11/17/78	0.5	0.0	80
11/20/78	1	0.0	--
11/22/78	0.4	0.0	60
11/27/78	.55	0.0	41
11/30/78			30
12/5/78	.5	0.0	35

RUSSELL CLEARFORK UNIT
GAINES COUNTY, TEXAS
Started 1971

System - Ogallala Water - Gas Stripping
Corrosion Probe Type: Corrator
Date Installed: November 13, 1978

Date	Avg. Corr. Rate MPY	Pitting Rate MPY	O_2 Content PPB
11/17/78	2.5	0.0	35
11/20/78	2.0	0.0	35
11/21/78	1.6		39
11/27/78	1.5	1.7	37
11/30/78	1.7	0.3	40

Ex 1

SLAUGHTER SAN ANDRES
HOCKLEY & COCHRAN COUNTY, TEXAS
Started 1966

System - Ogallala Water - SO_2 Scvenged
Probe Type: Corrosion Coupon

Exposure	Location	Avg. MPY	O_2 Content PPB
235 Days	Tr. 1-1	0.9	10-40
235 Days	Tr. 1-3	1.5	10-40
235 Days	Tr. 2	0.5	10-20
235 Days	Tr. 7	1.6	10-30
352 Days	Tr. 1-1	0.96	10-20
352 Days	Tr. 7	2.0	20-30
352 Days	Tr. 1-3	0.81	10-20

Dockets Nos. 5-79 and 6-79 are tentatively set for hearing on February 14 and 28, 1979. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - JANUARY 31, 1979

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

The following cases will be heard before Richard L. Stamets, Examiner, or Daniel S. Nutter, Alternate Examiner:

CASE 6422: In the matter of the hearing called by the Oil Conservation Division on its own motion to permit Helton Engineering & Geological Services, Inc., Travelers Indemnity Company, and all other interested parties to appear and show cause why the Brent Well No. 1 located in Unit M of Section 29 and the Brent Well No. 3 located in Unit G of Section 19, both in Township 13 North, Range 6 East, Sandoval County, New Mexico, should not be plugged and abandoned in accordance with a Division-approved plugging program.

CASE 6415: (Continued from January 17, 1979, Examiner Hearing)

Application of Yates Petroleum Corporation for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Wolfcamp thru Devonian formations underlying the W/2 of Section 20, Township 14 South, Range 36 East, Lea County, New Mexico, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6419: (Continued from January 17, 1979, Examiner Hearing)

Application of Yates Petroleum Corporation for a dual completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its Lanning JC Well No. 1 located in Unit B of Section 7, Township 18 South, Range 26 East, Eagle Creek Field, Eddy County, New Mexico, to produce gas from the Strawn formation through the casing-tubing annulus and from the Morrow formation through tubing.

CASE 6423: Application of Yates Petroleum Corporation for an unorthodox well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Jackson AT Well No. 9 located 660 feet from the South and West lines of Section 13, Township 17 South, Range 25 East, Eddy County, New Mexico, to test the Wolfcamp, Pennsylvanian, and Mississippian formations, the S/2 of said Section 13 to be dedicated to the well.

CASE 6424: Application of Yates Petroleum Corporation for an unorthodox well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Superior Fed. KJ Well No. 1 located 990 feet from the North and West lines of Section 7, Township 20 South, Range 29 East, Eddy County, New Mexico, to test the Wolfcamp and Pennsylvanian formations, the N/2 of said Section 7 to be dedicated to the well.

CASE 6425: Application of T. B. Knox Estate for exception to Order No. R-111-A, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to the casing/cementing rules for the Oil-Potash Area as promulgated by Order No. R-111-A to permit its Lucia Brookes Well No. 2 located in Unit K of Section 14, Township 18 South, Range 30 East, Eddy County, New Mexico, to be completed in the following manner: set surface casing and circulate cement; eliminate salt protection string; and do not circulate cement on production casing.

CASE 6426: Application of C. W. Trainer for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a well to be located 660 feet from the North and West lines of Section 24, Township 20 South, Range 32 East, South Salt Lake-Morrow Pool, Lea County, New Mexico, the N/2 of said Section 24 to be dedicated to the well.

CASE 6427: Application of Caribou Four Corners, Inc., for an unorthodox well location, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Caribou/Kirtland Well No. 1 to be located 1214 feet from the North line and 650 feet from the East line of Section 13, Township 29 North, Range 15 West, Cha Cha-Gallup Pool, San Juan County, New Mexico, the E/2 NE/4 to be dedicated to the well.

CASE 6428: Application of Mobil Oil Corporation for the amendment of Order No. R-5801, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-5801 to delete the requirements for lined tubing in injection wells in the North Vacuum Abo East Pressure Maintenance Project, Lea County, New Mexico.

CASE 6429: Application of Zia Energy, Inc., for approval of infill drilling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks a finding that the drilling of its Elliott State Well No. 2 to be located in Unit B of Section 34, Township 20 South, Range 36 East, Eumont Gas Pool, Lea County, New Mexico, is necessary to effectively and efficiently drain that portion of the proration unit which cannot be so drained by the existing well, and further seeks approval of a waiver of existing well-spacing requirements.

CASE 6430: Application of Phoenix Resources Company for a unit agreement, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval for its Buckhorn Canyon Unit Area comprising 23,009 acres, more or less, of Federal and state lands in Township 19 South, Ranges 19 and 20 East, Chaves County, New Mexico.

CASE 6431: Application of HNG Oil Company for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pennsylvanian formation underlying the N/2 of Section 35, Township 23 South, Range 28 East, Eddy County, New Mexico, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6432: Application of John Yuronka for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Langlie Mattix Pool underlying the NE/4 NW/4 and the SE/4 NW/4 of Section 29, Township 24 South, Range 37 East, Lea County, New Mexico, to form two 40-acre units, each to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said wells and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the wells and a charge for risk involved in drilling said wells.

CASE 6433: Application of Cities Service Company for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pennsylvanian formations underlying the S/2 of Section 8, Township 23 South, Range 28 East, Eddy County, New Mexico, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6434: Application of Amerada Hess Corporation for approval of infill drilling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks a finding that the drilling of its State "O" Well No. 5 to be located in Unit H of Section 30, Township 19 South, Range 37 East, Eumont Gas Pool, Lea County, New Mexico, is necessary to effectively and efficiently drain that portion of the proration unit which cannot be so drained by the existing well, and further seeks approval of a waiver of existing well-spacing requirements.

CASE 6435: Application of Amerada Hess Corporation for approval of infill drilling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks a finding that the drilling of its W. A. Weir "B" Well No. 3 located in Unit B of Section 26, Township 19 South, Range 36 East, Eumont Gas Pool, Lea County, New Mexico, is necessary to effectively and efficiently drain that portion of the proration unit which cannot be so drained by the existing well, and further seeks approval of a waiver of existing well-spacing requirements.

CASE 6436: Application of Amerada Hess Corporation for approval of infill drilling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks a finding that the drilling of its State "U" Gas Com Well No. 2 to be located in Unit C of Section 32, Township 19 South, Range 37 East, Eumont Gas Pool, Lea County, New Mexico, is necessary to effectively and efficiently drain that portion of the proration unit which cannot be so drained by the existing well, and further seeks approval of a waiver of existing well-spacing requirements.

CASE 6437: Application of Curtis Little for approval of infill drilling and a non-standard proration unit, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks a finding that the drilling of a well to be located 1085 feet from the South line and 285 feet from the West line of Section 12, Township 28 North, Range 13 West, Basin-Dakota Pool, San Juan County, New Mexico, is necessary to effectively and efficiently drain that portion of the proration unit which cannot be so drained by the existing well. Applicant further seeks rescission of Order No. R-4556 and approval of a 344.36-acre non-standard gas proration unit comprising all of Section 11, and Lot 4 and the SW/4 SW/4 of Section 12 for said well.

CASE 6438: Application of Caulkins Oil Company for dual completions and downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion of its Breech Well No. 812 located in Unit N of Section 18, Township 26 North, Range 6 West, and its Breech Well No. 224-A located in Unit B of Section 13, Township 26 North, Range 7 West, Rio Arriba County, New Mexico, to produce gas from the Dakota formation through a separate string of tubing and to commingle Chacra and Mesaverde production in the wellbores of said wells.

CASE 6439: Application of Caulkins Oil Company for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Mesaverde and Dakota production in the wellbore of its Breech A Well No. 229 located in Unit D of Section 17, Township 26 North, Range 6 West, Rio Arriba County, New Mexico.

CASE 6440: Application of Caulkins Oil Company for a dual completion and downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion of its Breech F Well No. 8 located in Unit A of Section 34, Township 27 North, Range 6 West, Rio Arriba County, New Mexico, to produce gas from the Pictured Cliffs formation through a separate string of tubing and to commingle Mesaverde and Dakota production in the wellbore of said well.

CASE 6441: Application of Caulkins Oil Company for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Pictured Cliffs and Mesaverde production in the wellbore of its Breech F Well No. 12 located in Unit A of Section 35, Township 27 North, Range 6 West, Rio Arriba County, New Mexico.

CASE 6442: Application of Caulkins Oil Company for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Pictured Cliffs, Chacra and Mesaverde production in the wellbore of its Breech E Well No. 109 located in Unit M of Section 3, Township 26 North, Range 6 West, Rio Arriba County, New Mexico.

CASE 6443: Application of Caulkins Oil Company for a dual completion and downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its Breech B Well No. 220-R located in Unit B of Section 14, Township 26 North, Range 7 West, to produce gas from the Dakota formation through a separate string of tubing and to commingle Pictured Cliffs, Chacra and Mesaverde production in the wellbore of said well.

CASE 6444: Application of Caulkins Oil Company for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Pictured Cliffs, Mesaverde, Chacra and Greenhorn production in the wellbore of its Breech Well No. 224 located in Unit A of Section 13, Township 26 North, Range 7 West, Rio Arriba County, New Mexico.

Mobil Oil Corporation

NINE GREENWAY PLAZA-SUITE 2700
HOUSTON, TEXAS 77046

JAN 2 - 1979

December 27, 1978

Set for hearing on January 31 Case 6248

Case 6428

State of New Mexico
Energy and Minerals Department
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

Attention: Mr. Joe D. Ramey

Cancel Order
Amend Order
without hrg

7.01
REQUEST FOR ADMINISTRATIVE AMENDMENT
TO ORDER NO. R-5801, NORTH VACUUM
ABO EAST PRESSURE MAINTENANCE PROJECT,
LEA COUNTY, NEW MEXICO

Gentlemen:

In its testimony concerning the subject order, Mobil testified that we would use corrosion resistant lined tubing in its injection wells. Subsequent to the hearing, which resulted in the order, we find that corrosion resistant lined tubing in injection wells in this proposed pressure maintenance project is unnecessary. We, therefore, request that the words "corrosion resistant lined" be removed from Order No. R-5801.

The following method will be used to control corrosion in the injection system. Injection water for the North Vacuum Abo East Pressure Maintenance Project will be fresh water from the Ogallala aquifer. The water, as produced, contains 20 to 60 mg/L chlorides, 345 to 462 mg/L total dissolved solids and 6 to 8 ppm oxygen. The water will be treated for oxygen removal by passing through a gas stripping column. The stripping column will reduce oxygen content to 35-60 ppb (.035 - .06 ppm). The system will be constructed, equipped, and maintained to exclude and monitor oxygen entry into the system.

This corrosion control procedure is being used successfully in several waterflood and/or pressure maintenance projects in the area. We anticipate no problems, however, the injection system will be routinely checked for evidence of corrosion. If a corrosion problem occurs, Mobil will take the necessary action to control the problem, so as to protect its investment and the environment.

We, therefore, respectfully request that you administratively approve changing the subject order to eliminate the following words on Page 3, Paragraph (2):

"corrosion resistant lined"

This change will result in the following revised sentence:

"(2) That injection into each of the aforesaid wells should be accomplished through tubing set in a packer as close as is practicable to the uppermost Abo perforation."

We will appreciate any consideration of this matter. If you are unable to administratively approve this request, please set the matter for hearing at your earliest convenience.

Yours very truly,

for J. J. Weaver

J. A. Morris
Regulatory Engineering Supervisor

HFWeaver:fg

ROUGH

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

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

CASE NO. 6428

Order No. R-5801-A

Application of Mobil Oil Corporation for the Amendment of Order No R-5801.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on Jan 31, 19 79, at Santa Fe, New Mexico, before Examiner RLS.

NOW, on this _____ day of _____, 19____, the Division Director, 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 Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Mobil Oil Corporation, seeks the amendment of Order No. R-5801 to delete the requirements for lined tubing in injection wells in applicant's North Vacuum Abo East Pressure Maintenance Project, Lea County, New Mexico.

(3) That the applicant is utilizing an oxygen removal process on the waters to be injected into wells in said project.

(4) That applicant has utilized said process in other projects in the area and in other areas.

(5) That said process has resulted in the elimination of significant corrosion in the tubing of injection wells subject to such process.

(6) That the applicant will monitor for oxygen entry into the system with 24-hour recording devices and for corrosion by means of corrosion coupons.

(7) That the applicant should notify the supervisor of the Division's district office at Hobbs any time a corrosion rate exceeding 3 ~~mix~~ mils ~~mpy~~ per year is detected or of the failure of any well injection equipment resulting from corrosion.

(8) That the Director of the Division should be authorized to administratively require the use of lined tubing in injection wells in said pressure maintenance project if it should appear that such requirement is necessary to maintain the integrity of the injection tubing.

(9) That subject to the monitoring, reporting, and administrative authority provisions of Findings Nos. (6), (7) and (8) above, the subject application should be approved.

IT IS THEREFORE ORDERED:

(1) That Order (2) of Order No. R-5801 is hereby amended to read in its entirety as follows:

"(2) That injection into each of the aforesaid wells should be accomplished through tubing set in a packer as close as is practicable to the uppermost Abo perforation. The casing-tubing annulus in each injection well shall be loaded with an inert fluid

and a pressure gauge installed to facilitate detection of leakage in the casing, tubing, or packer."

IT IS FURTHER ORDERED:

(2) That the operator of the North Vacuum-Abo East Unit Pressure Maintenance Project shall install and maintain treatment and monitoring facilities or equipment to:

(a) remove oxygen from the water to be injected into wells in said project;

(b) provide for 24-hour monitoring for oxygen entry into such injection water; and,

(c) provide for corrosion coupon monitoring of the injection water.

(3) That said operator shall immediately notify the supervisor of the Division's district office at Hobbs anytime a corrosion rate exceeding 3 mils per year shall be detected or of the failure of any injection well equipment in said project resulting from corrosion.

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

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

(5) That the ~~Division~~ Director of the Division may administratively require the use of lined tubing in injection wells in said pressure maintenance project if it should appear that such requirement is necessary to maintain the integrity of the injection tubing.