CASE 2948: Application of ATLANTIC RFG. CO. for a pressure maintenance project, San Juan County, N. Mex.

CASE NO.
2418

Application,
Transcripts,
Small Exhibits
ETC.

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER

P. O. BOX 871
SANTA FE

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

December 19, 1963

Re: Case No. 2948
Order No. R-2622
Applicant:
Atlantic Refining Company

Mr. Howard Bratton
Hervey, Dow & Hinkle
Attorneys at Law
Post Office Box 10
Roswell, New Mexico

Dear Sir:

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

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ir/

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC x
OTHER

OIL CONSERVATION COMMISSION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

May 28, 1971

Atlantic Richfield Company
1860 Lincoln Street - Suite 501
Denver, Colorado 80203

Attention: Mr. O. G. Simpson

Re: 1971 Plan of Operation
Many Rocks-Gallup Unit,
San Juan County, New Mexico

Gentlemen:

This is to advise that the New Mexico Oil Conservation Commission has this date approved the Plan of Development and Operation for the year 1971 for the Many Rocks-Gallup Unit, San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico.

Two approved copies of the plan are returned herewith.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/JEK/og

cc: United States Geological Survey - Roswell
Commissioner of Public Lands - Santa Fe

North American Producing Division
Rocky Mt. Area-District
1860 Lincoln St. – Suite 501
Denver, Colorado 80203
Telephone 303 266 2401

O. G. Simpson
District Manager

January 28, 1971

Mr. John A. Anderson (4)
Regional Oil & Gas Supervisor
United States Geological Survey
P. O. Drawer 1857
Roswell, New Mexico 88201

Oil Conservation Commission (3)
of the State of New Mexico
P. O. Box 2088
Santa Fe, New Mexico 87501

Commissioner of Public Lands (3)
of the State of New Mexico
State Land Office Building
Santa Fe, New Mexico 87501

All Working Interest Owners
(See Attached List)

Re: Plan of Development
Many Rocks - Gallup Unit
San Juan County, New Mexico

Gentlemen:

As required, the attached Plan of Development and Operation is hereby submitted for your information.

Very truly yours,

O. G. Simpson

KVT/oh

Att.

Many Rocks - Gallup Project
San Juan County, New Mexico
Plan of Development and Operation
For the Year 1971

ATLANTIC RICHFIELD COMPANY
Unit Operator

Review of The Last Plan of Development Period

In 1970, there were no additions or contractions of either the Unit Area or the Participating Area. No wells were converted or additional wells drilled during this period.

The oil production in 1970 declined from 139 BOPD in January to 112 BOPD in December. The water production in December averaged 40 BWPD. Injection during this period averaged 2993 BWPD. No wells were shut-in during 1970.

Attached is a statistical summary of the 1970 operations.

Plan of Development for 1971

It is proposed that one (1) additional well be converted to injection during 1971. This will be done to increase injection into the better pay sections of reservoir and thereby increase the producing rate and improve the sweep efficiency. There are no plans to drill any additional wells in 1971.

Approved May 25 1971

A. L. Porter, Jr.
Secretary-Director

NEW MEXICO OIL CONSERVATION COMMISSION

Statistical Summary

Many Rocks-Gallup Project

Well Status (1-1-71)	
Producing	9
Injection	11
Water Supply	1
Shut-in	0
TOTAL	21

Oil Production (S.T.B.)	1970	Cumulative to 1-1-71
Daily Average	112	-----
Total for Year	40,850	622,628
Since Unitization	----	508,548

Gas Production (M.C.F.)	1970	Cumulative to 1-1-71
Daily Average	47	-----
Total for Year	17,124	217,000
Since Unitization	----	158,604

Water Production (S.T.B.)	1970	Cumulative to 1-1-71
Daily Average	18	-----
Total for Year	6,664	10,025
Since Unitization	----	10,025

Water Injection (S.T.B)	1970	Cumulative to 1-1-71
Daily Average	2,993	-----
Total for Year	1,092,595	7,003,113

WORKING INTEREST OWNER

MANY ROCKS-GALLUP UNIT

Getty Oil Corporation
Desk 22
P. O. Box 1404
Houston, Texas 77001

Mobil Oil Corporation
P. O. Box 633
Midland, Texas 79701

OIL CONSERVATION COMMISSION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

September 22, 1972

Atlantic Richfield Company
1860 Lincoln Street
Suite 501
Denver, Colorado 80203

Attention: Mr. C. E. Cardwell, Jr.

Re: 1972 Plan of Development
Many Rocks-Gallup Unit,
San Juan County, New Mexico

Gentlemen:

This is to advise that the New Mexico Oil Conservation Commission has this date approved the 1972 Plan of Development dated July 5, 1972, for the Many Rocks-Gallup Unit, San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico.

Two approved copies of the plan are returned herewith.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/JEK/og

cc: Commissioner of Public Lands - Santa Fe
United States Geological Survey - Roswell

AtlanticRichfieldCompany
North American Producing Division
Rocky Mountain District
1860 Lincoln St. -- Suite 501
Denver, Colorado 80203
Telephone 303 266 2461

C. E. Cardwell, Jr.
District Manager

July 5, 1972

Mr. John A. Anderson (4)
Regional Oil & Gas Supervisor
United States Geological Survey
P.O. Drawer 1857
Roswell, New Mexico 88201

Oil Conservation Commission (3)
of the State of New Mexico
P.O. Box 2088
Santa Fe, New Mexico 87501

Commissioner of Public Lands (3)
The State of New Mexico
State Land Office Building
Santa Fe, New Mexico 87501

All Working Interest Owners
(See Attached List)

Re: Plan of Development
Many Rocks - Gallup Unit
San Juan County, New Mexico

Gentlemen:

As required, the attached Plan of Development and Operation is hereby submitted for your information.

Very truly yours,

C. E. Cardwell Jr.

C. E. Cardwell, Jr.

APB:var

Att

Many Rocks - Gallup Project
San Juan County, New Mexico
Plan of Development and Operation
For the Year 1972

ATLANTIC RICHFIELD COMPANY
Unit Operator

Review of The Last Plan of Development Period

In 1971, there were no additions or contractions of either the Unit Area or the Participating Area. No wells were drilled during this period, but three producing wells were converted to water injection.

The oil production in 1971 declined from 108 BOPD in January to 95 BOPD in December. Injection during this period averaged 2993 BWPD. No wells were shut-in during 1971.

Attached is a statistical summary of the 1971 operations.

Plan of Development for 1972

There are no plans to drill or convert any wells in 1972. It is understood that this plan may be modified at any time that changing conditions warrant it.

Approved September 22, 1972

A. L. Porter, Jr.
Secretary-Director
NEW MEXICO OIL CONSERVATION COMMISSION

Statistical Summary

Many Rocks - Gallup Project

Well Status (1-1-72)	
Producing	6
Injection	14
Water Supply	1
Shut-in	0
TOTAL	21

Oil Production (S.T.B.)	1971	Cumulative to 1-1-72
Daily Average	85	---
Total for Year	31,038	653,666
Since Unitization	--	539,586

Gas Production (MMCF)		
Daily Average	.04	---
Total for Year	13	230
Since Unitization	--	167

Water Production (S.T.B.)		
Daily Average	31	---
Total for Year	11,398	21,423
Since Unitization	--	21,423

Water Injection (S.T.B.)		
Daily Average	3,229	---
Total for Year	1,178,882	8,181,995

WORKING INTEREST OWNER

MANY ROCKS - GALLUP UNIT

Getty Oil Corporation
Desk 22
P.O. Box 1404
Houston, Texas 77001

Mobil Oil Corporation
P.O. Box 633
Midland, Texas 79701

Atlantic Richfield Company
North American Producing Division
Rocky Mountain District
1860 Lincoln St. — Suite 501
Denver, Colorado 80203
Telephone 303 266 2461

C. E. Cardwell, Jr.
District Manager

January 29, 1973

Mr. N. O. Frederick (4)
Area Oil and Gas Supervisor
United States Geological Survey
P. O. Drawer 1857
Roswell, New Mexico 82201

Oil Conservation Commission (3)
of the State of New Mexico
P. O. Box 2088
Santa Fe, New Mexico 87501

Commissioner of Public Lands (3)
The State of New Mexico
State Land Office Building
Santa Fe, New Mexico 87501

All Working Interest Owners
(See Attached List)

Re: Plan of Development
Many Rocks - Gallup Unit
San Juan County, New Mexico

Gentlemen:

As required, the attached Plan of Development and Operation is hereby submitted for your information.

Very truly yours,

C. E. Cardwell, Jr.

C. E. Cardwell, Jr.

APB/kp

Att.

Many Rocks - Gallup Project

San Juan County, New Mexico

Plan of Development and Operation

For the Year 1973

ATLANTIC RICHFIELD COMPANY
Project Operator

Review of the Last Plan of Development Period

During 1972 there were no additions or contractions of the Project Area or Participating Area. No wells were drilled during this period.

The oil production declined from 95 BOPD in January, 1972, to 39 BOPD in December, 1972. Water injection during this period averaged 3290 BWPD.

Attached is a statistical summary and a production decline curve for this operation.

Plan of Development for 1973

There are no plans to drill any wells in 1973.

It is proposed to cease injection in this project. This action is necessary due to lack of response in the project with resulting uneconomical operations.

The producing wells will continue operations until they become uneconomical at which time approval to P & A will be solicited.

It is understood that this plan may be modified at any time changing conditions warrant it.

Statistical Summary

Many Rocks - Gallup Project

Well Status	1-1-72	1-1-73
Producing	6	5
Injection	14	14
Water Supply	1	1
Shut-in	0	1
TOTAL	21	21

Oil Production (S.T.B.)	1972	Cumulative to 1-1-73
Daily Average	50	----
Total for Year	18,188	671,854
Since Unitization	----	557,774

Gas Production (MMCF)		
Daily Average	.01	----
Total for Year	5	235
Since Unitization	----	172

Water Production (S.T.B.)		
Daily Average	40	----
Total for Year	14,455	35,878
Since Unitization	----	35,878

Water Injection (S.T.B.)		
Daily Average	3,290	----
Total for Year	1,200,875	9,382,870

WORKING INTEREST OWNER

MANY ROCKS - GALLUP UNIT

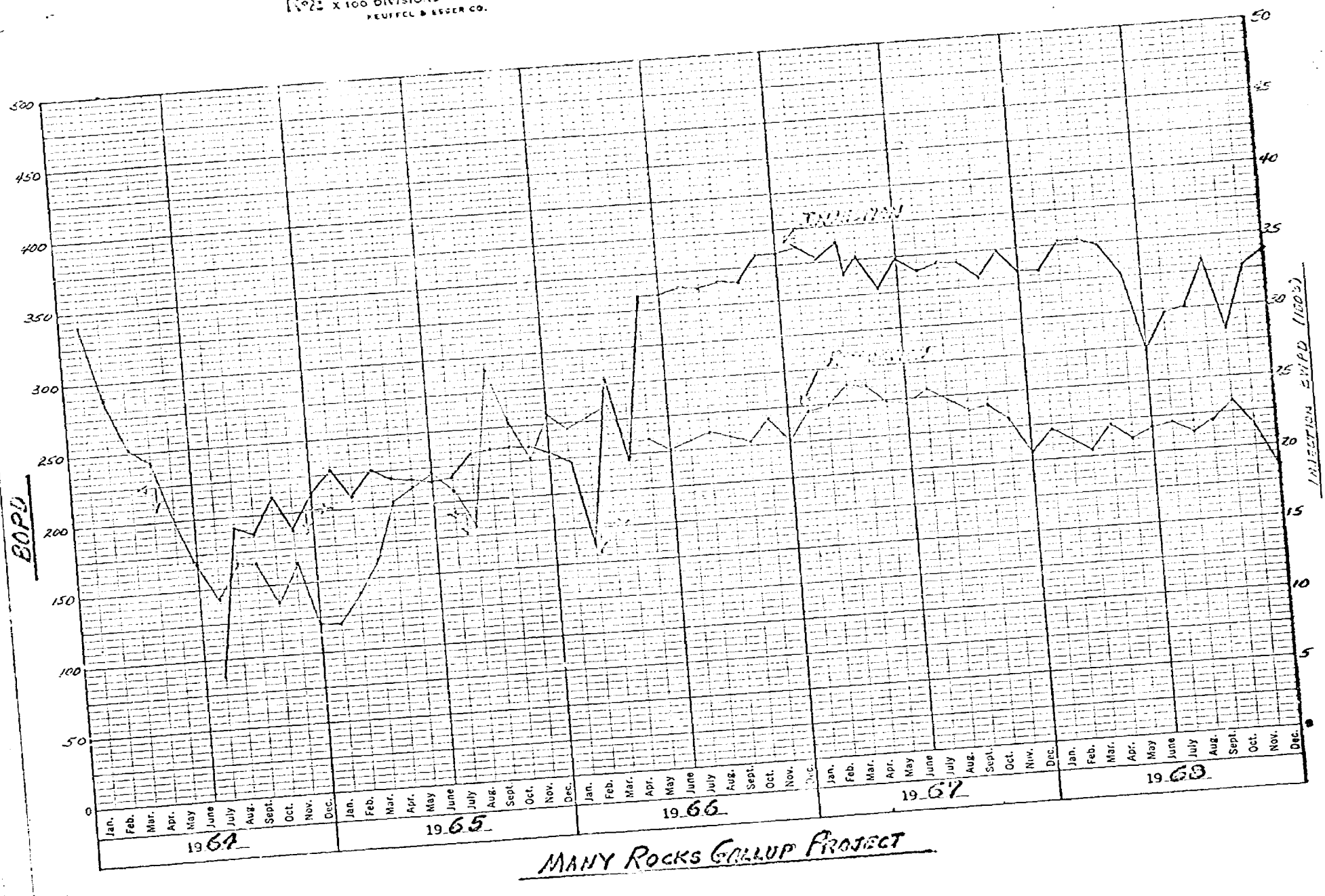
Getty Oil Corporation
Box 1231
Midland, Texas 79701

Mobil Oil Corporation
P. O. Box 633
Midland, Texas 79701

Page 1

KEUFFEL & ESSER CO. 46 3653

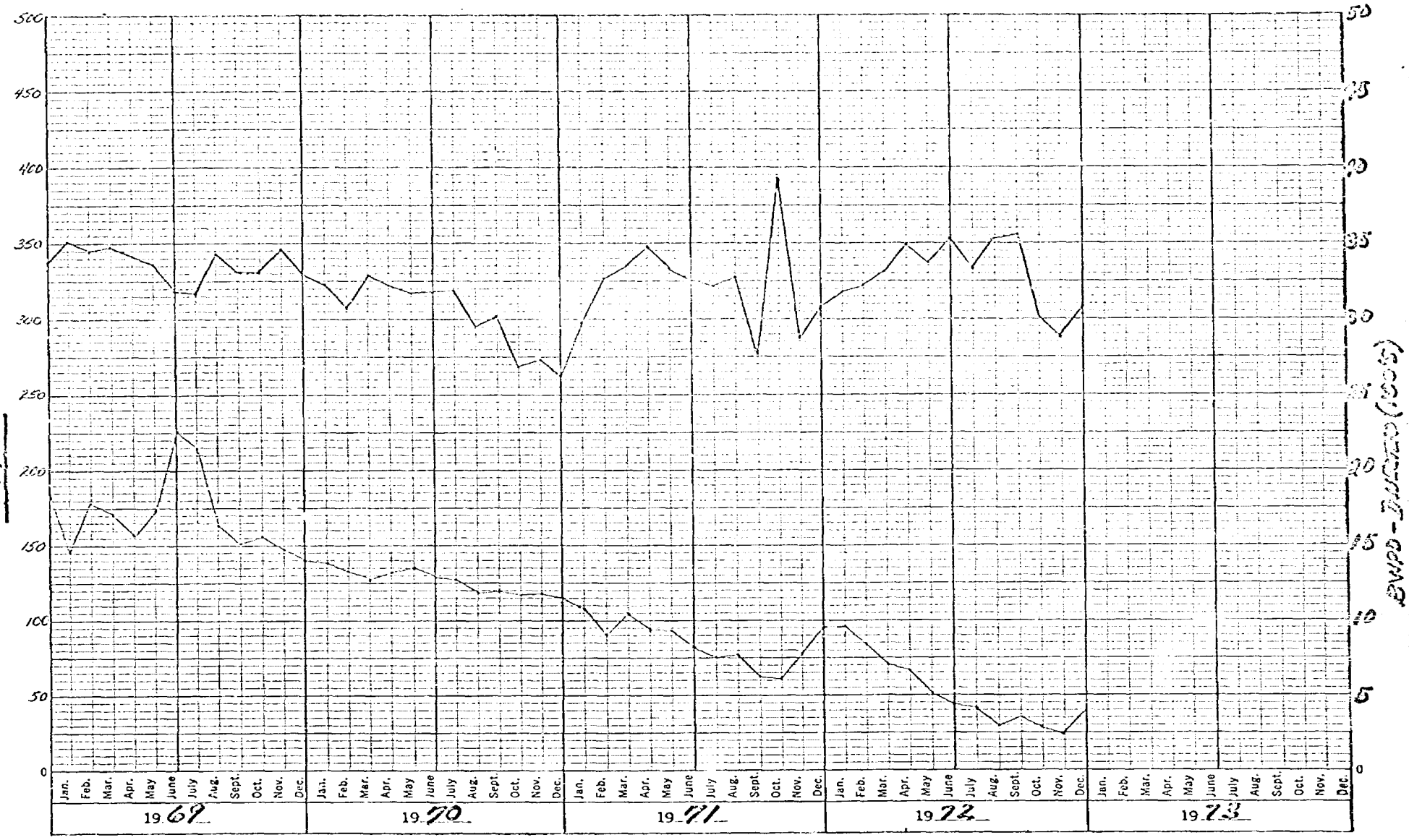
5 YEARS BY MONTHS
X 100 DIVISIONS



MANY ROCKS GALLUP PROJECT

KEUFFEL & ESSER CO.

Page 2



MANY ROCKS GULLY PROJECT

OIL CONSERVATION COMMISSION
P. O. BOX 2088
SANTA FE NEW MEXICO 87501

March 24, 1975

Atlantic Richfield Company
P. O. Box 2197
Farmington, New Mexico 87401

Attention: Mr. C. E. Cardwell, Jr.

Re: 1975 Plan of Development,
Many Rocks-Gallup Unit,
San Juan County, New Mexico.

Gentlemen:

This is to advise that the New Mexico Oil Conservation Commission has this date approved the 1975 Plan of Development received March 5, 1975, for the Many Rocks-Gallup Unit, San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico.

Two approved copies of the plan are returned herewith.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/JEK/og

cc: United States Geological Survey
Roswell, New Mexico

Commissioner of Public Lands
Santa Fe, New Mexico 87501

Atlantic Richfield Company
North American Producing Division

January 30, 1975

Mr. N. O. Frederick (4)
Area Oil and Gas Supervisor
United States Geological Survey
P. O. Drawer 1857
Roswell, New Mexico 82201

Oil Conservation Commission (3)
of the State of New Mexico
P. O. Box 2088
Santa Fe, New Mexico 87501

All Working Interest Owners
(See Attached List)

Re: Plan of Development
Many Rocks - Gallup Unit
San Juan County, New Mexico

Gentlemen:

As required, the attached Plan of Development and Operation is hereby submitted for your information.

Very truly yours,

C. E. Cardwell Jr.

C. E. Cardwell, Jr.

RWH/nc

Att.

Many Rocks - Gallup Project

San Juan County, New Mexico

Plan of Development and Operation

For the Year 1975

ATLANTIC RICHFIELD COMPANY

Project Operator

Review of the Last Plan of Development Period

During 1974 there were no additions or contractions of the Project Area or Participating Area. No wells were drilled during this period.

The oil production has remained fairly stable with 26 BOPD average in January, 1974 and an average of 29 BOPD during December, 1974. Production averaged 30 BOPD for the year, which is the same as 1973.

Attached is a statistical summary for the past year 1974.

Plan of Development for 1975

There are no plans to drill any wells in 1975.

The producing wells will continue operations until they become uneconomical at which time approval to P & A will be solicited.

It is understood that this plan may be modified at any time when changing conditions warrant it.

Approved March 24 1975

A. L. Porter

Secretary-Director

NEW MEXICO OIL CONSERVATION COMMISSION

Statistical Summary

Many Rocks - Gallup Project

Well Status	1-1-74	1-1-75
Producing	6	6
Injection - SI	13	13
Water Supply - SI	1	1
Shut-In Producing	1	1
TOTAL	21	21

Oil Production (S.T.B.)	1974	Cumulative to 1-1-75
Daily Average	30	--
Total for Year	10,987	693,666
Since Unitization	--	579,586

Gas Production (MMCF)		
Daily Average	.01	--
Total for Year	3	240
Since Unitization	--	177

Water Production (S.T.B.)		
Daily Average	57	--
Total for Year	20,751	72,631
Since Unitization	--	72,631

Water Injection (S.T.B.)		
Daily Average	0 *	--
Total for Year	0	9,665,933

* Injection plant shut in 3/29/73.

WORKING INTEREST OWNER

MANY ROCKS - GALLUP UNIT

Mr. Richard L. White, Dist. Prod. Supt.
Getty Oil Corporation
Box 1231
Midland, Texas 79701

Mobil Oil Corporation
P. O. Box 633
Midland, Texas 79701

ATLANTIC

THE ATLANTIC REFINING COMPANY

INCORPORATED - 1870

PETROLEUM PRODUCTS

December 5, 1963

DOMESTIC PRODUCING DEPARTMENT
ROCKY MOUNTAIN DISTRICT
S. L. SMITH, MANAGER
C. M. BONAR, GEOLOGICAL
FRANK P. CASTLEBERRY, LAND
R. O. CHILDERS, DRILLING & PRODUCTION
R. P. CURRY, ADMINISTRATIVE
T. O. DAVIS, ENGINEERING
H. F. DODSON, GEOPHYSICAL

SUITE 760
PETROLEUM CLUB BLDG.
110 16TH STREET
DENVER 2, COLORADO
266-3741

New Mexico Oil Conservation Commission
Attention: Mr. Elvis A. Utz
Post Office Box 871
Santa Fe, New Mexico

Gentlemen:

In the hearing of Case No. 2948, Application of The Atlantic Refining Company for a Pressure Maintenance Project, Many Rocks Field, San Juan County, New Mexico, you requested the footage location of the Atlantic Navajo 17-1 well. This information, with other data which you might need, are below:

Well - The Atlantic Refining Company Navajo 17-1.

Location - 660 feet FNL and 2030 feet FWL, Section 17, T-31-N, R-16-W.

Elevation - 5699' Kelly Bushing.

Date Spudded - 3-13-63.

Hole Drilled - 12-1/4" hole to 98 feet and 7-7/8" hole to total depth of 1820 feet.

Casing: Surface - 90.16 feet of 8-5/8" 28#/foot H-40 cemented with 90 sx of cement circulated to surface.
Production - None.

Tests - Swabbed with no recovery.

Present Status - Plugged and abandoned on 3-20-63 with cement plug of 75 sx from 1490 feet to 1820 feet, cement plug of 25 sx from 260 feet to 400 feet and cement plug of 10 sx in top of surface casing. Intervals between cement plugs filled with 8.5#/gal. mud.

If you should need any additional information, please let us know.

Yours truly,

Eugene Herbeck

Eugene Herbeck

EFH:lb
cc: Mr. Howard C. Bratton
Hervey, Dow & Hinkle
Post Office Box 10
Roswell, New Mexico

CLASS OF SERVICE
This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION
TELEGRAM

1201 (4-60)

W. P. MARSHALL, PRESIDENT

SYMBOLS
DL = Day Letter
NL = Night Letter
LT = International Letter Telegram

The filing time shown in the date line on domestic telegrams is LOCAL TIME at point of origin. Time of receipt is LOCAL TIME at point of destination

1963 DEC 13 AM 10 15

LA042 KA133

K DVF050 PD=FAX DENVER COLO 3 944A MST=
NEW MEXICO OIL CONSERVATION COMMISSION, A L PORTER JR=
:STATE LAND OFFICE BLDG SANTA FE NMEX=

RE CASE 2948 EXAMINER HEARING DECEMBER 4, 1963 AT SANTA FE ON ATLANTIC'S APPLICATION FOR A WATER FLOOD PROJECT IN MANY ROCKS GALLUP SAND POOL. TEXACO HAS A DIAGONAL OFFSET WELL TO PROJECT IN NW1/4 NW1/4 SEC. 21, T31N, R16W. TEXACO CONCURS WITH ATLANTIC'S APPLICATION BUT FEELS PROJECT PRODUCING WELLS WHEN OFFSET BY A WELL OATSIDE PROJECT SHOULD NOT BE PRODUCED

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

CLASS OF SERVICE

This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION

TELEGRAM

W. P. MARSHALL, PRESIDENT

(59).

SYMBOLS

DL=Day Letter

NL=Night Letter

LT=International Letter Telegram

The filing time shown in the date line on domestic telegrams is LOCAL TIME at point of origin. Time of receipt is LOCAL TIME at point of destination

1963 DEC 3 AM 10 44

OFFICE OCC

2948 4 1963 NW1/4 NW1/4 21 T31N R16W 31 1964 1570=

ABOVE TOP ALLOWABLE PRIOR TO MAY 31, 1964=

J F NEILL TEXACO INC 1570 GRANT DENVER COLO==

CLASS OF SERVICE
This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION
TELEGRAM

W. P. MARSHALL, PRESIDENT

1220 (R 11-54)

SYMBOLS
DL = Day Letter
NL = Night Letter
LT = International Letter Telegram

The filing time shown in the date line on domestic telegrams is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

LA106 DC202

(54)

D MDA114 PD=MIDLAND TEX 3 245P CST= 1963 DEC 3 PM 2:16

NEW MEXICO OIL CONSERVATION COMM=

SANTA FE NMEX=

ATTN MR. A L PORTER JR: REFERENCE IS MADE TO CASE #2948 APPLICATION OF ATLANTIC REFINING COMPANY FOR APPROVAL TO CONDUCT A COOPERATIVE PRESSURE MAINTENANCE PROJECT IN THE MANY ROCKS GALLUP POOL SAN JUAN COUNTY NEW MEXICO AS A WORKING INTEREST OWNER IN THE AREA OF CONSIDERATION TIDEWATER HAS STUDIED IN DETAIL THE PROPOSED PROGRAM AND BELIEVES IT TO BE IN THE INTEREST OF CONSERVATION AND REALIZATION OF MAXIMUM RECOVERY THRU PRESENT DAY TECHNIQUES TIDEWATER SUPPORTS THIS APPLICATION AND URGES THE COMMISSION TO ACT FAVORABLY IN THIS REGARD=

TIDEWATER OIL COMPANY R H COE DISTRICT PRODUCTION MANAGER MIDLAND TEXAS=

MAIN OFFICE OCC
1963 DEC 3 PM 3 04

=#2948=

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

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. 2865
Order No. R-2541

APPLICATION OF HUMBLE OIL & REFINING
COMPANY FOR A PRESSURE MAINTENANCE
PROJECT, SAN JUAN COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on July 24, 1963, at Santa Fe, New Mexico, before Daniel S. Nutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 7th day of August, 1963, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Nutter, 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, ~~Humble Oil & Refining~~ Company, seeks authority to institute a pressure maintenance project in the Many Rocks-Gallup Oil Pool, San Juan County, New Mexico, by the injection of water into the Gallup formation initially through nine wells located or to be located within the proposed project area comprising the following-described acreage:

~~TOWNSHIP 31 NORTH, RANGE 17 WEST, NMPM~~
Section 1: W/2, SE/4, ~~and~~ SW/4 NE/4
Section 2: ~~NE/4~~ and NE/4 SE/4
~~Section~~ 12: NE/4 and NE/4 NW/4

(3) That the applicant seeks the promulgation of special rules and regulations governing the proposed project similar to the special rules and regulations governing the Horseshoe-Gallup Pressure Maintenance Project No. 2 promulgated by Order No. R-1745.

(4) That the applicant proposes that the special rules and regulations provide that any producing well in the project area which directly or diagonally offsets any well outside the project area producing from the same common source of supply shall not produce in excess of top unit allowable for the pool until January 1, 1964, or until the operators of such offset well outside the project area have instituted a pressure maintenance project in the area of such well, whichever shall first occur.

(5) That the proposed pressure maintenance project is in the interest of conservation and should result in greater ultimate recovery of oil, thereby preventing waste.

(6) That the proposed special rules and regulations should be adopted in order to prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Humble Oil & Refining Company, is hereby authorized to institute a pressure maintenance project designated the Many Rocks-Gallup Pressure Maintenance Project No. 1 in the Many Rocks-Gallup Oil Pool, San Juan County, New Mexico, by the injection of water into the Gallup formation through nine injection wells located or to be located in Units F, J, L, and N of Section 1, Unit H of Section 2, and Unit B of Section 12, Township 31 North, Range 17 West, NMPM, San Juan County, New Mexico, with one injection well located on each of the above-described units.

(2) That special rules and regulations governing the Many Rocks-Gallup Pressure Maintenance Project No. 1, San Juan County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
MANY ROCKS-GALLUP PRESSURE MAINTENANCE PROJECT NO. 1

RULE 1. The project area of the Many Rocks-Gallup Pressure Maintenance Project No. 1, hereinafter referred to as the Project, shall comprise the following-described area:

TOWNSHIP 31 NORTH, RANGE 17 WEST, NMPM
Section 1: W/2, SE/4, and SW/4 NE/4
Section 2: NE/4 and NE/4 SE/4
Section 12: NE/4 and NE/4 NW/4

RULE 2. The allowable for the Project shall be the sum of the allowables of the several wells within the project area, including those wells which are shut-in, curtailed, or used as injection wells. Allowables for all wells shall be determined in a manner hereinafter prescribed.

RULE 3. Allowables for injection wells may be transferred to producing wells within the project area, as may the allowables for producing wells which, in the interest of more efficient operation of the Project, are shut-in or curtailed because of high gas-oil ratio, pressure regulation, control of pattern or sweep efficiencies, or to observe changes in pressures or changes in characteristics of reservoir liquids or progress of sweep.

RULE 4. The allowable assigned to any well which is shut-in or which is curtailed in accordance with the provisions of Rule 3, which allowable is to be transferred to any well or wells in the project area for production, shall in no event be greater than its ability to produce during the test prescribed by Rule 6, below, or greater than the current top unit allowable for the pool during the month of transfer, whichever is less.

RULE 5. The allowable assigned to any injection well on a 40-acre proration unit shall be top unit allowable for the pool.

RULE 6. The allowable assigned to any well which is shut-in or curtailed in accordance with Rule 3 shall be determined by a 24-hour test at a stabilized rate of production which shall be the final 24-hour period of a 72-hour test throughout which the well should be produced in the same manner and at a constant rate. The daily tolerance limitation set forth in Rule 502 I (a) of the General Rules and Regulations and any limiting gas-oil ratio for the pool shall be waived during such tests. The project operator shall notify the Commission and all offset operators in writing of the exact time and date such tests are to be conducted. The Commission and representatives of the offset operators may witness the tests.

RULE 7. The allowable assigned to each producing well in the Project shall be equal to the well's ability to produce or to top unit allowable for the pool, whichever is less; provided, however, that any producing well in the project area which directly or diagonally offsets a well outside the project area producing from the same common source of supply shall not produce in excess of top unit allowable for the pool until January 1, 1964, or until the operators of such offset well outside the project area have instituted a pressure maintenance project in the area of such well, whichever shall first occur. Each producing well shall be subject to the limiting gas-oil ratio (2,000 to 1) for the pool, except that any well or wells within the project area producing with a gas-oil ratio in excess of 2,000 cubic feet of gas per barrel of oil may be produced on a "net" gas-oil ratio basis, which net gas-oil ratio shall be determined by applying credit for daily average gas injected, if any, into the pool within the project area to such high gas-oil ratio well. The daily adjusted oil allowable for any well receiving gas injection credit shall be

determined in accordance with the following formula:

$$A_{adj} = \frac{TUA \times F_a \times 2{,}000}{\frac{P_g - I_g}{P_o}}$$

where:

A_{adj} = the well's daily adjusted allowable

TUA = top unit allowable for the pool

F_a = the well's acreage factor

P_g = average daily volume of gas produced by the well during the preceding month, cubic feet

I_g = the well's allocated share of the daily average gas injected during the preceding month, cubic feet

P_o = average daily volume of oil produced by the well during the preceding month, barrels

In no event shall the amount of injected gas being credited to a well be such as to cause the net gas-oil ratio, $\frac{P_g - I_g}{P_o}$, to be less than 2,000 cubic feet of gas per barrel of oil produced.

RULE 8. Credit for daily average net water injected into the pool through any injection well located within the project area may be converted to its gas equivalent and applied to any well producing with a gas-oil ratio in excess of two thousand cubic feet of gas per barrel of oil. Total credit for net water injected in the project area shall be the gas equivalent volume of the daily average net water injected during a one-month period. The daily average gas equivalent of net water injected shall be computed in accordance with the following formula:

$$E_g = (V_{w\ inj} - V_{w\ prod}) \times 5.61 \times \frac{P_a}{15.025} \times \frac{520^{\circ}}{T_r} \times \frac{1}{Z}$$

where:

E_g = Average daily gas equivalent of net water injected, cubic feet

$V_{w\ inj}$ = Average daily volume of water injected, barrels

$V_{w\ prod}$ = Average daily volume of water produced, barrels

5.61 = Cubic foot equivalent of one barrel of water

P_a = Average reservoir pressure at mid-point of the pay-zones of the pool in the project area, psig + 12.01, as determined from most recent survey

15.025 = Pressure base, psi

520° = Temperature base of $60^{\circ}F$ expressed as absolute temperature

T_r = Reservoir temperature of $92^{\circ}F$ expressed as absolute temperature ($552^{\circ}R$)

Z = Compressibility factor from analysis of gas from the pool at average reservoir pressure, P_a, interpolated from compressibility tabulation below:

Reservoir Pressure	Z	Reservoir Pressure	Z	Reservoir Pressure	Z
50	.9725	300	.8325	500	.6560
100	.9465	350	.8030	600	.6135
150	.9215	400	.7710	650	.5655
200	.8885	450	.7220	700	.5220
250	.8600	500	.6900	750	.4630
				800	.3935

RULE 9. Each month the project operator shall, within three days after the normal unit allowable for Northwest New Mexico has been established, submit to the Commission a Pressure Maintenance Project Operator's Report, on a form prescribed by the Commission, outlining thereon the data required, and requesting allowables for each of the several wells in the Project as well as the total Project allowable. The aforesaid Pressure Maintenance Project Operator's Report shall be filed in lieu of Form C-120 for the Project.

Use Ex. #14

RULE 10. The Commission shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for each well in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to the Project and may be produced from the wells

in the Project in any proportion except that no well in the Project which directly or diagonally offsets a well outside the Project producing from the same common source of supply shall produce in excess of top unit allowable for the pool until January 1, 1964, or until the operators of such offset well outside the project area have instituted a pressure maintenance project in the area of such well, whichever shall first occur.

RULE 11. The conversion of producing wells to injection, the drilling of additional wells for injection, and expansion of the project area shall be accomplished only after approval of the same by the Secretary-Director of the Commission. To obtain such approval, the project operator shall file proper application with the Commission, which application, if it seeks authorization to convert additional wells to injection or to drill additional injection wells shall be filed in accordance with Commission Rule 701-B and shall be accompanied by a statement that all offset operators to the proposed injection well have been furnished a complete copy of the application and the date of notification.

The Secretary-Director may approve the proposed injection well if, within 15 days after receiving the application, no objection to the proposal is received. The Secretary-Director may grant immediate approval, provided waivers of objection are received from all offset operators and from the State Engineer.

Expansion of the project area may be approved by the Secretary-Director of the Commission administratively when good cause is shown therefor.

(3) 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

JACK M. CAMPBELL, Chairman

E. S. WALKER, Member

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

S E A L

esr/

Case 2948
Heard 12-4-63
Rec. 12-6-63

1. Grant Atlantic request for H.O flood unit. R-2941 as a model order.

2. Project area Rule 1.

31 N-16W.

Sec. 7 - W/2 NE/4, SE/4 NE/4, NW/4, NW/4 SW/4, E/2 SW/4, SE/4.

" 6 - SW/4 SW/4

" 8. - SW/4

" 17 - SE/4 NE/4, W/2 NE/4, NW/4, W/4 SW/4, E/2 SW/4, SE/4.

" 18 - E/2 NE/4, NW/4 NE/4.

3. Injection wells to be located in:

31 N - 16W,

sec. 6 - unit M

7 - " B, H, L, & N.

8 - " L

17 - " G, E, R, I, P, & O.

18 - " A & B.

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. 2948
Order No. R-2622

APPLICATION OF THE ATLANTIC REFINING
COMPANY FOR A PRESSURE MAINTENANCE
PROJECT, SAN JUAN COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on December 4, 1963, at Santa Fe, New Mexico, before Elvis A. Utz, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 19th day of December, 1963, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Elvis A. Utz, 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, The Atlantic Refining Company, seeks authority to institute a pressure maintenance project in the Many Rocks-Gallup Oil Pool, San Juan County, New Mexico, by the injection of water into the Gallup (Tocito) formation initially through 14 wells located or to be located within the proposed project area comprising the following-described acreage:

TOWNSHIP 31 NORTH, RANGE 16 WEST, NMPM	
Section 6:	SW/4 SW/4
Section 7:	W/2 NE/4, SE/4 NE/4, NW/4, NW/4 SW/4, E/2 SW/4, and SE/4
Section 8:	SW/4
Section 17:	SE/4 NE/4, W/2 NE/4, NW/4, NW/4 SW/4, E/2 SW/4, and SE/4
Section 18:	E/2 NE/4 and NW/4 NE/4

(3) That the applicant seeks the promulgation of special rules and regulations governing the proposed project similar to

the special rules and regulations governing the Many Rocks-Gallup Pressure Maintenance Project No. 1 promulgated by Order No. R-2541.

(4) That the applicant proposes that the special rules and regulations provide that the Atlantic-Navajo Well No. 17-5 located in the SE/4 SE/4 of Section 17, Township 31 North, Range 16 West, shall not produce in excess of top unit allowable for the pool until May 31, 1964, or until a Gallup pressure maintenance project has been instituted in the area offsetting said well outside the project area, whichever shall first occur.

(5) That the proposed pressure maintenance project is in the interest of conservation and should result in greater ultimate recovery of oil, thereby preventing waste.

(6) That the proposed special rules and regulations should be adopted in order to prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, The Atlantic Refining Company, is hereby authorized to institute a pressure maintenance project designated the Many Rocks-Gallup Pressure Maintenance Project No. 2 in the Many Rocks-Gallup Oil Pool, San Juan County, New Mexico, by the injection of water into the Gallup (Tocito) formation through 14 injection wells located or to be located in Unit M of Section 6, Units B, H, L, and N of Section 7, Unit L of Section 8, Units C, E, G, I, K, and O of Section 17, and Units A and B of Section 18, all in Township 31 North, Range 16 West, NMPM, San Juan County, New Mexico, with one injection well located on each of the above-described units.

(2) That special rules and regulations governing the Many Rocks-Gallup Pressure Maintenance Project No. 2, San Juan County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
MANY ROCKS-GALLUP PRESSURE MAINTENANCE PROJECT NO. 2

RULE 1. The project area of the Many Rocks-Gallup Pressure Maintenance Project No. 2, hereinafter referred to as the Project, shall comprise the following-described area:

TOWNSHIP 31 NORTH, RANGE 16 WEST, NMPM	
Section 6:	SW/4 SW/4
Section 7:	W/2 NE/4, SE/4 NE/4, NW/4, NW/4 SW/4, E/2 SW/4, and SE/4
Section 8:	SW/4
Section 17:	SE/4 NE/4, W/2 NE/4, NW/4, NW/4 SW/4, E/2 SW/4, and SE/4
Section 18:	E/2 NE/4 and NW/4 NE/4

RULE 2. The allowable for the Project shall be the sum of the allowables of the several wells within the project area, including those wells which are shut-in, curtailed, or used as injection wells. Allowables for all wells shall be determined in a manner hereinafter prescribed.

RULE 3. Allowables for injection wells may be transferred to producing wells within the project area, as may the allowables for producing wells which, in the interest of more efficient operation of the Project, are shut-in or curtailed because of high gas-oil ratio, pressure regulation, control of pattern or sweep efficiencies, or to observe changes in pressures or changes in characteristics of reservoir liquids or progress of sweep.

RULE 4. The allowable assigned to any well which is shut-in or which is curtailed in accordance with the provisions of Rule 3, which allowable is to be transferred to any well or wells in the project area for production, shall in no event be greater than its ability to produce during the test prescribed by Rule 6, below, or greater than the current top unit allowable for the pool during the month of transfer, whichever is less.

RULE 5. The allowable assigned to any injection well on a 40-acre proration unit shall be top unit allowable for the pool.

RULE 6. The allowable assigned to any well which is shut-in or curtailed in accordance with Rule 3 shall be determined by a 24-hour test at a stabilized rate of production which shall be the final 24-hour period of a 72-hour test throughout which the well should be produced in the same manner and at a constant rate. The daily tolerance limitation set forth in Rule 502 I (a) of the General Rules and Regulations and any limiting gas-oil ratio for the pool shall be waived during such tests. The project operator shall notify the Commission and all offset operators in writing of the exact time and date such tests are to be conducted. The Commission and representatives of the offset operators may witness the tests.

RULE 7. The allowable assigned to each producing well in the Project shall be equal to the well's ability to produce or to top unit allowable for the pool, whichever is less. Each producing well shall be subject to the limiting gas-oil ratio (2,000 to 1) for the pool, except that any well or wells within the project area producing with a gas-oil ratio in excess of 2,000 cubic feet of gas per barrel of oil may be produced on a "net" gas-oil ratio basis, which net gas-oil ratio shall be determined by applying credit for daily average gas injected, if any, into the pool within the project area to such high gas-oil ratio well. The daily adjusted oil allowable for any well receiving gas injection credit shall be determined in accordance with the following formula:

$$A_{adj} = \frac{TUA \times F_a \times 2{,}000}{\frac{P_g - I_g}{P_o}}$$

where:

A_{adj} = the well's daily adjusted allowable

TUA = top unit allowable for the pool

F_a = the well's acreage factor

P_g = average daily volume of gas produced by the well during the preceding month, cubic feet

I_g = the well's allocated share of the daily average gas injected during the preceding month, cubic feet

P_o = average daily volume of oil produced by the well during the preceding month, barrels

In no event shall the amount of injected gas being credited to a well be such as to cause the net gas-oil ratio, $\frac{P_g - I_g}{P_o}$, to be less than 2,000 cubic feet of gas per barrel of oil produced.

RULE 8. Credit for daily average net water injected into the pool through any injection well located within the project area may be converted to its gas equivalent and applied to any well producing with a gas-oil ratio in excess of two thousand cubic feet of gas per barrel of oil. Total credit for net water injected in the project area shall be the gas equivalent volume of the daily average net water injected during a one-month period. The daily average gas equivalent of net water injected shall be computed in accordance with the following formula:

$$E_g = (V_{w\ inj} - V_{w\ prod}) \times 5.61 \times \frac{P_a}{15.025} \times \frac{520^\circ}{T_r} \times \frac{1}{Z}$$

where:

E_g = Average daily gas equivalent of net water injected, cubic feet

$V_{w\ inj}$ = Average daily volume of water injected, barrels

$V_{w\ prod}$ = Average daily volume of water produced, barrels

5.61 = Cubic foot equivalent of one barrel of water

P_a = Average reservoir pressure at mid-point of the pay-zones of the pool in the project area, psig + 12.01, as determined from most recent survey

15.025 = Pressure base, psi

520° = Temperature base of 60°F expressed as absolute temperature

T_r = Reservoir temperature of 92°F expressed as absolute temperature (552°R)

Z = Compressibility factor from analysis of gas from the pool at average reservoir pressure, P_a, interpolated from compressibility tabulation below:

Reservoir Pressure	Z	Reservoir Pressure	Z	Reservoir Pressure	Z
50	.9725	300	.8325	500	.6560
100	.9465	350	.8030	600	.6135
150	.9215	400	.7710	650	.5655
200	.8885	450	.7220	700	.5220
250	.8600	500	.6900	750	.4630
				800	.3935

RULE 9. Each month the project operator shall, within three days after the normal unit allowable for Northwest New Mexico has been established, submit to the Commission a Pressure Maintenance Project Operator's Report, on a form prescribed by the Commission, outlining thereon the data required, and requesting allowables for each of the several wells in the Project as well as the total Project allowable. The aforesaid Pressure Maintenance Project Operator's Report shall be filed in lieu of Form C-120 for the Project.

RULE 10. The Commission shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for each well in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to the Project and may be produced from the wells in the project in any proportion except that the Atlantic-Navajo Well No. 17-5, located in the SE/4 SE/4 of Section 17, Township 31 North, Range 16 West, shall not produce in excess of the top unit allowable for the pool until May 31, 1964, or until a Gallup pressure maintenance project has been instituted in the area offsetting said well outside the project area, whichever shall first occur.

RULE 11. The conversion of producing wells to injection, the drilling of additional wells for injection, and expansion of the project area shall be accomplished only after approval of the same by the Secretary-Director of the Commission. To obtain such approval, the project operator shall file proper application with the Commission, which application, if it seeks authorization to convert additional wells to injection or to drill additional injection wells shall be filed in accordance with Commission Rule 701-B and shall be accompanied by a statement that all offset operators to the proposed injection well have been furnished a complete copy of the application and the date of notification.

The Secretary-Director may approve the proposed injection well if, within 15 days after receiving the application, no objection to the proposal is received. The Secretary-Director may grant immediate approval, provided waivers of objection are received from all offset operators and from the State Engineer

Expansion of the project area may be approved by the Secretary-Director of the Commission administratively when good cause is shown therefor.

(3) 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

JACK M. CAMPBELL, Chairman

E. S. WALKER, Member

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

esr/

CLASS OF SERVICE
This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION
TELEGRAM

W. P. MARSHALL, PRESIDENT

1220 (R 11-54)

SYMBOLS
DL = Day Letter
NL = Night Letter
LT = International Letter Telegram

The filing time shown in the date line on domestic telegrams is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

LA104 SSF146

L LSD031 DL PD=WUX LOS ANGELES CALIF 3 1050A PST=
NEW MEXICO OIL CONSERVATION COMMISSION, STATE LAND OFFICE
BLDG= ATTN ELVIS A UTZ EXAMINER SANTA FE NMEX=

REGARDING CASE NUMBER 2948. THE SOCONY MOBIL OIL COMPANY, INC. BOTH AS A PARTICIPANT IN THE PROPOSED PROJECT, AND AS A OFFSETTING OPERATOR, I HAS REVIEWED APPLICATION BY THE ATLANTIC REFINING COMPANY FOR A COOPERATIVE PRESSURE MAINTENANCE PROJECT COMPRISING APPROXIMATELY 1,440 ACRES IN SECTIONS 6, 7, 8, 17 AND 18, T31N, R16W, SAN JUAN COUNTY OF THE MANY ROCKS GALLUP FIELD. IT IS OUR OPINION THAT THE PROJECT IS IN THE INTEREST OF THE CONSERVATION OF HYDROCARBONS AND WILL INCREASEOIL RECOVERY IN THE MANY ROCKS FIELD. WE THEREFORE SUPPORT ATLANTIC IN ITS REQUEST FOR SPECIAL PROJECT RULES IDENTICAL TO THOSE PROMULGATED BY THE COMMISSION IN CASE NUMBER 2865, ORDER NO. R=2541
THE ABOVE MESSAGE WAS ALSO WIRED TO E F HERBECK, ATLANTIC REFINING CO., LA FONDA HOTEL, SANTA FE, NEW MEXICO=
H H CARRICK, SUPERINTENDENT, SANTA FE SPRINGS PRODUCING DISTRICT, SOCONY MOBIL OIL COMPANY INC=

J. M. HERVEY 1874-1953
HIRAM M. DOW
CLARENCE E. HINKLE
W. E. BONDURANT, JR.
GEORGE H. HUNKER, JR.
HOWARD C. BRATTON
S. B. CHRISTY IV
LEWIS C. COX, JR.
PAUL W. EATON, JR.
CONRAD E. COFFIELD
HAROLD L. HENSLEY, JR.
MICHAEL R. WALLER

LAW OFFICES
HERVEY, DOW & HINKLE
HINKLE BUILDING
ROSWELL, NEW MEXICO

TELEPHONE 622-6510
AREA CODE 505
POST OFFICE BOX 10

November 20, 1963

Case 2948

New Mexico Oil Conservation Commission
P.O. Box 871
Santa Fe, New Mexico

Gentlemen:

Enclosed herewith please find the following:

1. Application of The Atlantic Refining Company for a Pressure Maintenance Project in the Many Rocks Gallup Field, San Juan County, New Mexico.

2. Copy of a letter which I have today sent transmitting a copy of the application to the State Engineer as required by Rule 701.

It is my understanding that this application will be set down for hearing before an examiner on December 4, 1963.

Thank you for your attention to this matter.

Very truly yours,

HERVEY, DOW & HINKLE

Howard C. Bratton

HCB:bb

Enclosures

3 cc: Mr. T.O. Davis
The Atlantic Refining Company
Suite 760 Petroleum Club Building
110 16th Street
Denver 2, Colorado

DOCKET MAILED

Date 11-22-63

Memo

from Hintle 10:30 am

From
P. B. Nutter
Chief Engineer

11/15/8

DOCKET MAILED

To Atlantic —

water inj p m Date

portion of many rocks
gallup

Case 9948

horseshoe gp unit (not
in p.a.

app of The Atl Rfg Co for
The app of a coop p m
proj for the inj of Str
into the Gp (Tocito) fm
of a portion of the Many Rks
Gp Pool. Proj area
consist of approx 1480

Memo

From

D. S. Nutter
Chief Engineer

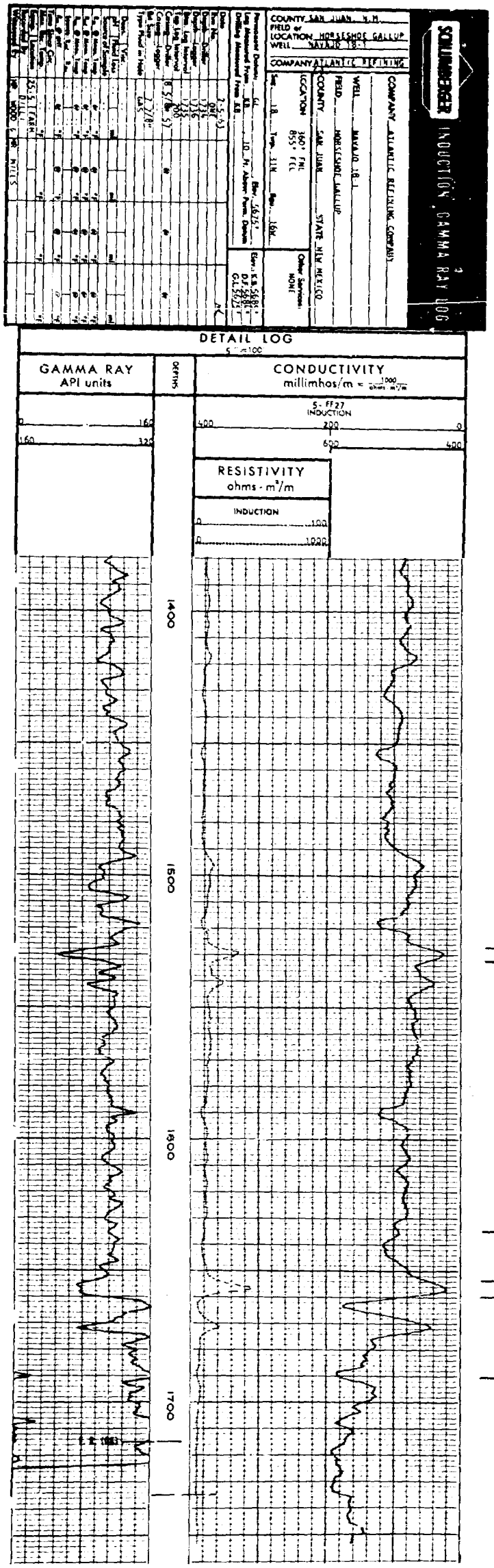
To in Sec 6, 7, 8, 17, 18
T31N R16W SJCo
NM or for the adoption
of appropriate fld rules
in Comm therewith

11 inj wells + 2 conversion
Mobil 14-6
Atl Nav 17-1

RULE 7. The allowable assigned to each producing well in the Project shall be equal to the well's ability to produce or to top unit allowable for the pool, whichever is less; provided, however, that the Atlantic-Navajo Well No. 17-5, located in the SE/4 SE/4 of Section 17, T-31-N, R-16-W, shall not produce in excess of the top unit allowable for the pool until May 31, 1964 or until a pressure maintenance project is instituted in the same source of supply, in the area offsetting this well outside the project area, whichever shall first occur. Each producing well shall be subject to the limiting gas-oil ratio (2,000 to 1) for the pool, except that any well or wells within the project area producing with a gas-oil ratio in excess of 2,000 cubic feet of gas per barrel of oil may be produced on a "net" gas-oil ratio basis, which net gas-oil ratio shall be determined by applying credit for daily average gas injected, if any, into the pool within the project area to such high gas-oil ratio well...

RULE 10. The Commission shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for each well in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to the Project and may be produced from the wells in the project in any proportion except that the Atlantic-Navajo Well No. 17-5, located in the SE/4 SE/4 of Section 17, T-31-N, R-16-W, shall not produce in excess of the top unit allowable for the pool until May 31, 1964 or until a pressure maintenance project is instituted in the same source of supply, in the area offsetting this well outside the project area, whichever shall first occur.

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 14
CASE NO. 2948



THE ATLANTIC REFINING COMPANY

EXHIBT NO. 2

TYPE LOG

MANY ROCKS GALLUP FIELD
SAN JUAN COUNTY, NEW MEXICO

UPPER ZONE

LOWER ZONE CORRELATION POINT FOR MAPPING

LOWER ZONE

TOP OF SANASTEE

THE ATLANTIC REFINING COMPANY
EXHIBIT NO. 6
TABULATION OF INFORMATION
MANY ROCKS-GALLUP FIELD

General Information:

Date of Discovery	1962
Number of Wells in Project Area	14

Reservoir and Fluid Information:

Formation	Gallup
Composition	Sand
Structure	Stratigraphic Trap
Depth	1100'-1800'
Producing Mechanism	Solution Gas
Original BHP	425 psi
Solution GOR @ Po	400 SCF/STD
Original F.V.F.	1.2 Rvb/STB
Bottom Hole Temperature	95° F.
Oil Gravity	40° API
Porosity	12%
Permeability	45 md
Thickness (both zones)	10'
Connate Water	30%

Production Summary from Area to be Flooded:

Original Oil in Place	5400 MB
Est. Primary Recovery Factor	12%
Est. Ultimate Primary Recovery	645 MB
Recovery to 11-1-63	87,870 bbls.
Remaining Primary Oil	557 MBO
Est. Additional Recovery by Secondary	1250 MB
Est. Secondary Recovery Factor	23
Est. Total Primary and Secondary Recovery	1900 MB

Secondary Plans:

Number of Injection Wells	13
Est. Daily Water Injection Rate	2300 bbls.
Number of Producing Wells	13
Number of Water Supply Wells	1
Est. Life of Project	12

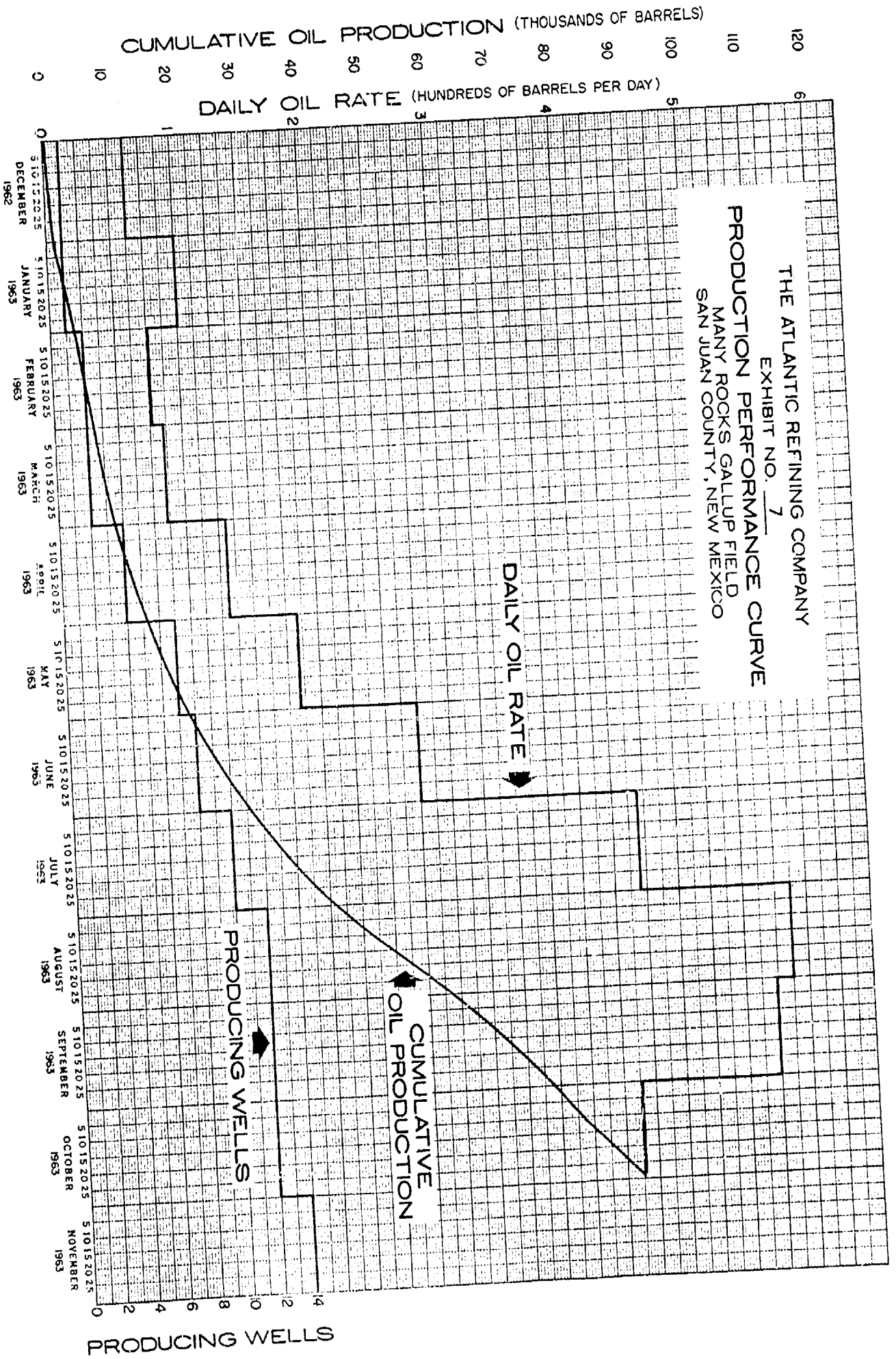
THE ATLANTIC REFINING COMPANY

EXHIBIT NO. 7

PRODUCTION PERFORMANCE CURVE

MANY ROCKS GALLUP FIELD

SAN JUAN COUNTY, NEW MEXICO



The Atlantic Refining Company
Exhibit No. 9

Schedule of Proposed Injection Wells Completed to Date
Many Rocks-Gallup Field
San Juan County, New Mexico

Mobil-Chimney Rock No. 14-6

Location: 330' FSL & 330' FWL, Sec. 6, T-31-N, R-16-W, San Juan County, New Mexico
Elevation Ground: 5309'
Elevation Kelly Bushing: 5320'
Total Depth, Drilled: 1376'
Total Depth, Plug Back: 1340'
Well Casing: Surface: 98' of 9-5/8" J-55 36#/ft. cemented with 80 sx. circulated to surface.
Production: 1365' of 5-1/2" J-55, 14#/ft. cemented with 125 sx. Cement top at 520' by Temperature Survey
Perforations and Stimulation: Upper Zone: 1180' to 1188' with 2 jet shots per foot. Fractured with 55,000# of 10/20 sand in 27,562 gal. lease crude.
Lower Zone: 1299' to 1305' with 4 jet shots per foot. Fractured with 30,000# of 10/20 sand in 20,400 gal. of lease crude.
Completion Date and Initial Production: Upper Zone: Completed 7-1-63 for 36 BOPD, no water
Lower Zone: Completed 5-29-63 for 55 BOPD, no water.
Proposed In-hole Equipment for Injection: Tubing and packer will be set in order to isolate injection between the upper and lower zones as shown on Exhibit 11.

Atlantic-Navajo No. 18-1

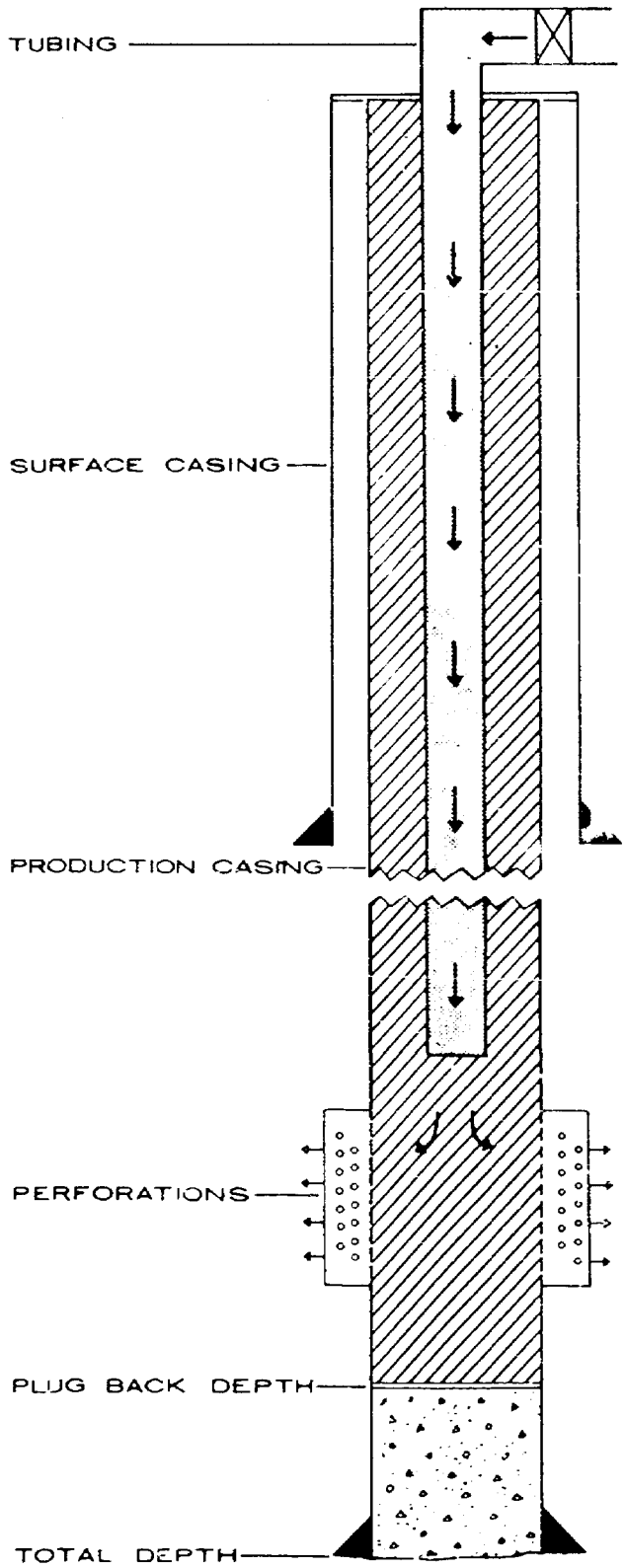
Location: 360' FNL & 855' FEL, Sec. 18, T-31-N, R-16-W, San Juan County, New Mexico
Elevation Ground: 5675'
Elevation Kelly Bushing: 5685'
Total Depth, Drilled: 1734'
Total Depth, Plug Back:
Well Casing: Surface: 98' of 8-5/8" J-55, 28#/ft. cemented with 85 sx. circulated to surface.
Production: 1730' of 4-1/2" J-55, 9.5#/ft. cemented with 125 sx. calculated cement top at 960'.
Perforations and Stimulation: Upper Zone: 1528' to 1532' with 4 jet shots per foot. Fractured with 10,000# of 10/20 sand and 1500# of 8/12 glass beads in 19,320 gal. of lease crude.
Lower Zone: 1653' to 1658' with 4 jet shots per foot. Fractured with 15,000# of 10/20 sand in 12,936 gal. of lease crude and 250# of 4/6 sand in 1134 gal. lease crude.
Completion Date and Initial Production: Upper Zone: Completed 8-25-63 for 5 BOPD, no water.
Lower Zone: Completed 2-21-63 for 19 BOPD, no water.
Proposed In-hole Equipment for Injection: The well will be an upper zone injector and lower zone producer. A packer will be set between the two zones for isolation as shown on Exhibit 12.

THE ATLANTIC REFINING COMPANY

EXHIBIT NO. 10

TYPICAL ONE ZONE INJECTION
WELL EQUIPMENT

MANY ROCKS GALLUP FIELD
SAN JUAN COUNTY, NEW MEXICO



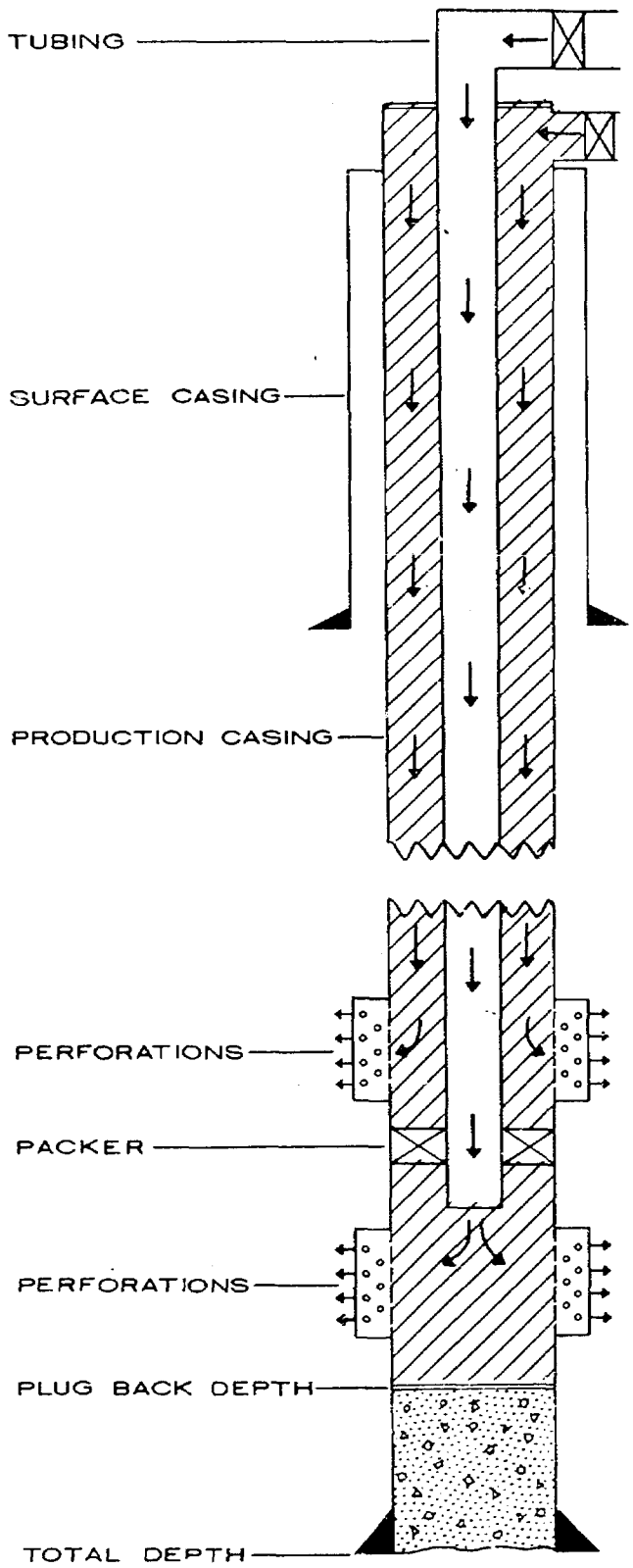
THE ATLANTIC REFINING COMPANY

EXHIBIT NO. 11

TYPICAL TWO ZONE INJECTION WELL EQUIPMENT

MANY ROCKS GALLUP FIELD

SAN JUAN COUNTY, NEW MEXICO



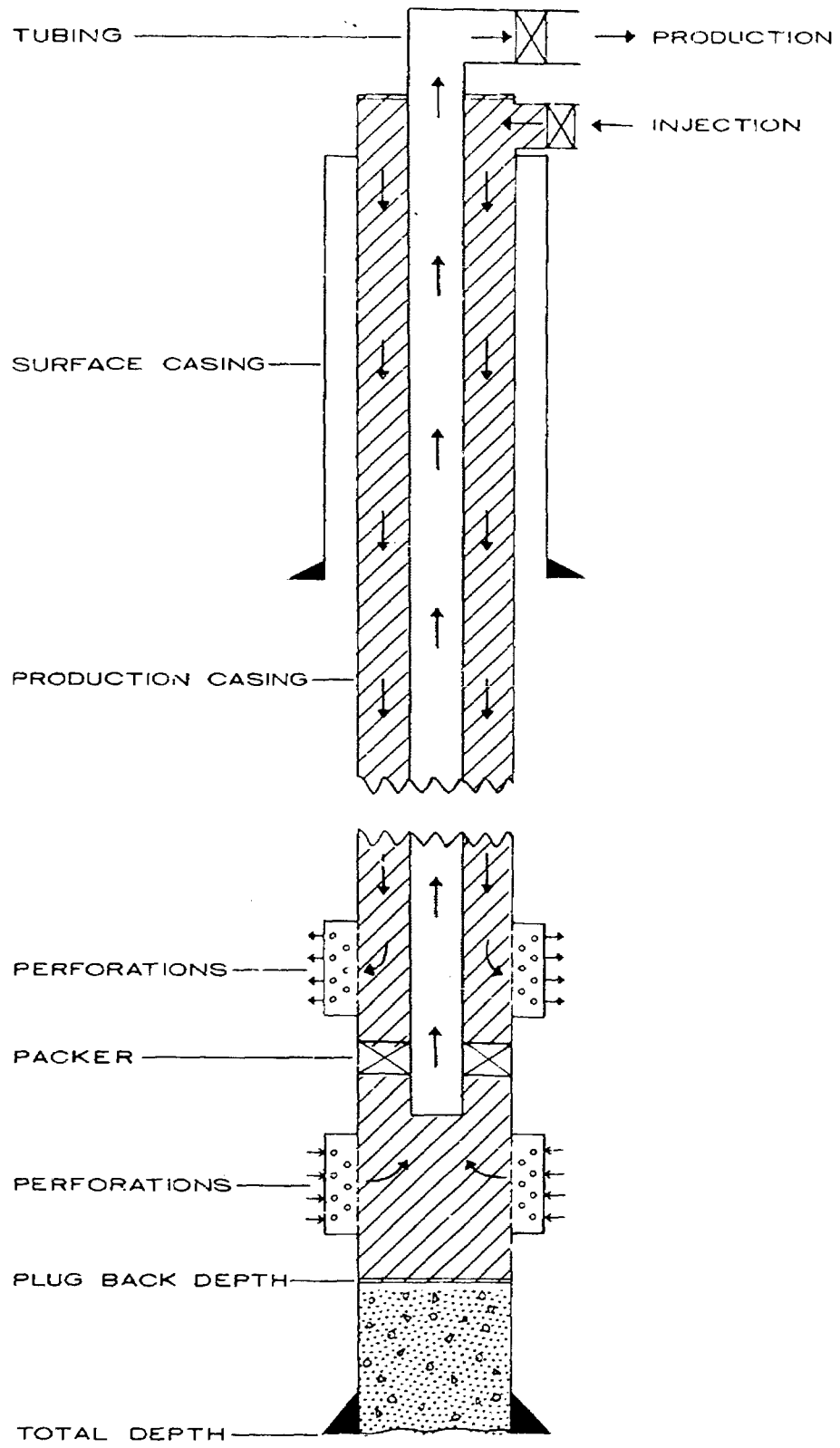
THE ATLANTIC REFINING COMPANY

EXHIBIT NO. 12

WELL EQUIPMENT SKETCH FOR NAVAJO NO. 18-1
UPPER ZONE INJECTOR AND LOWER ZONE PRODUCER

MANY ROCKS GALLUP FIELD

SAN JUAN COUNTY, NEW MEXICO



The Atlantic Refining Company
Exhibit No. 13

Water Analysis
Many Rocks-Gallup Field

Constituent	Horseshoe-Gallup Unit Well No. 45	Horseshoe-Gallup Unit Well No. 1 Water Source
	Dakota Formation	Morrison Formation
Sodium	1578 ppm	2215 ppm
Calcium	24 ppm	192 ppm
Magnesium	1 ppm	32 ppm
Iron	0 ppm	0 ppm
Barium	0 ppm	0 ppm
Chloride	284 ppm	300 ppm
Bicarbonate	625 ppm	305 ppm
Sulfate	2484 ppm	4570 ppm
Carbonate	0 ppm	0 ppm
Hydroxide	0 ppm	0 ppm
Total Solids	4996 ppm	7614 ppm
ph	7.0	7.9

Dakota sample taken 5-4-59

Morrison sample taken 3-18-60

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
December 4, 1963

EXAMINER HEARING

IN THE MATTER OF:

Application of the Atlantic Refining Company for a pressure maintenance project San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the approval of a cooperative pressure maintenance project for the injection of water into the Gallup (Tocito) formation, Many Rocks-Gallup Oil Pool, San Juan County, New Mexico, by the injection of water through 13 wells located in Sections 6, 7, 8, 17 and 18, Township 31 North, Range 16 West.

Case No. 2948

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

DEARNLEY, MEIER, WILKINS and CROWNOVER
General Court Reporting Service
Suite 1120 Simms Building Albuquerque, New Mexico Phone 243-6691

MR. UTZ: Case 2948.

MR. DURRETT: Application of the Atlantic Refining Company for a pressure maintenance project, San Juan County, New Mexico.

MR. BRATTON: Howard Bratton on behalf of the Applicant. We have one witness, Mr. Herbeck.

(Witness sworn.)

EUGENE HERBECK

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

DIRECT EXAMINATION

BY MR. BRATTON:

Q State your name, by whom you are employed and in what capacity.

A My name is Eugene Herbeck. I am employed by the Atlantic Refining Company as a Senior Petroleum Engineer in Denver, Colorado.

(Whereupon, Applicant's Exhibits Nos. 1 through 14 marked for identification.)

MR. UTZ: Are there any other appearances in this case? You may proceed.

Q (By Mr. Bratton) Does the Many Rocks Pool in San Juan County, New Mexico, come under your jurisdiction?

A Yes, it does.

Q Are you familiar with the matters under consideration

in the application in Case 2948?

A Yes, I am.

Q Have you previously testified before this Commission as an expert witness?

A Yes, I have.

MR. BRATTON: Are the witness' qualifications acceptable?

MR. UTZ: Yes, they are.

Q (By Mr. Bratton) Turning to the bound folio and the Exhibit No. 1 therein, will you state what that map is and what it depicts?

A This map shows the project area and the area surrounding it. The project area is that colored in pink on the map.

Q In that connection, Mr. Herbeck, the actual project area that we would like included is that in pink.

MR. BRATTON: I think in our application we have one additional 40 acres set out, the Northeast of the Northeast of 17, but I don't think we want to include it in the project area, Mr. Durrett, just the area in pink.

Q (By Mr. Bratton) All right, go ahead.

A This project area covers only a part of the Many Rocks Pool. It extends in a northwest direction from the project area over to the northwest corner of the map and beyond for about two or three miles. Immediately offsetting the project area to the northwest, Humble has a pressure maintenance project already in

operation. From the project area going in a southeast direction, there is one additional well. This is Texaco's Horseshoe Gallup Unit No. 276 well shown in Section 21. That is as far as the field has been developed in that direction.

Q Now the legend at the bottom is explanatory, but briefly it shows that Humble is injecting water into the Many Rocks Pool to the northwest?

A Yes.

Q It shows your producing wells in the project area and the wells that you propose to inject into?

A Yes, sir.

Q This is like all of the Gallup formations, it has an upper and lower stringer?

A Yes, it has.

Q And in some of these you are going to inject into both upper and lower, and in some you are going to inject into just one of those?

A That is correct.

Q And we will explain later on with the isopachs the necessity for this?

A Yes. I would like to explain that there are three operators in this project area: Tidewater, Mobil, and Atlantic; and it is the plans of these operators to form a joint operation in which they would combine their working interest. Also there are two base leases involved here; both of these are Indian leases,

Navajo and Ute Mountain Tribes of Indians.

One of the base leases is Mobil's base lease which covers that area involved in the project, which would be in Sections 6, 7, and 8. The other base lease is Atlantic's covering the area in Sections 17 and 18. It is the intention of the operators to keep the production separate from those two base leases. Atlantic will be the operator of this joint operation.

Q But all of the royalty is common?

A It is common.

Q Now the dotted line showing the boundary of the Horseshoe Gallup Unit is actually immaterial, because all of the lands we're concerned with here are in the Many Rocks Pool, is that correct?

A Insofar as the Commission is concerned.

Q Yes.

A Also shown on here is the Horseshoe Gallup Unit participating area, that is the dashed line; and all the wells to the south, on the south part of the map, are in the Horseshoe Gallup Field.

Q Is there anything further you care to bring out in connection with that map, Mr. Herbeck?

A No.

Q Turn then to your Exhibit No. 2. That is a log of your Navajo 18 No. 1 Well, is that correct?

A That is correct. That well is located in the Northeast

DEARNLEY, MEIER, WILKINS and CROWNOVER
General Court Reporting Service
Suite 1120 Simms Building Albuquerque, New Mexico Phone 243-6691

Quarter of the Northeast Quarter of Section 18, Township 31 North, Range 16 West. This is approximately near the center of the project area. This is a gamma ray induction log on which we have marked the upper and the lower producing zones in this Gallup pay. The upper zone appears at about 1527 to 1532; the lower zone from about 1653 to 1660. Also shown on there is what we call the lower zone correlation point for mapping. It was used in constructing the next exhibit.

Q Turn then to your next exhibit, No. 3, Mr. Herbeck. That's a structure map of the lower zone, is that correct?

A On the correlation point.

Q What does it reflect?

A It shows that there is a general dipping of the pay in a northeasterly direction, that this accumulation is in a stratigraphic trap.

Q Typical Gallup sand bar, is that correct?

A Yes.

Q Now your next two exhibits, Mr. Herbeck, are isopachs of your upper zone and your lower zone through this area?

A Yes.

Q Showing the necessity for injecting in both zones in some areas and in one zone in other areas, is that right?

A Yes.

Q Turn to your Exhibit No. 4, then.

A This Exhibit 4 is an isopach on the upper zone. On this

we used any pay which had one millidarcy permeability or more. That was our cutoff point in constructing this. It shows in much of Humble's lease which is outside of our project area that the upper zone is not present, but it starts developing in a lenticular form and as we go in a southeasterly direction the lenses become larger and become continuous. You can also see that this upper zone widens on the southeast edge of the map.

Q Turn to your next exhibit, which is your lower zone.

A This Exhibit 5, which is the isopach of the lower zone, shows that it is quite a continuous pay throughout, and again this lower zone widens on the southeast side of the map.

Q Then turn to your Exhibit No. 6. This is your data on the pool as a whole, is that correct?

A Yes, it is. It shows the date of discovery, 1962; the field was discovered in December of '62 with the drilling of Atlantic's Mobil Navajo No. 1 Well. There are 14 wells producing in the project area. Regarding reservoir and fluid information, the formation is the Gallup, the pay composition is sand, the structure is a stratigraphic trap. It is found from 1100 to 1800 feet deep. The producing mechanism is solution gas. Original bottom hole pressure, 425 psi; solution gas-oil ratio, 400 standard cubic feet per stock tank barrel; original formation volume factor 1.2 reservoir barrels per stock tank barrel; bottom hole temperature, 95 degrees Fahrenheit; gravity, 40 percent API; porosity, 12 percent; permeability, 45 millidarcies; average thickness, both

zones, would [illegible] five feet per zone; [illegible].

[illegible] on here is a production summary [illegible] area to be [illegible]. Original oil in place, 5,400,000 barrels; estimated primary recovery factor is 12 percent; the estimated ultimate primary recovery is 645,000 barrels; recovery to November 1st, '63, was 87,870 barrels; remaining primary oil is 557,000 barrels; the additional recovery by secondary, 1,250,000 barrels with an estimated secondary recovery factor of 25 percent; total recovery, 1,900,000 barrels.

We show under our secondary plans, number of injection wells is 13; the estimated daily water injection rate, 2300 barrels per day; number of producing wells, 13; one water supply well; estimated life of 12 years.

Q Turn over to your next exhibit now, Mr. Herbeck, which shows your cumulative production and your daily producing rate.

A This performance curve I believe is quite self-explanatory. The daily oil rate for the month of October was 441 barrels per day. The peak oil production was in August when the project area produced 563 barrels per day. It possibly indicates that we have, that we're starting to decline in production.

Cumulative production to November 1st, 87,870 barrels. We have also shown on here the number of wells, 12 wells producing in October, two more wells were completed about the 1st of November, giving us 14 wells in November.

Q Turn to your next Exhibit, Mr. Herbeck. Actually, your injection pattern is also reflected on Exhibit No. 1, is that correct?

A That is right. This Exhibit 8 shows the injection pattern that we plan to use. The nomenclature there, the squares are dual upper and lower injectors -- we mean upper and lower zones in the Gallup. We have a dotted triangle for an upper injector, and that applies only to the 18-1 Well which is in the Northeast corner of Section 18. It is our intent on that well that we would inject into the upper zone but continue producing the lower zone.

Q Did we set that out in our application?

A I don't think that we set that out.

Q So we would like to amend our application and ask that 18-1 be considered also as an injector?

A Yes. We are making an injector in the upper only because these two sands do not overlie the same area. We are adjusting to the sands by doing that. The lower injectors are shown as solid triangles where there would be single injectors in the lower zone only.

The 14-6 Well, this is Mobil's well in the Southwest corner of Section 6, would be an injector in cooperation with Humble's program; they would put their G-17 Well on injection, or lease line cooperation. Our injection wells would be located along the edge of the sand and we would be flooding inward from

the edge. It is a pattern similar to the one being used by Humble.

Q Turn to your next exhibit, Mr. Herbeck. We only have, to date, two of these injection wells completed, is that correct?

A That is correct.

Q This is the information as to those, and I believe we also attached to our application the logs of these wells, is that correct?

A We did not attach the log of the 18-1 but that is included here in this set of exhibits.

Q We attached the 14-6 log?

A The 14-6.

Q What do these show as to your well casing and your completion data and your in-hole equipment for injection?

A These show that surface casing is in the order of 100 feet, cemented to surface. The 14-6 Well was drilled to a TD of 1,376 feet. It has 5-1/2 inch production string in it. The cement comes up to 520 feet in that well. The Atlantic Navajo No. 18-1 was drilled to 1,734 feet. The plugback depth was left blank. That should be 1,693 feet. There are 1,730 feet of 4-1/2 inch casing, and it's been cemented up to 960 feet.

Q Your next set of exhibits show how you propose to complete and the equipment you will have in the single zone and two zone injection wells, is that correct?

A That is correct.

Q All right.

A Exhibit No. 10 is "Typical One Zone Completion". All of these would be for lower zone only and we would inject down tubing. We did not intend to use a packer in this case.

Exhibit No. 11 is a two zone injection, typical two zone injection well where we would inject into the upper zone down casing tubing annulus, and we would inject down tubing to the lower zone. It is our intention to meter the water going into the two zones separately for better control of the flood.

Q On your 18-1 Well?

A As shown in Exhibit 12, this is a special case where we want to inject water into the upper zone. That would be down the tubing casing annulus and we would continue producing the lower zone through the tubing.

Q In connection with injection down the annulus, Mr. Herbeck, are there any fresh waters in this area from here up to the surface?

A We know of no fresh water sands in this area from the Gallup to the surface.

Q How far below is the Morrison?

A The Morrison, which will be the source of injection water, is found at about 2600 feet. We are asking permission in this case to use -- it's from the Indian tribes -- to use both Dakota and Morrison water. The top of the Dakota would be at about 2300 feet. The Gallup in this area is found from 1100 to

1800 feet. So the Morrison formation is still 500 feet below the lowest Gallup that we would encounter.

Q Your Exhibit No. 13 is your water analysis of the proposed water source, is that correct?

A That is correct.

Q These are off of a water well over in the Horseshoe-Gallup, but you would be seeking the same source?

A We would be seeking the same source. The first one on the Dakota is from the Horseshoe-Gallup Unit Well No. 45. That well was taken to the Dakota just for the purposes of obtaining a Dakota sample. The other was a water supply well in the Horseshoe-Gallup Field.

Q Do you propose to use coupons to detect any corrosion?

A We will be using corrosion coupons in this to detect any possible corrosion.

Q Over in the Horseshoe, have you been successful in treating the water over there to prevent corrosion?

A We have been. We did not think that the water would be corrosive. We did find some corrosion taking place which we think is from hydrogen sulfide, and we have been successful in chemically treating that water to stop corrosion.

Q So you propose to follow the same procedure here?

A We would intend to keep corrosion completely under control.

Q But in addition, you have no fresh water beds here

that you could affect?

A We do not. I might add that we will, however, take periodic checks on our injection wells to make certain that there has been no casing damage; that is, any pressure on the casinghead would indicate a casing leak. That can be checked quite easily, and if we did have any damage it could be corrected by cement squeezing the casing or packing of the casing, whatever is necessary.

Q This is just for effective operation of your flood because there's neither fresh water zones or other oil zones that you could be contaminating?

A That is correct.

Q Is there anything further you care to state in connection with any of the exhibits we've gone over here, Mr. Herbeck?

A No.

Q In connection with the rules which you would propose, it's my understanding that you would propose the same rules that the Commission issued in the Humble Many Rocks pressure maintenance project, with one exception, is that correct?

A That is right.

Q Looking at the map, No. 1, I believe the Humble order provided that the wells along the east part of Section 11 there wouldn't be produced at above one single allowable until January 1, 1964, or until offset operators could get their pressure maintenance project in force, is that correct?

A That is right.

Q So there's no problem there because we'll now be having our project in cooperation with the Humble project?

A Yes.

Q But down to the southeast, insofar as the Texaco well is concerned, to protect it you would propose that the rules state that the 17-5 Well not be produced at above a single allowable until May 31, 1964, or until Texaco gets a pressure maintenance project in operation, whichever is sooner, is that correct?

A That is right.

Q So that would protect their correlative rights?

A Yes.

Q In other words, you just want the same protection afforded to Texaco that the Humble order afforded to you?

A Yes.

Q And to that end you have a suggested form of Rules 7 and 10 out of the Humble Many Rocks order which would transplant it over to the southeast here to protect the Texaco well?

A That is right.

Q Otherwise, we would want the Northeast Northeast of 17 cut out of the project area and the 18-1 added as an injector well?

A Yes. It will serve both as an injector and as a producer.

Q Is there anything further you care to state in connection

with any of these exhibits, Mr. Herbeck?

A No, sir.

Q In your opinion would the granting of this application be in the interest of conservation and the prevention of waste?

A It would.

Q Were Atlantic's Exhibits 1 through 14 inclusive prepared by you or under your supervision?

A They were.

MR. BRATTON: We would offer in evidence Atlantic's Exhibits 1 through 14. We have nothing further at this time.

MR. UTZ: Was your suggested rule exhibit Exhibit 14?

A Yes, sir.

MR. UTZ: Without objection Exhibits 1 through 14 will be entered into the record of this case.

(Whereupon, Applicant's Exhibits Nos. 1 through 14 received in evidence.)

CROSS EXAMINATION

BY MR. UTZ:

Q Will the tables in R-2541 be satisfactory for this area?

A As are in the rules?

Q That are printed in that order.

A Yes.

Q The possibility of the gas in this area would be identical, would it not?

A I think it would be. We would have no information to

show that it's different.

Q Referring to your Exhibits 10, 11, and 12, what kind of a cementing program did you use on your production string, particularly for your injection wells that you have proposed in this application?

A Well, we have only the two wells drilled so far, which are in Exhibit No. 9, which would be used as injection wells, the 14-6, where there under "Well Casing: Surface, 98 feet of 9-5/8 J-55 cemented with 80 sacks circulated to surface." The production string was 1,365 feet of 5-1/2 inch J-55 cemented with 125 sacks. The cement top was at 520 feet by the temperature survey.

The Atlantic Navajo No. 18-1, again looking under well casing, the surface is 98 feet of J-55 cemented with 85 sacks, circulated to surface. The production string, 1,730 feet of 4-1/2 inch J-55 cemented with 125 sacks, circulated. Cement top at 960. In this case we did not have a temperature survey and we just calculated that that is how high the cement would rise if it filled everything completely.

Q So you actually have considerable open hole behind the casing from the top of your cement to the bottom of the surface casing?

A Yes.

Q In all these programs?

A Yes, we have 520 feet in the 14-6 and 960 feet in the 18-1.

Q What type of zones are behind the casing in this instance?

A I think that it's just mainly shale zones. I'm not aware of any sand zones that are behind the casing. We feel quite certain that there are no water zones. We drilled our wells with air and we did not encounter any water in drilling the wells.

Q There is no oil or gas production above the Gallup?

A No. No, sir.

Q You propose to drill most of these injection wells in the future, do you not?

A Yes.

Q Is it your opinion that they'll be located far enough to each side of the producing zone in order not to push oil out to the outer side of the producing area?

A Yes. Well, those are approximate locations. When we drill these we, you might say, have to feel our way along a little bit to keep the wells in close enough to inject water; on the other side, keep them out far enough to get the maximum recovery.

Q So even the best you can do, maybe some of the oil would be pushed to the outside that might be difficult to recover?

A It's possible. We are sort of getting on the feather edge of this and I doubt that there would be very much.

MR. UTZ: Are there other questions of the witness?

MR. DURRETT: Yes, sir, I have a question.

BY MR. DURRETT:

Q Mr. Herbeck, if I'm following correctly, I see that we have the proposed injection wells on your Exhibit No. 1; I believe you just stated you don't have the footage locations determined at this time, is that correct, for these proposed injection wells that will be drilled?

A That is right.

Q They will be in the same unit as designated here, will they not? There won't be a possibility that you will get outside the unit that you show on the map?

A Outside of this project area?

Q No, I'm not making myself clear. As far as the quarter quarter section.

A I think they will be in the same quarter quarter as shown here. We may have to move them in that 40 acres either in or out, depending on how we find the sand along this edge.

Q Let me see if I can make myself a little clearer. For instance, look at Section 7 up in the north part of your project. You have a proposed well there which would be in Unit B, what the Commission designates as Unit B?

A Yes.

Q If we authorize you to drill a well in Unit B, there wouldn't be any possibility that you would not be able to drill the well in Unit B so that you have to go into Unit C or down below, possibly?

A I think that we could drill that well in Unit B.

Q Then if the Commission's order would authorize you to drill specific injection wells in specific units, that would be satisfactory to you, is that correct?

A Yes.

MR. DURRETT: Thank you.

BY MR. UTZ:

Q The three injection wells that you have already drilled are the 14-6, the 18-1, and the 17-1?

A The 17-1 was not completed. It has been drilled but there's no casing in that well as yet.

Q The location has been set?

A The location is set.

Q Have you anywhere in here given the -- well, you gave the exact location on the 18-1 and the 14-6. Have you given an exact location on the 17-1 well?

A It is not shown in these exhibits. It may be on the application.

MR. BRATTON: If the Examiner please, if the exact location isn't on the application, we'll furnish it to you.

MR. UTZ: I don't believe it is.

A Then we will be glad to furnish that.

MR. UTZ: As soon as possible.

A All right.

MR. UTZ: Are there any other questions of the witness?

The witness may be excused.

(Witness excused.)

MR. UTZ: Are there any statements in this case?

MR. GRAY: Mr. Examiner, D. D. Gray with the State Engineer's Office. We would like to state that the State Engineer has no objection to the granting of this application.

MR. UTZ: Are there any other statements?

MR. DURRETT: If the Examiner please, I have several communications that I would like to briefly refer to. The Commission received a telegram from Texaco stating that they concur but feel the project producing wells, when offset by a well outside the project, should not be produced above top allowable prior to May 31, 1964.

We have received a letter from Skelly Oil Company stating that they concur. We have received a $50.00 telegram from Socony Mobil Oil Company stating that they support the application, and we have received a $25.00 telegram from Tidewater Oil Company stating that they support the application.

MR. UTZ: Any other statements in this case? The case will be taken under advisement.

* * * *

DEARNLEY, MEIER, WILKINS and CROWNOVER
General Court Reporting Service
Suite 1120 Simms Building Albuquerque, New Mexico Phone 243-6691

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I,ADA DEARNLEY, Notary Public 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.

WITNESS my Hand and Seal this 12th day of December, 1963.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2958, heard by me on Dec. 4, 1963.

....., Examiner
New Mexico Oil Conservation Commission

SKELLY OIL COMPANY

P. O. Box 1650
TULSA 2, OKLAHOMA

PRODUCTION DEPARTMENT

C. L. BLACKSHER, VICE PRESIDENT
W. P. WHITMORE, MGR. PRODUCTION
W. D. CARSON, MGR. TECHNICAL SERVICES
ROBERT G. HILTZ, MGR. JOINT OPERATIONS
GEORGE W. SELINGER, MGR. CONSERVATION

December 2, 1963

VIA AIR MAIL

Oil Conservation Commission (3)
P. O. Box 871
Santa Fe, New Mexico

Gentlemen:

On Wednesday, December 4, 1963, the Oil Conservation Commission will hear the application of Atlantic Refining Company, in Case No. 2948, for a pressure maintenance project in San Juan County, New Mexico. As interested party, we concur in the request of the applicant and urge the Commission's approval.

In Case No. 2954, Ambassador Oil Corporation is seeking approval of a unit agreement in Lea County, New Mexico, of the Langlie Mattix-Penrose Sand Unit. As interested party we urge the Commission's approval of the subject agreement.

In Case No. 2955, the Commission will hear the application of Ambassador Oil Corporation for a waterflood project in Lea County, New Mexico, including extension of existing project and conversion of additional wells for injection of water. Applicant further seeks a provision for capacity allowable for wells in said project. As interested operator in this field we concur in the request of Ambassador and urges the Commission grant the relief sought.

Yours very truly,

GWS:br

BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

Application of The Atlantic Refining Company for the Approval of a Cooperative Pressure Maintenance Project for the injection of water into the Gallup (Tocito) Formation of a portion of the Many Rocks Gallup Pool, the project area consisting of approximately 1,480 acres in Sections 6,7,8,17 and 18, Township 31 North, Range 16 West, San Juan County, New Mexico, and for promulgation of special rules governing the operation of said project.

CASE NO. 2945

The Honorable Oil Conservation Commission
of the State of New Mexico
Santa Fe, New Mexico

The Atlantic Refining Company hereby applies for the approval of a Cooperative Pressure Maintenance Project for the injection of water into the Gallup (Tocito) Formation of a portion of the Many Rocks Gallup Pool in a project area consisting of approximately 1,480 acres in Sections 6,7,8, 17 and 18, Township 31 North, Range 16 West, N.M.P.M., San Juan County, New Mexico, and for the adoption of appropriate field rules as requested hereinafter. Applicant respectfully shows:

I.

There is attached hereto and made a part hereof, and for purposes of identification marked Exhibit "A", a plat showing the proposed project area, the location of all wells drilled thereon and all wells drilled within a radius of two miles from said project area. All wells shown on Exhibit "A" and located in the project area and within two miles therefrom are producing from the Gallup (Tocito) Sandstone Formation. Said Exhibit "A" also shows the location of the proposed injection wells for which authorization is requested herein, and the ownership of the respective leasehold interest within a radius of two miles from the project area.

II.

There is outlined on Exhibit "A" the proposed project area which includes the following lands:

Township 31 North, Range 16 West N.M.P.M.	
Section 6:	SW¼SW¼
Section 7:	NW¼, N½SW¼, SE¼SW¼ NW¼NE¼, S½NE¼ and SE¼

Section 8: SW¼
Section 17: E½, E½W½, W½NW¼, and NW¼SW¼
Section 18: N½NE¼ and SE¼NE¼

III.

There is attached hereto as Exhibit "B" a schedule of the Mobil-Chimney Rock No. 14-6 Well, which is the only proposed injection well completed to date, except the Atlantic Navajo 17-1 well which is now plugged and abandoned.

IV.

There is attached hereto as Exhibit "C" a diagrammatic sketch of the well equipment in a well to be used to inject into two zones, both the upper and lower zones. Attached as Exhibit "D" is a diagrammatic sketch of the well equipment in a well to be used for injection in one zone.

V.

Attached hereto as Exhibit "E" is a log of the Mobil Oil Company Chimney Rock No. 14-6 well located in the SW¼SW¼ of Section 6, Township 31 North, Range 16 West. Attached hereto as Exhibit "F" is a log of The Atlantic Refining Company Navajo No. 17-1 well located in the NE¼SW¼ Section 17, Township 31 North, Range 16 West, N.M.P.M. Both of these wells will be used as injection wells, along with other injection wells to be drilled as shown on Exhibit A.

VI.

Applicant proposes to inject water in the proposed water injection wells into the Gallup (Tocito) Sandstone Producing Formation which is encountered beneath the project area at depths ranging from 1320 feet in the northwest portion of the project area to 1780 feet in the southeast portion. Water injection rates will range from 75 to 400 barrels of water per day per well, and it is anticipated that the average injection rate for all of the proposed injection wells will be approximately 175 barrels of water per day per well.

It is anticipated that the water to be used will be from the Morrison Formation. Applicant proposes to drill a well to obtain Morrison water at the intersections of Section 7,8,17 and 18, Township 31 North, Range 16 West, N.M.P.M. in order to obtain the water source. This would be the same formation water which is being used in the Many Rocks Pressure Maintenance Project now operated by Humble Oil & Refining Company. It is possible that Dakota Formation water may be utilized. Water analysis of the actual water to be used will be submitted when obtained.

VII.

Applicant recommends the adoption of special project rules for this project area identical to those promulgated by the Commission in Case No. 2865, Order No. R-2541 which govern the Many Rocks-Gallup Pressure Maintenance Project No. 1.

Wherefore, Applicant requests that this application be set down for hearing before an examiner at the earliest available date.

Respectfully submitted,

THE ATLANTIC REFINING COMPANY

By _____

HERVEY, DOW & HINKLE
P.O. Box 10
Roswell, New Mexico

COPY

HERVEY, DOW & HINKLE, ATTORNEYS
ROSWELL, NEW MEXICO

November 20, 1963

Mr. Frank Irby
Office of State Engineer
P.O. Box 1079
Santa Fe, New Mexico

Dear Mr. Irby:

Enclosed herewith please find application of The Atlantic Refining Company for a Pressure Maintenance Project in the Many Rocks Gallup Field in San Juan County, New Mexico. If there is anything you need in connection with this application, please let me hear from you prior to the hearing on December 4, 1963.

Very truly yours,

HERVEY, DOW & HINKLE

Howard C. Bratton

HCB:bb

Enclosure

cc: New Mexico Oil Conservation Commission
P.O. Box 871
Santa Fe, New Mexico

Mr. T.O. Davis
The Atlantic Refining Company
Suite 760, Petroleum Club Building
110 16th Street
Denver 2, Colorado

Schedule of Proposed Injection Wells Completed to Date

Case 3948

Mobil-Chimney Rock No. 14-6

Location: 330' FSL & 330' FWL, Sec. 6, T-31-N, R-16-W, San Juan County, New Mexico
Elevation Ground: 5309'
Elevation Kelly Bushing: 5320'
Total Depth, Drilled: 1376'
Total Depth, Plug Back: 1340'
Well Casing: Surface: 98' of 9-5/8" J-55, 36#/ft. cemented with 80 sx circulated to surface.
Production: 1365' of 5-1/2" J-55, 14#/ft. cemented with 125 sx. Cement top at 520' by Temperature Survey.
Perforations and Stimulation: Upper Zone: 1180' to 1188' with 2 jet shots per foot. Fractured with 55,000# of 10/20 sand and 27,562 gal. lease crude.
Lower Zone: 1299' to 1305' with 4 jet shots per foot. Fractured with 30,000# of 10/20 sand and 20,400 gal. of lease crude.
Completion Date and Initial Production: Upper Zone: Completed 7-1-63 for 36 BOPD, no water.
Lower Zone: Completed 5-29-63 for 55 BOPD, no water.
Proposed In-hole Equipment for Injection: Tubing and packer will be set in order to isolate injection between the upper and lower zones as shown on Exhibit "D". Typical two zone injection well equipment.

EXHIBIT "B"

To Application of The Atlantic Refining Company
For
Approval to Institute a Pressure Maintenance Project
Section 6, 7, 8, 17, 18, T-31-N, R-16-W
San Juan County, New Mexico

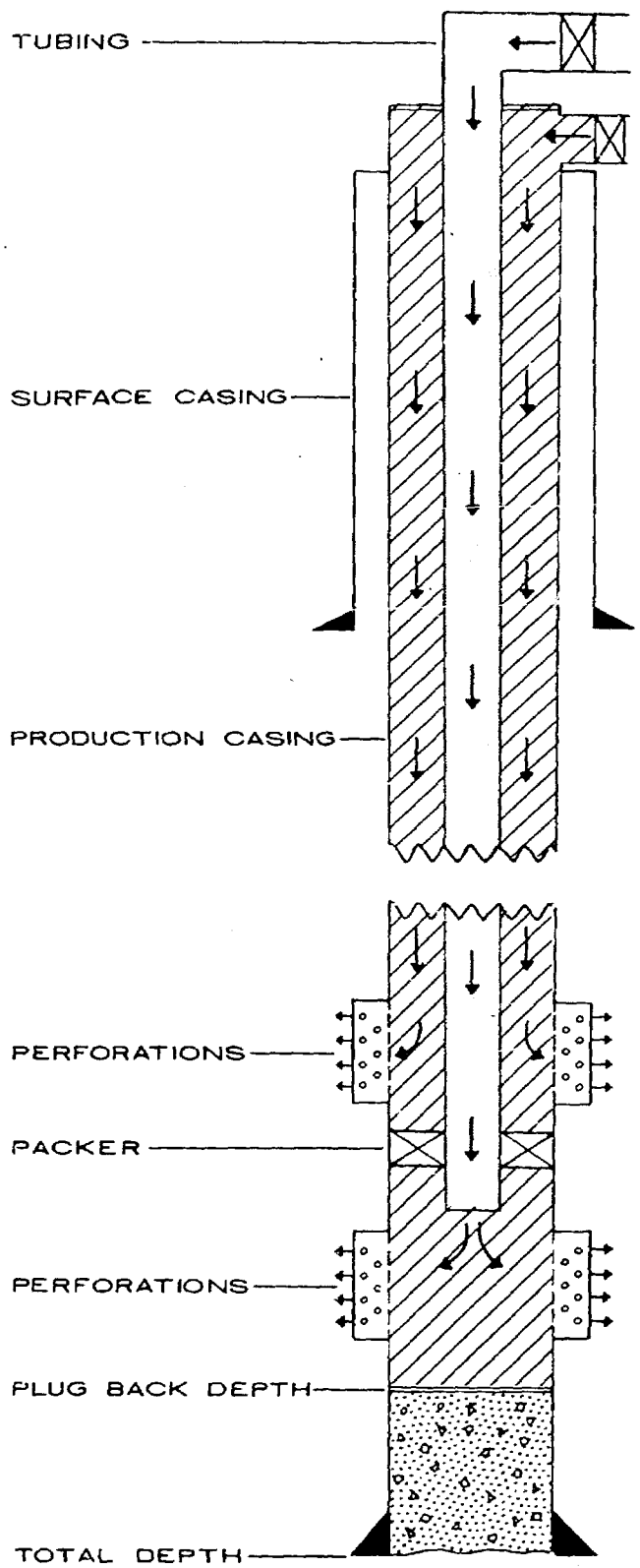
Case 2948

TYPICAL TWO ZONE INJECTION WELL EQUIPMENT

EXHIBIT "C"

TO APPLICATION OF THE ATLANTIC REFINING COMPANY
FOR
APPROVAL TO INSTITUTE A PRESSURE MAINTENANCE PROJECT

SECTION 6, 7, 8, 17 AND 18, T 31 N - R 16 W
SAN JUAN COUNTY, NEW MEXICO



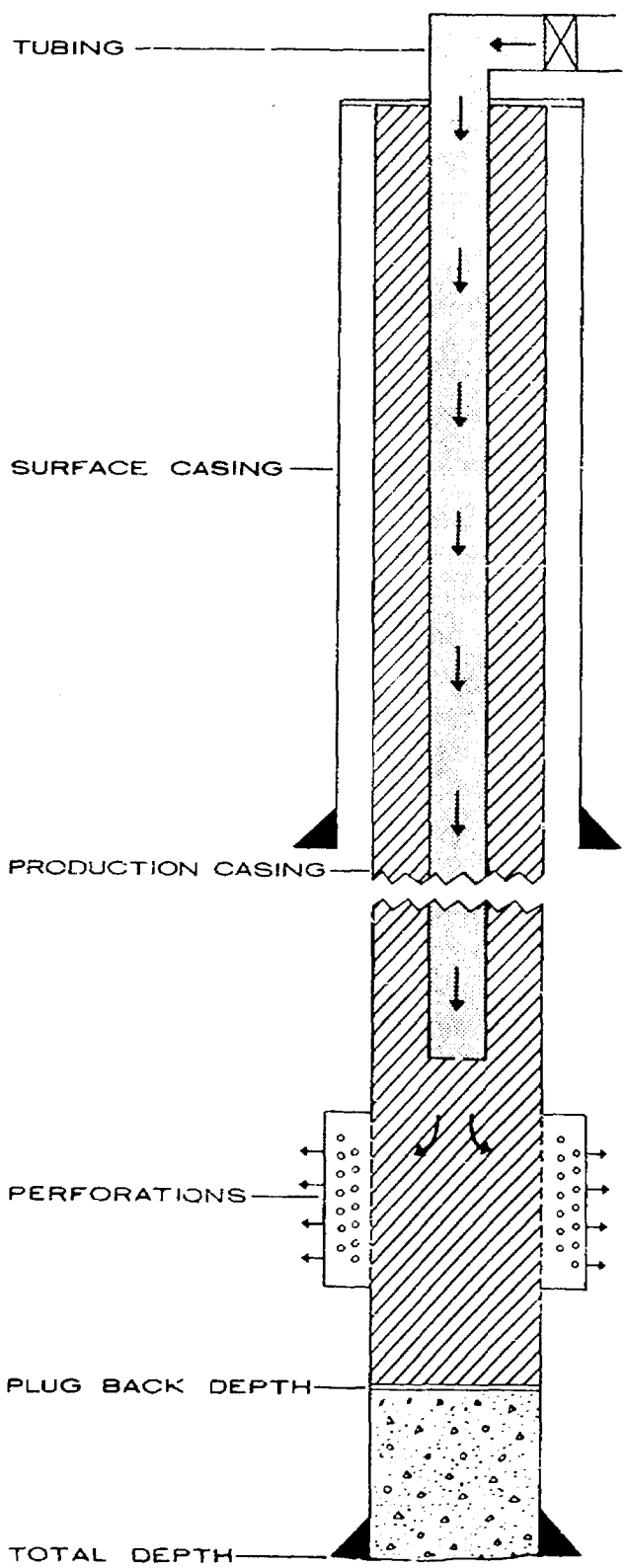
Case 3178

TYPICAL ONE ZONE INJECTION WELL EQUIPMENT

EXHIBIT "D"

TO APPLICATION OF THE ATLANTIC REFINING COMPANY
FOR
APPROVAL TO INSTITUTE A PRESSURE MAINTENANCE PROJECT

SECTION 6, 7, 8, 17 AND 18, T 31 N - R 16 W
SAN JUAN COUNTY, NEW MEXICO



DRAFT
JMD/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. 2948

Order No. R- 2622

APPLICATION OF THE ATLANTIC REFINING
COMPANY FOR A PRESSURE MAINTENANCE
PROJECT, SAN JUAN COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on December 4, 1963, at Santa Fe, New Mexico, before Elvis A. Utz, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this _____ day of December, 1963, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Elvis A. Utz, 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, The Atlantic Refining Company, seeks authority to institute a pressure maintenance project in the Many Rocks-Gallup Oil Pool, San Juan County, New Mexico, by the injection of water into the Gallup (Tocito) formation initially through 14 wells located or to be located within the proposed project area comprising the following-described acreage:

TOWNSHIP 31 NORTH, RANGE 16 WEST, NMPM

Section 6:	SW/4 SW/4
Section 7:	W/2 NE/4, SE/4 NE/4, NW/4, NW/4 SW/4, E/2 SW/4, and SE/4
Section 8:	SW/4
Section 17:	SE/4 NE/4, W/2 NE/4, NW/4, NW/4 SW/4, E/2 SW/4, and SE/4
Section 18:	E/2 NE/4 and NW/4 NE/4

(3) That the applicant seeks the promulgation of special rules and regulations governing the proposed project similar to the special rules and regulations governing the Many Rocks-Gallup Pressure Maintenance Project No. 1 promulgated by Order No. R-2541.

(4) That the applicant proposes that the special rules and regulations provide that ~~any producing well in the project area which directly or diagonally offsets any well outside the project area producing from the same common source of supply~~ the Atlantic-Navajo Well No. 17-5, located in the SE/4 SE/4 of Section 17, Township 31 North, Range 16 West, NMPM, shall not produce in excess of top unit allowable for the pool until May 31, 1964, or until a pressure maintenance project has been instituted in the area of said well, outside the project area, whichever shall first occur. ~~the operators of such offset well outside the project area have instituted a pressure maintenance project in the area of such well, whichever shall first occur.~~

(5) That the proposed pressure maintenance project is in the interest of conservation and should result in greater ultimate recovery of oil, thereby preventing waste.

(6) That the proposed special rules and regulations should be adopted in order to prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, The Atlantic Refining Company, is hereby authorized to institute a pressure maintenance project designated the Many Rocks-Gallup ~~Cooperative~~ Pressure Maintenance Project No. 2 in the Many Rocks-Gallup Oil Pool, San Juan County, New Mexico, by the injection of water into the Gallup (Tocito) formation through 14 injection wells located or to be located in Unit M of Section 6, Units B, H, L, and N of Section 7, Unit L of Section 8, Units C, E, G, I, K, and O of Section 17, and Units A and B of Section 18, all in Township 31 North, Range 16 West, NMPM, San Juan County, New Mexico, with one injection well located on each of the above-described units.

(2) That special rules and regulations governing the Many Rocks-Gallup ~~Cooperative~~ Pressure Maintenance Project No. 2, San Juan County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
Many Rocks-Gallup ~~COOPERATIVE~~ PRESSURE MAINTENANCE PROJECT No. 2

RULE 1. The project area of the ~~Cooperative~~ Many Rocks Gallup No. 2 Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise the following-described area:

TOWNSHIP 31 NORTH, RANGE 16 WEST, NMPM

Section 6:	SW/4 SW/4
Section 7:	W/2 NE/4, SE/4 NE/4, NW/4, NW/4 SW/4, E/2 SW/4, and SE/4
Section 8:	SW/4
Section 17:	SE/4 NE/4, W/2 NE/4, NW/4, NW/4 SW/4, E/2 SW/4, and SE/4
Section 18:	E/2 NE/4 and NW/4 NE/4

RULE 2. The allowable for the Project shall be the sum of the allowables of the several wells within the project area, including those wells which are shut-in, curtailed, or used as injection wells. Allowables for all wells shall be determined in a manner hereinafter prescribed.

RULE 3. Allowables for injection wells may be transferred to producing wells within the project area, as may the allowables for producing wells which, in the interest of more efficient operation of the Project, are shut-in or curtailed because of high gas-oil ratio, pressure regulation, control of pattern or sweep efficiencies, or to observe changes in pressures or changes in characteristics of reservoir liquids or progress of sweep.

RULE 4. The allowable assigned to any well which is shut-in or which is curtailed in accordance with the provisions of Rule 3, which allowable is to be transferred to any well or wells in the project area for production, shall in no event be greater than its ability to produce during the test prescribed by Rule 6, below, or greater than the current top unit allowable for the pool during the month of transfer, whichever is less.

RULE 5. The allowable assigned to any injection well on a 40-acre proration unit shall be top unit allowable for the pool.

RULE 6. The allowable assigned to any well which is shut-in or curtailed in accordance with Rule 3 shall be determined by a 24-hour test at a stabilized rate of production which shall be the final 24-hour period of a 72-hour test throughout which the well should be produced in the same manner and at a constant rate. The daily tolerance limitation set forth in Rule 502 I (a) of the General Rules and Regulations and any limiting gas-oil ratio for the pool shall be waived during such tests. The project operator shall notify the Commission and all offset operators in writing of the exact time and date such tests are to be conducted. The Commission and representatives of the offset operators may witness the tests.

~~RULE 7. The allowable assigned to each producing well in the Project shall be equal to the well's ability to produce or to top unit allowable for the pool, whichever is less, provided, however, that the Atlantic-Navajo Well No. 17-5, located in the SE/4 SE/4 of Section 17, T-31-N, R-16-W, shall not produce in excess of the top unit allowable for the pool until May 31, 1964 or until a pressure maintenance project is instituted in the same source of supply in the area offsetting that well outside the project area, whichever shall first occur.~~ Each producing well shall be subject to the limiting gas-oil ratio (2,000 to 1) for the pool, except that any well or wells within the project area producing with a gas-oil ratio in excess of 2,000 cubic feet of gas per barrel of oil may be produced on a "net" gas-oil ratio basis, which net gas-oil ratio shall be determined by applying credit for daily average gas injected, if any, into the pool within the project area to each high gas-oil ratio well.

~~xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx~~ The daily adjusted oil allowable for any well receiving gas injection credit shall be

determined in accordance with the following formula:

$$A_{adj} = \frac{TUA \times F_a \times 2{,}000}{\frac{P_g - I_g}{P_o}}$$

where:

A_{adj} = the well's daily adjusted allowable

TUA = top unit allowable for the pool

F_a = the well's acreage factor

P_g = average daily volume of gas produced by the well during the preceding month, cubic feet

I_g = the well's allocated share of the daily average gas injected during the preceding month, cubic feet

P_o = average daily volume of oil produced by the well during the preceding month, barrels

In no event shall the amount of injected gas being credited to a well be such as to cause the net gas-oil ratio, $\frac{P_g - I_g}{P_o}$, to be less than 2,000 cubic feet of gas per barrel of oil produced.

RULE 8. Credit for daily average net water injected into the pool through any injection well located within the project area may be converted to its gas equivalent and applied to any well producing with a gas-oil ratio in excess of two thousand cubic feet of gas per barrel of oil. Total credit for net water injected in the project area shall be the gas equivalent volume of the daily average net water injected during a one-month period. The daily average gas equivalent of net water injected shall be computed in accordance with the following formula:

$$E_g = (V_{w\ inj} - V_{w\ prod}) \times 5.61 \times \frac{P_a}{15.025} \times \frac{520^{o}}{T_r} \times \frac{1}{Z}$$

where:

E_g = Average daily gas equivalent of net water injected, cubic feet

$V_{w\ inj}$ = Average daily volume of water injected, barrels

$V_{w\ prod}$ = Average daily volume of water produced, barrels

5.61 = Cubic foot equivalent of one barrel of water

P_a = Average reservoir pressure at mid-point of the pay-zones of the pool in the project area, psig + 12.01, as determined from most recent survey

15.025 = Pressure base, psi

520° = Temperature base of $60^{\circ}F$ expressed as absolute temperature

T_r = Reservoir temperature of $92^{\circ}F$ expressed as absolute temperature ($552^{\circ}R$)

Z = Compressibility factor from analysis of gas from the pool at average reservoir pressure, P_a, interpolated from compressibility tabulation below:

Reservoir Pressure	Z	Reservoir Pressure	Z	Reservoir Pressure	Z
50	.9725	300	.8325	500	.6560
100	.9465	350	.8030	600	.6135
150	.9215	400	.7710	650	.5655
200	.8885	450	.7220	700	.5220
250	.8600	500	.6900	750	.4630
				800	.3935

RULE 9. Each month the project operator shall, within three days after the normal unit allowable for Northwest New Mexico has been established, submit to the Commission a Pressure Maintenance Project Operator's Report, on a form prescribed by the Commission, outlining thereon the data required, and requesting allowables for each of the several wells in the Project as well as the total Project allowable. The aforesaid Pressure Maintenance Project Operator's Report shall be filed in lieu of Form C-120 for the Project.

RULE 10. The Commission shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for each well in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to the Project and may be produced from the wells

RULE 10. The Commission shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for each well in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to the Project and may be produced from the wells in the project in any proportion except that the Atlantic-Navajo Well No. 17-5, located in the SE/4 SE/4 of Section 17, T-31-N, R-16-W, shall not produce in excess of the top unit allowable for the pool until May 31, 1964 or until a pressure maintenance project is instituted in the [illegible], in the area offsetting this well outside the project area, whichever shall first occur.

RULE 11. The conversion of producing wells to injection, the drilling of additional wells for injection, and expansion of the project area shall be accomplished only after approval of the same by the Secretary-Director of the Commission. To obtain such approval, the project operator shall file proper application with the Commission, which application, if it seeks authorization to convert additional wells to injection or to drill additional injection wells shall be filed in accordance with Commission Rule 701-B and shall be accompanied by a statement that all offset operators to the proposed injection well have been furnished a complete copy of the application and the date of notification.

The Secretary-Director may approve the proposed injection well if, within 15 days after receiving the application, no objection to the proposal is received. The Secretary-Director may grant immediate approval, provided waivers of objection are received from all offset operators and from the State Engineer.

Expansion of the project area may be approved by the Secretary-Director of the Commission administratively when good cause is shown therefor.

(3) 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

JACK M. CAMPBELL, Chairman

E. S. WALKER, Member

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

S E A L

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