

CASE 3051: Application of PAN AM.
to amend Order No. R-2026, San
Juan County, N. M.

CASE NO.
3051

Application,
TRANSCRIPTS,
SMALL Exhibits
ETC.

1964 MAY 21 PM 3:45

BEFORE THE OIL CONSERVATION COMMISSION

OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION)
OF PAN AMERICAN PETROLEUM COR-)
PORATION TO AMEND ORDER NO. R-2026,) No. 3051
SAN JUAN COUNTY, NEW MEXICO.)


ENTRY OF APPEARANCE

The undersigned, Atwood & Malone, of Roswell, New Mexico, a firm of attorneys, all of whose members are duly licensed to practice law in the State of New Mexico, hereby enters its appearance as local counsel with Guy Buell, Esquire, of the Texas Bar, for Pan American Petroleum Corporation.

DATED at Roswell, New Mexico, this 22nd day of May, 1964.

ATWOOD & MALONE

By


P. O. Drawer 700
Roswell, New Mexico

ATWOOD & MALONE

LAWYERS

1964 MAY 24 PM 3 45

JEFF O. ATWOOD (1883-1960)
ROSS L. MALONE
CHARLES F. MALONE
RUSSELL O. MANN
PAUL A. COOTER
BOB F. TURNER
ROBERT A. JOHNSON

P. O. DRAWER 700
TELEPHONE 505 822-8221
SECURITY NATIONAL BANK BUILDING
ROSWELL, NEW MEXICO
88201

May 22, 1964

New Mexico Oil Conservation Commission
State Land Office Building
P. O. Box 871
Santa Fe, New Mexico

Re: Case No. 3051 on the docket of May 27, 1964.

Gentlemen:

We enclose herewith our Entry of Appearance as local
counsel for Pan American Petroleum Corporation in Case No.
3051 on the docket of May 27, 1964. Would you please file the
same.

Appreciating your courtesy, we are

Very truly yours,

ATWOOD & MALONE

By: 

PC:d

Enclosures

cc: J. K. Smith, Esquire
Division Attorney
Pan American Petroleum Corporation
P. O. Box 1410
Fort Worth, Texas

PAN AMERICAN PETROLEUM CORPORATION

MAIN OFFICE

P. O. Box 480, Farmington, New Mexico
May 1, 1964

1964 MAY 4

File: N-300-986.510.1

Subject: Application of Pan American Petroleum Corporation For A Hearing to Consider Amendment of Order R-2026, Special Rules and Regulations for the Northeast Hogback Unit Pressure Maintenance Project, San Juan County, New Mexico

Case 3051

Mr. A. L. Porter, Jr.
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico

Dear Sir:

Pan American Petroleum Corporation respectfully makes application for a hearing to consider amendment of Rules 7 and 10 of Order R-2026, Special Rules and Regulations for the Northeast Hogback Unit Pressure Maintenance Project, Horseshoe Gallup Field, San Juan County, New Mexico. The specific amendment that will be sought at this hearing will be to eliminate that portion of Rules 7 and 10 of Order R-2026 that restricts production from a well which directly or diagonally offsets a well outside the project area to no more than two times top unit allowable for the pool.

The Atlantic Refining Company, operator of the Horseshoe Gallup Unit which adjoins the Northeast Hogback Unit to the north, intends to file a similar application for hearing to consider a similar amendment to Rules 7 and 10 of Order R-1699, which grants special rules and regulations for that project. It is therefore respectfully requested that this application and the Atlantic application be set for hearing on the same date.

Yours very truly,

PAN AMERICAN PETROLEUM CORPORATION

F. M. Curtis
F. M. Curtis
District Superintendent

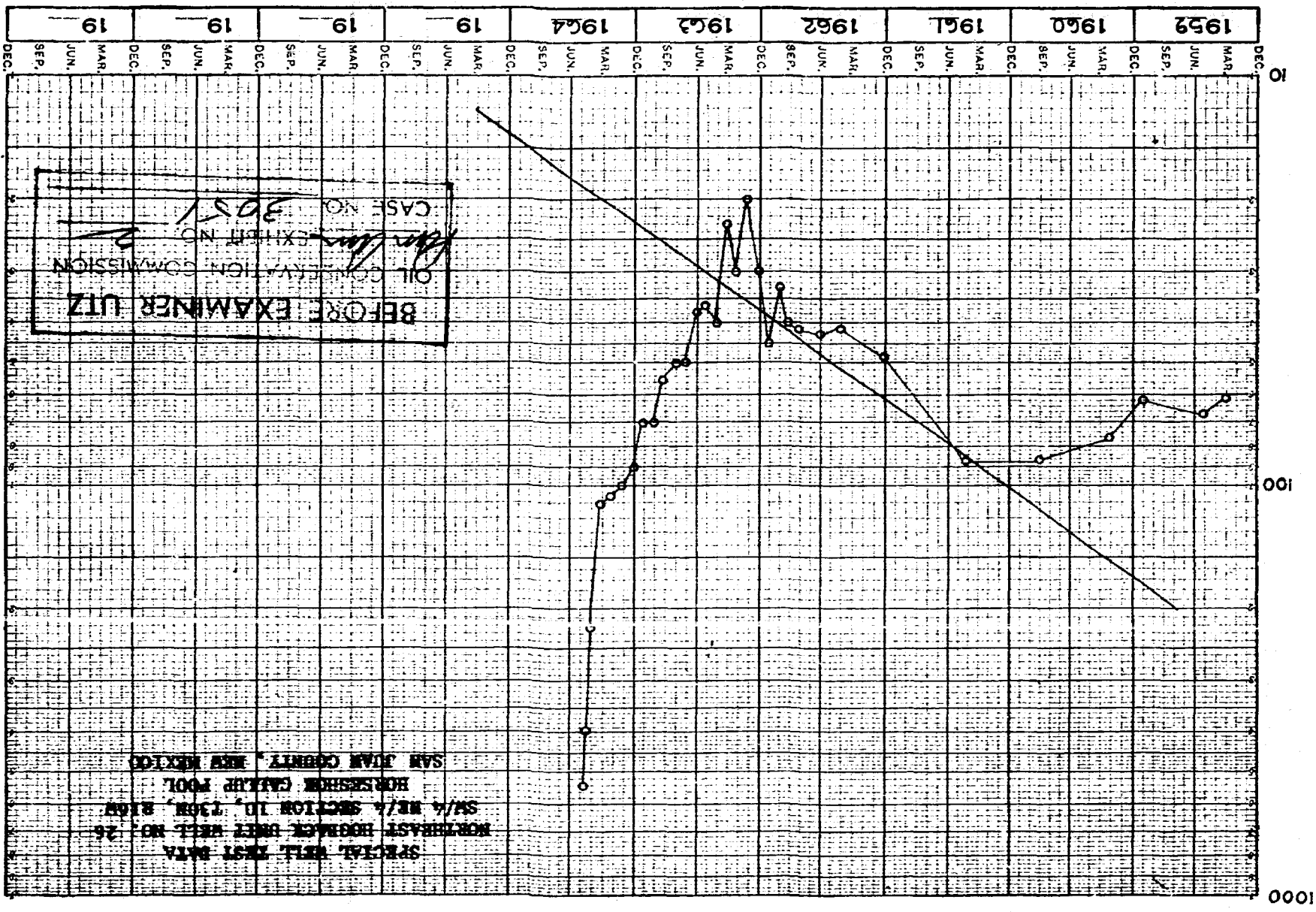
GWE:en

cc: The Atlantic Refining Company
Suite 1500, Security Life Building
Denver, Colorado

DOCKET MAILED

Date 5-15-64

BOPD



BEFORE EXAMINER UTZ
OIL COLLECTION COMMISSION
EXHIBIT NO. 3051
CASE NO. 1502

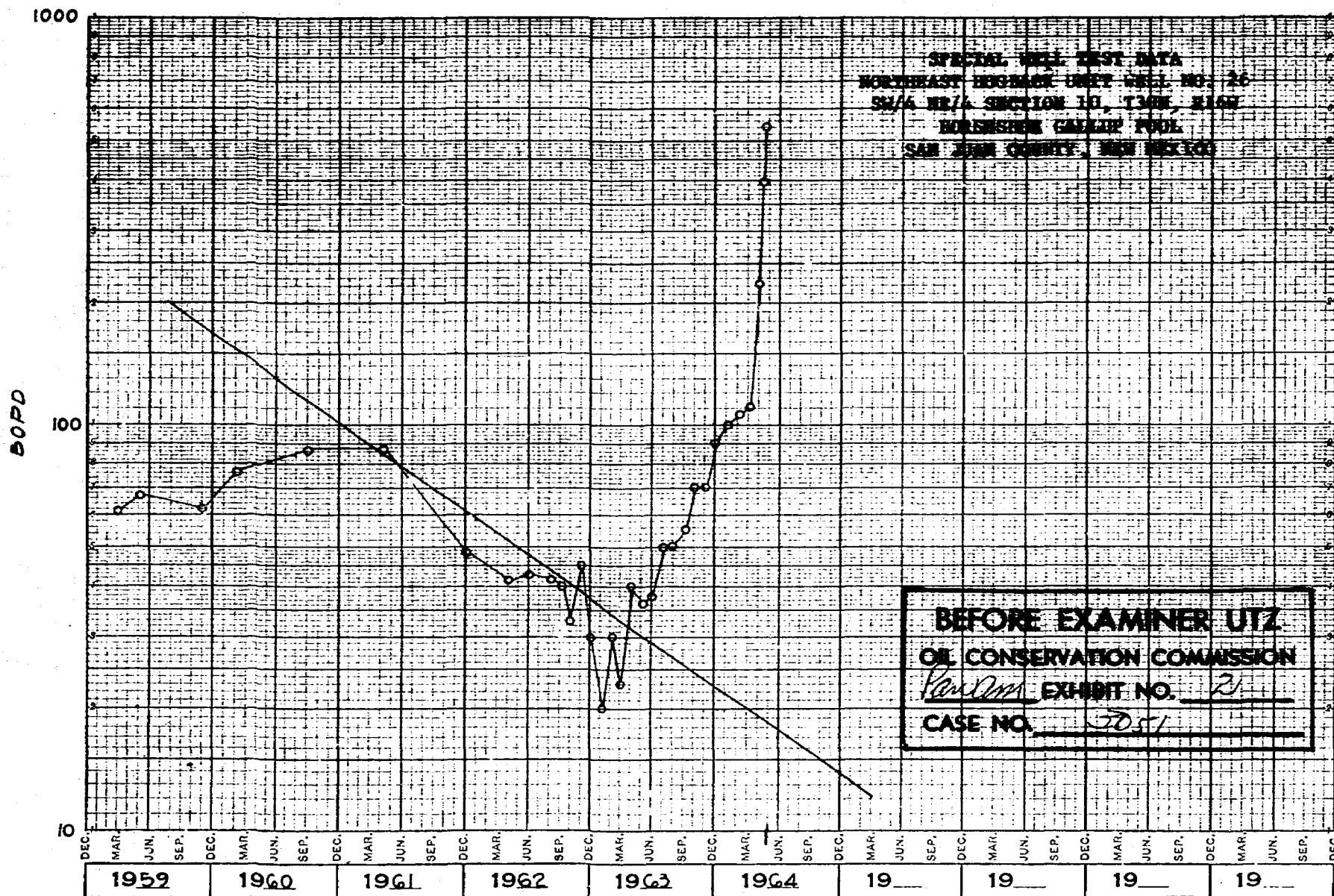
SPECIAL TEST DATA
NORTHEAST HOBBS WELLS NO. 26
SW 1/4 SEC. 10, T10N, R10W
HOBBSHIRE OILFIELD
SAN JUAN COUNTY, NEW MEXICO



SPECIAL WELL TEST DATA
NORTHEAST HOGBACK UNIT WELL NO. 26
SW/4 NE/4 SECTION 10, T30N, R16W
HORSESHOE GALLUP POOL
SAN JUAN COUNTY, NEW MEXICO

<u>Date</u>	<u>Barrels Oil</u>	<u>Barrels Water</u>	<u>GOR</u>
3-22-59	62	0	205
5-2-59	67	0	274
11-25-59	62	0	-
2-18-60	77	0	156
9-14-60	86	0	496
5-5-61	87	0	532
12-10-61	49	0	-
4-10-62	42	0	1054
6-13-62	43	0	853
8-11-62	41	0	979
9-11-62	40	0	320
10-9-62	33	0	744
11-5-62	45	0	687
12-12-62	30	0	840
1-7-63	20	1	239
2-9-63	30	0	935
3-6-63	23	0	1099
4-3-63	40	0	1015
5-1-63	36	0	740
6-14-63	38	0	674
7-15-63	50	0	482
8-11-63	49	0	338
9-13-63	55	0	336
10-8-63	70	0	244
11-6-63	70	0	139
12-10-63	91	0	30
1-6-64	101	0	63
2-1-64	108	0	63
3-5-64	110	0	61
4-4-64	223	4	60
4-21-64	404	15	-
4-25-64	540	18	-
5-7-64	472	31	48
5-13-64	471	38	52
5-19-64	418	36	-
5-25-64	438	39	-

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
Paw/Am EXHIBIT NO. 3
CASE NO. 3051



SQUARE LAKE (LOWER GRAYBURG AND UPPER SAN ANDRES WATERFLOOD) POOL—Cont'd.)**TOWNSHIP 16 SOUTH, RANGE 31 EAST, NMPM
EDDY COUNTY, NEW MEXICO**

Section 19: S/2 SE/4
 Section 28: W/2 SW/4
 Section 29: S/2 N/2 and S/2
 Section 30: NE/4 and E/2 SE/4
 Section 32: N/2
 Section 33: N/2, SE/4 and E/2 SW/4
 Section 34: S/2, W/2 NW/4 and SW/4 NE/4

(2) That all of the above-described acreage which was not included in the previously authorized Square Lake Waterflood Project is hereby designated a legitimate expansion of said project, and shall be exempt from the allowable provisions of Rule 701 E.

(3) That the provisions of Orders Nos. R-1110 and R-1110-A shall remain in full force and effect.

(4) That the waterflood project as expanded by this order shall be operated in accordance with the provisions of Rule 701 E of the Commission Rules and Regulations, except as provided in Paragraph 2 above.

(5) 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.

HORSESHOE-GALLUP POOL
 (Pan American Pressure Maintenance)
 San Juan County, New Mexico

Order No. R-2026, Authorizing Pan American Petroleum Corporation to Institute a Pressure Maintenance Project in the Horseshoe-Gallup Pool, San Juan County, New Mexico, July 13, 1961.

Application of Pan American Petroleum Corporation for a Pressure Maintenance Project in the Horseshoe-Gallup Oil Pool, San Juan County, New Mexico, and for special rules governing the operation of said project.

CASE NO. 2317
 Order No. R-2026

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 o'clock a.m. on June 28, 1961, 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 13th day of July, 1961, 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, Pan American Petroleum Corporation, proposes to institute a pressure maintenance project in the Horseshoe-Gallup Oil Pool in Township 30 North, Range 16 West, San Juan County, New Mexico, by the injection of water into the Gallup formation through 20 wells initially, all of which wells are within the proposed project area.

(3) That the proposed pressure maintenance project, to be known as the Northeast Hogback Pressure Maintenance Project, includes lands formerly designated by Order No. R-1494 as part of the Northeast Hogback Unit.

(4) That the applicant proposes that the Special Rules and Regulations to be established for the Northeast Hogback Pressure Maintenance Project be identical with the rules established by Order No. R-1699 for The Atlantic Refining Company Horseshoe-Gallup Pressure Maintenance Project.

(5) That such identical rules should be established in order to prevent conflict in the event the two projects eventually merge.

IT IS THEREFORE ORDERED:

(1) That the applicant, Pan American Petroleum Corporation, is hereby authorized to institute a pressure maintenance project in the Horseshoe-Gallup Oil Pool, San Juan County, New Mexico, by the injection of water into the Gallup formation through the following-described wells in Township 30 North, Range 16 West:

PAN AMERICAN PETROLEUM CORPORATION

Northeast Hogback Unit Well No. 4, Unit J, Section 14
 Northeast Hogback Unit Well No. 6, Unit B, Section 15
 Northeast Hogback Unit Well No. 10, Unit E, Section 14
 Northeast Hogback Unit Well No. 11, Unit F, Section 14
 Northeast Hogback Unit Well No. 13, Unit E, Section 13
 Northeast Hogback Unit Well No. 14, Unit I, Section 14
 Northeast Hogback Unit Well No. 16, Unit K, Section 13
 Northeast Hogback Unit Well No. 17, Unit M, Section 13
 Northeast Hogback Unit Well No. 20, Unit B, Section 24
 Northeast Hogback Unit Well No. 21, Unit D, Section 15
 Northeast Hogback Unit Well No. 22, Unit G, Section 15
 Northeast Hogback Unit Well No. 23, Unit B, Section 10
 Northeast Hogback Unit Well No. 25, Unit D, Section 11
 Northeast Hogback Unit Well No. 29, Unit F, Section 11
 Northeast Hogback Unit Well No. 30, Unit L, Section 10
 Northeast Hogback Unit Well No. 32, Unit L, Section 11
 Northeast Hogback Unit Well No. 37, Unit P, Section 10

EL PASO NATURAL GAS PRODUCTS COMPANY

Williams Well No. 2, Unit P, Section 11
 Williams Well No. 3, Unit J, Section 11

ABRAHAM

Federal Well No. 3, Unit B, Section 14

(2) That Special Rules and Regulations governing the operation of the Northeast Hogback Pressure Maintenance Project, San Juan County, New Mexico, are hereby promulgated, as follows:

SPECIAL RULES AND REGULATIONS**FOR THE****NORTHEAST HOGBACK PRESSURE MAINTENANCE PROJECT**

RULE 1. The project area of the Northeast Hogback Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise the following-described acreage in San Juan County, New Mexico:

TOWNSHIP 30 NORTH, RANGE 16 WEST, NMPM

Section 10: E/2 and SW/4
 Section 11: SW/4 NE/4, W/2 and the SE/4
 Section 12: W/2 SW/4
 Section 13: SW/4, W/2 NW/4 and the W/2 SE/4
 Section 14: N/2, N/2 SW/4 and the SE/4
 Section 15: NE/4 and the N/2 NW/4
 Section 23: NE/4 NE/4
 Section 24: NW/4 NE/4 and the N/2 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 or are shut-in for any of the following reasons: 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

(HORSESHOE-GALLUP (PAN AMERICAN PRESSURE MAINTENANCE) POOL—Cont'd.)

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 Horseshoe-Gallup Oil 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 Commission Rule 502 I (a) and the limiting gas-oil ratio (2,000 to 1) for the Horseshoe-Gallup Oil Pool shall be waived during such tests. The project operator shall notify all operators offsetting the well, as well as the Commission, of the exact time such tests are to be conducted. Tests may be witnessed by representatives of the offsetting operators and the Commission, if they so desire.

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 Horseshoe-Gallup Oil Pool, whichever is less, provided 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 two times top unit allowable for the pool. Each producing well shall be subject to the limiting gas-oil ratio (2,000 to 1) for the Horseshoe-Gallup Oil 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 Horseshoe-Gallup Oil 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:

$$Aadj = \frac{TUA \times Fa \times 2,000}{Pg - Ig} \times Po$$

where:

- Aadj = the well's daily adjusted allowable
- TUA = top unit allowable for the pool
- Fa = the well's acreage factor
- Pg = average daily volume of gas produced by the well during the preceding month, cubic feet
- Ig = the well's allocated share of the daily average gas injected during the preceding month, cubic feet
- Po = 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, $\frac{Pg - Ig}{Po}$, 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 Horseshoe-Gallup Oil 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:

$$Eg = (Vw_{inj} - Vw_{prod}) \times 5.61 \times \frac{Pa}{15.025} \times \frac{520^\circ}{Tr} \times \frac{1}{Z}$$

where:

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

- Vw_{inj} = Average daily volume of water injected, barrels
- Vw_{prod} = Average daily volume of water produced, barrels
- 5.61 = Cubic foot equivalent of one barrel of water
- Pa = Average reservoir pressure at mid-point of the pay zones of Horseshoe-Gallup Oil Pool in 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
- Tr = Reservoir temperature of 87°F expressed as absolute temperature (547°R)
- Z = Compressibility factor from analysis of Horseshoe-Gallup gas at average reservoir pressure, Pa, interpolated from compressibility tabulation below:

Reservoir Pressure	Z	Reservoir Pressure	Z	Reservoir Pressure	Z
50	.9725	300	.8325	550	.6560
100	.9465	350	.8080	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 well 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 two times top unit allowable for the Pool.

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 include the following:

(1) A plat showing the location of proposed injection well, all wells within the project area, and offset operators, locating wells which offset the project area.

(2) A schematic drawing of the proposed injection well which fully describes the casing, tubing, perforated interval, and depth showing that the injection of gas or water will be confined to the Gallup formation.

(3) A letter stating 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 20 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.

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.

- CASE 3050:** Application of Sohio Petroleum Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Littman-San Andres Pool by the injection of water into the San Andres formation through 4 wells in Sections 8, 9 and 16, Township 21 South, Range 36 East, Lea County, New Mexico. Said project is to be operated in Lea County, New Mexico. Said project is to be operated in conjunction with applicant's proposed waterflood project in the Littman San Andres Unit in Andrews County, Texas.
- CASE 3051:** Application of Pan American Petroleum Corporation to amend Order No. R-2026, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks amendment of Rules 7 and 10 of Order No. R-2026 to permit the production of more than two times top allowable from wells in its Northeast Hogback Unit Pressure Maintenance Project even though they offset wells outside the project area.
- CASE 3052:** Application of The Atlantic Refining Company to amend Order No. R-2210, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks amendment of Rules 7 and 10 of Order No. R-2210 to permit the production of more than two times top allowable from wells in its Horseshoe Gallup Unit Pressure Maintenance Project even though they offset wells outside the project area.
- CASE 3053:** Application of Texaco Inc. for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Maljamar Pool by the injection of water into the Grayburg-San Andres formation through two wells located in Section 12, Township 17 South, Range 32 East, Lea County, New Mexico.
- CASE 3055:** Application of Texas Pacific Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its J. P. Collier Well No. 1 located in Unit F of Section 10, Township 11 South, Range 33 East, Lea County, New Mexico, to produce oil from the North Bagley Upper and Lower Pennsylvanian Pools through parallel strings of tubing.
- CASE 3056:** Application of Texas Pacific Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its State "AF" Well No. 3, located in Unit L of Section 8, Township 18 South, Range 36 East, Lea County, New Mexico, to produce oil from the Abo and Wolfcamp formations, Vacuum Field, through parallel strings of tubing.
- CASE 3057:** Application of Charles O. Trimble for an oil treating plant permit, Lea County, New Mexico. Charles O. Trimble, dba Trimble Mud Service, in the above-styled cause, seeks authority pursuant to Rule 312 to install and operate an oil treating plant approximately one mile South and West of Eunice, New Mexico, for the purpose of processing and treating sediment oil.
- CASE 3058:** Application of Cities Service Oil Company to establish a special GOR limit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of a special gas-oil ratio limit of 6000 cubic feet of gas for each barrel of oil produced in the Reeves-Pennsylvanian Pool, Lea County, New Mexico.

DOCKET: EXAMINER HEARING - WEDNESDAY - MAY 27, 1964

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

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

CASE 3033: (Continued from April 29, 1964 Examiner Hearing)

Application of Cherry Brothers and Cabot Corporation for the creation of a new oil pool and for special temporary pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new oil pool for Lower Wolfcamp production for its Austin State Well No. 1, located in Unit F of Section 19, Township 14 South, Range 36 East, Lea County, New Mexico, and for the establishment of temporary pool rules therefor, including a provision for 80-acre oil proration units.

CASE 3046:

Application of Marathon Oil Company for a triple completion and a non-standard oil proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the triple completion (tubingless) of its State Warn A/c 1 Well No. 3, located in Unit F of Section 31, Township 17 South, Range 35 East, to produce oil from the Glorieta, Wolfcamp, and Abo formations, Vacuum Field, Lea County, New Mexico. Applicant further seeks the approval of a non-standard 80-acre proration unit comprising the SE/4 NW/4 and NE/4 SW/4 of said Section 31 to be dedicated to the aforesaid Wolfcamp and Abo zones in said well.

CASE 3047:

Application of El Paso Natural Gas Company for three non-standard gas proration units and one unorthodox well location, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the approval of the following three non-standard gas proration units:

A 376.88-acre unit comprising the SE/4 and E/2 SW/4 and Lots 1, 2 and 3 of Section 9 and Lots 3 and 4 and the NW/4 SW/4 of Section 10;

A 357.84-acre unit comprising the SE/4, S/2 SW/4, and NE/4 SW/4 and Lots 1 and 2 of Section 10 and Lots 3 and 4 of Section 11;

A 359.20-acre unit comprising the S/2 and Lots 1 and 2 of Section 11, all in Township 32 North, Range 7 West, Blanco Mesaverde Pool, San Juan County, New Mexico. Applicant further seeks the approval of an unorthodox location for a well to be dually completed in the Mesaverde and Dakota formations at a point 1650 feet from the South line and 825 feet from the East line of said Section 9.

CASE 3048:

Application of E. L. Fundgineland for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order force-pooling all mineral interests in the Basin Dakota Gas Pool underlying the S/2 of Section 3, Township 29 North, Range 13 West, San Juan County, New Mexico.

CASE 3049:

Application of Sohio Petroleum Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Littman San Andres Unit Area comprising 661 acres, more or less, of State and Federal lands in Sections 8, 9, 16, and 17, Township 21 South, Range 38 East, Lea County, New Mexico. The Unit Area also includes 1280 acres of fee land in Sections 5, 6, 7, 14, and 15, Block A-29, PSL, Andrews County, Texas.

- 3 - Wednesday, May 27 Examiner Hearing

CASE 3059: Application of Frank Darden for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Cowntown Unit Area comprising 280 acres, more or less, of State land in Sections 13 and 24, Township 18 South, Range 28 East, Eddy County, New Mexico.

CASE 3060: Application of Frank Darden for a waterflood, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Artesia Pool in his Cowntown Unit Area, by the injection of water into the Grayburg formation through two injection wells in Sections 13 and 24, Township 18 South, Range 28 East, Eddy County, New Mexico.

CASE 3061: Application of Kewanee Oil Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Dayton Grayburg Pool by the injection of water into the Grayburg formation through one well in Section 25, Township 18 South, Range 26 East, Eddy County, New Mexico.

CASE 3062: Application of Kewanee Oil Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Atoka Grayburg Pool by the injection of water into the Grayburg formation through one well in Section 13, Township 18 South, Range 26 East, Eddy County, New Mexico.

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION

EXHIBIT NO. 4
CASE NO. 3051

SECTION IV

New Mexico Page 79

(SQUARE LAKE (LOWER GRAYBURN AND UPPER SAN ANDRES WATERFLOOD) POOL—Cont'd.)

TOWNSHIP 16 SOUTH, RANGE 31 EAST, NMPM
EDDY COUNTY, NEW MEXICO

Section 19: S/2 SE/4
Section 28: W/2 SW/4
Section 29: S/2 N/2 and S/2
Section 30: NE/4 and E/2 SE/4
Section 32: N/2
Section 33: N/2, SE/4 and E/2 SW/4
Section 34: S/2, W/2 NW/4 and SW/4 NE/4

(2) That all of the above-described acreage which was not included in the previously authorized Square Lake Waterflood Project is hereby designated a legitimate expansion of said project, and shall be exempt from the allowable provisions of Rule 701 E.

(3) That the provisions of Orders Nos. R-1110 and R-1110-A shall remain in full force and effect.

(4) That the waterflood project as expanded by this order shall be operated in accordance with the provisions of Rule 701 E of the Commission Rules and Regulations, except as provided in Paragraph 2 above.

(5) 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.

HORSESHOE-GALLUP POOL
(Pan American Pressure Maintenance)
San Juan County, New Mexico

Order No. R-2026, Authorizing Pan American Petroleum Corporation to institute a Pressure Maintenance Project in the Horseshoe-Gallup Pool, San Juan County, New Mexico, July 13, 1961.

Application of Pan American Petroleum Corporation for a Pressure Maintenance Project in the Horseshoe-Gallup Oil Pool, San Juan County, New Mexico, and for special rules governing the operation of said project.

CASE NO. 2317
Order No. R-2026

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 o'clock a.m. on June 28, 1961, 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 13th day of July, 1961, 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, Pan American Petroleum Corporation, proposes to institute a pressure maintenance project in the Horseshoe-Gallup Oil Pool in Township 30 North, Range 16 West, San Juan County, New Mexico, by the injection of water into the Gallup formation through 20 wells initially, all of which wells are within the proposed project area.

(3) That the proposed pressure maintenance project, to be known as the Northeast Hogback Pressure Maintenance Project, includes lands formerly designated by Order No. R-1494 as part of the Northeast Hogback Unit.

(4) That the applicant proposes that the Special Rules and Regulations to be established for the Northeast Hogback Pressure Maintenance Project be identical with the rules established by Order No. R-1699 for The Atlantic Refining Company Horseshoe-Gallup Pressure Maintenance Project.

(5) That such identical rules should be established in order to prevent conflict in the event the two projects eventually merge.

IT IS THEREFORE ORDERED:

(1) That the applicant, Pan American Petroleum Corporation, is hereby authorized to institute a pressure maintenance project in the Horseshoe-Gallup Oil Pool, San Juan County, New Mexico, by the injection of water into the Gallup formation through the following-described wells in Township 30 North, Range 16 West:

PAN AMERICAN PETROLEUM CORPORATION

Northeast Hogback Unit Well No. 4, Unit J, Section 14
Northeast Hogback Unit Well No. 6, Unit E, Section 15
Northeast Hogback Unit Well No. 10, Unit E, Section 14
Northeast Hogback Unit Well No. 11, Unit F, Section 14
Northeast Hogback Unit Well No. 13, Unit E, Section 13
Northeast Hogback Unit Well No. 14, Unit I, Section 14
Northeast Hogback Unit Well No. 16, Unit K, Section 13
Northeast Hogback Unit Well No. 17, Unit M, Section 13
Northeast Hogback Unit Well No. 20, Unit B, Section 24
Northeast Hogback Unit Well No. 21, Unit D, Section 15
Northeast Hogback Unit Well No. 22, Unit G, Section 15
Northeast Hogback Unit Well No. 23, Unit B, Section 10
Northeast Hogback Unit Well No. 25, Unit D, Section 11
Northeast Hogback Unit Well No. 29, Unit F, Section 11
Northeast Hogback Unit Well No. 30, Unit L, Section 10
Northeast Hogback Unit Well No. 32, Unit L, Section 11
Northeast Hogback Unit Well No. 37, Unit P, Section 10

EL PASO NATURAL GAS PRODUCTS COMPANY

Williams Well No. 2, Unit P, Section 11
Williams Well No. 3, Unit J, Section 11

ABRAHAM

Federal Well No. 3, Unit B, Section 14

(2) That Special Rules and Regulations governing the operation of the Northeast Hogback Pressure Maintenance Project, San Juan County, New Mexico, are hereby promulgated, as follows:

**SPECIAL RULES AND REGULATIONS
FOR THE**

**NORTHEAST HOGBACK PRESSURE MAINTENANCE
PROJECT**

RULE 1. The project area of the Northeast Hogback Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise the following-described acreage in San Juan County, New Mexico:

TOWNSHIP 30 NORTH, RANGE 16 WEST, NMPM
Section 10: E/2 and SW/4
Section 11: SW/4 NE/4, W/2 and the SE/4
Section 12: W/2 SW/4
Section 13: SW/4, W/2 NW/4 and the W/2 SE/4
Section 14: N/2, N/2 SW/4 and the SE/4
Section 15: NE/4 and the N/2 NW/4
Section 23: NE/4 NE/4
Section 24: NW/4 NE/4 and the N/2 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 or are shut-in for any of the following reasons: 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

(HORSESHOE-GALLUP (PAN AMERICAN PRESSURE MAINTENANCE) POOL—Cont'd.)

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 Horseshoe-Gallup Oil 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 Commission Rule 502.1 (a) and the limiting gas-oil ratio (2,000 to 1) for the Horseshoe-Gallup Oil Pool shall be waived during such tests. The project operator shall notify all operators offsetting the well, as well as the Commission, of the exact time such tests are to be conducted. Tests may be witnessed by representatives of the offsetting operators and the Commission, if they so desire.

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 Horseshoe-Gallup Oil Pool, whichever is less, provided 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 two times top unit allowable for the pool. Each producing well shall be subject to the limiting gas-oil ratio (2,000 to 1) for the Horseshoe-Gallup Oil 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 Horseshoe-Gallup Oil 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:

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

Po

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 Horseshoe-Gallup Oil 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 feet equivalent of one barrel of water
 P_a = Average reservoir pressure at mid-point of the pay-zones of Horseshoe-Gallup Oil Pool in 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 87°F expressed as absolute temperature (547°R)
 Z = Compressibility factor from analysis of Horseshoe-Gallup gas at average reservoir pressure, P_a , interpolated from compressibility tabulation below:

Reservoir Pressure	Z	Reservoir Pressure	Z	Reservoir Pressure	Z
50	.9725	300	.8325	550	.6600
100	.9465	350	.8030	600	.6135
150	.9215	400	.7710	650	.5655
200	.8985	450	.7380	700	.5220
250	.8800	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 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 two times top unit allowable for the Pool.

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 include the following:

- (1) A plat showing the location of proposed injection well, all wells within the project area, and offset operators, locating wells which offset the project area.
- (2) A schematic drawing of the proposed injection well which fully describes the casing, tubing, perforated interval, and depth showing that the injection of gas or water will be confined to the Gallup formation.
- (3) A letter stating 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 20 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.

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 hereinafore designated.

Case 3151
Record 5-27-64
Res. 5-28-64

1. Grant Pam Amir's request to
revise Rule 7 & 10 of R-2026 by
deleting the wording as shown on
the attached sheets of R-2026

Edward J. [Signature]

-3-

CASE No. 2317
Order No. R-2026

comprise the following-described acreage in San Juan County, New Mexico:

TOWNSHIP 30 NORTH, RANGE 16 WEST, NMPM

Section 10: E/2 and SW/4
Section 11: SW/4 NE/4, W/2 and the SE/4
Section 12: W/2 SW/4
Section 13: SW/4, W/2 NW/4 and the W/2 SE/4
Section 14: N/2, N/2 SW/4 and the SE/4
Section 15: NE/4 and the N/2 NW/4
Section 23: NE/4 NE/4
Section 24: NW/4 NE/4 and the N/2 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 or are shut-in for any of the following reasons: 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 Horseshoe-Gallup Oil 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 Commission Rule 502 I (a) and the limiting gas-oil ratio (2,000 to 1) for the Horseshoe-Gallup Oil Pool shall be waived during such tests. The project operator shall notify all operators offsetting the well, as well as the Commission, of the exact time such tests are to be conducted. Tests may be witnessed by representatives of the offsetting operators and the Commission, if they so desire.

-4-

CASE No. 2317
Order No. R-2026

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 Horseshoe-Gallup Oil Pool, whichever is less, ~~provided 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 two times top unit allowable for the pool.~~ Each producing well shall be subject to the limiting gas-oil ratio (2,000 to 1) for the Horseshoe-Gallup Oil 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 Horseshoe-Gallup Oil 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 Horseshoe-Gallup Oil 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

-5-

CASE No. 2317
Order No. R-2026

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:

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

where:

- E_g = Average daily gas equivalent of net water injected, cubic feet
- $V_w \text{ inj}$ = Average daily volume of water injected, barrels
- $V_w \text{ prod}$ = 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 Horseshoe-Gallup Oil Pool in 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 87°F expressed as absolute temperature (547°R)
- Z = Compressibility factor from analysis of Horseshoe-Gallup gas at average reservoir pressure, P_a , interpolated from compressibility tabulation below:

Reservoir Pressure	Z	Reservoir Pressure	Z	Reservoir Pressure	Z
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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

-6-

CASE No. 2317
Order No. R-2026

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 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 two times per unit allowable for the Pool.~~

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 include the following:

(1) A plat showing the location of proposed injection well, all wells within the project area, and offset operators, locating wells which offset the project area.

(2) A schematic drawing of the proposed injection well which fully describes the casing, tubing, perforated interval, and depth showing that the injection of gas or water will be confined to the Gallup formation.

(3) A letter stating 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 20 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.

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.

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



P. O. BOX 571
SANTA FE

LAND COMMISSIONER
E. S. JOHNSON WALKER
MEMBER

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

June 3, 1964

Mr. Guy Buell
Pan American Petroleum Corporation
Post Office Box 1410
Fort Worth, Texas

Re: Case No. 3051

Order No. R-2718

Applicant:

Pan American Petroleum Corp.

Dear Sir:

is one copy

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

ix/

Carbon copy of order also sent to:

Hobbs OCC x

Artesia OCC

Astec OCC x

OTHER Mr. Clarence Hinkle

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. 3051
Order No. R-2718

APPLICATION OF PAN AMERICAN PETROLEUM
CORPORATION TO AMEND ORDER NO. R-2026,
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 May 27, 1964, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 3rd day of June, 1964, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Pan American Petroleum Corporation, seeks amendment of Rules 7 and 10 of the Special Rules and Regulations for the Northeast Hogback Pressure Maintenance Project promulgated by Order No. R-2026 to delete the provision 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 two times top unit allowable for the pool.

(3) That approval of the subject application will afford to the owner of each property in the Horseshoe-Gallup Oil Pool the opportunity to produce his just and equitable share of the oil or gas, or both, in the pool, and will otherwise prevent waste and protect correlative rights.

-2-

CASE No. 3051
Order No. R-2718

IT IS THEREFORE ORDERED:

(1) That Rules 7 and 10 of the Special Rules and Regulations for the Northeast Hogback Pressure Maintenance Project promulgated by Order No. R-2026 are hereby amended to read in their entirety as follows:

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 Horseshoe-Gallup Oil Pool, whichever is less. Each producing well shall be subject to the limiting gas-oil ratio (2,000 to 1) for the Horseshoe-Gallup Oil 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 Horseshoe-Gallup Oil 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

-3-

CASE No. 3051
Order No. R-2718

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 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.

(2) That this order shall be effective June 1, 1964.

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

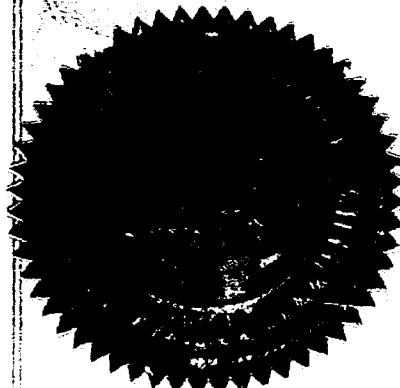
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Jack M. Campbell
JACK M. CAMPBELL, Chairman

E. S. Walker
E. S. WALKER, Member

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



esr/

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
May 27, 1964

EXAMINER HEARING

IN THE MATTER OF:

Application of Pan American Petroleum
Corporation to amend Order No. R-2026,
San Juan County, New Mexico.

Application of The Atlantic Refining
Company to amend Order No. R-2210, San
Juan County, New Mexico.

Case No. 3051
and

Case No. 3052

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 963-3971

ALBUQUERQUE, N. M.
PHONE 243-6551

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

MR. UTZ: Case 3051.

MR. DURRETT: Application of Pan American Petroleum Corporation to amend Order No. R-2026, San Juan County, New Mexico.

MR. BUELL: May it please the Examiner, Guy Buell for Pan American Petroleum Corporation. I would like to move that this case and the next case, 3052, be consolidated for purposes of the record, and that Atlantic Refining Company be given the privilege of proceeding ahead of Pan American, in that Atlantic was the pioneer waterflooded in this area.

MR. HINKLE: Thank you. Clarence Hinkle, Hinkle, Bondurant and Christy, representing The Atlantic. We would like to join Mr. Buell in the motion he just made to consolidate these two cases.

MR. UTZ: These two cases are for the same number of rules, two different orders, both of which are in the Horseshoe Gallup Pool. Case 3051 and 3052 will be consolidated for purposes of testimony. Separate orders will be written on each case.

MR. HINKLE: We have one witness, Mr. A. P. Beer.. We would like to have him sworn.

MR. DURRETT: Do you have a witness, Mr. Buell?

MR. BUELL: Yes.

(Witnesses sworn.)

MR. HINKLE: We have several exhibits all under the



same folder. I will ask the reporter to mark these.

(Whereupon, The Atlantic's Exhibits Nos. 1, 2, 3, 3-B, 4, and 4-B marked for identification.)

MR. UTZ: Are there other appearances in this case?

You may proceed.

A. P. BEER

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

DIRECT EXAMINATION

BY MR. HINKLE:

Q Your name is A. P. Beer?

A Yes, sir.

Q You are employed by The Atlantic Refining Company?

A Yes.

Q In what capacity?

A Senior operations engineer.

Q Have you ever testified before the Oil Conservation Commission?

A No, sir.

Q Are you a graduate petroleum engineer?

A Yes, sir, 1952 from Oklahoma University.

Q Have you been employed by Atlantic ever since your graduation?

A Yes, sir.

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1192

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 683-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

Q Are you familiar with Atlantic's operations in New Mexico?

A Yes, sir, I am. I have been employed as a senior operations engineer in Farmington since 1962.

Q You live in Farmington?

A Yes, sir.

Q Does your operation include the Horseshoe Gallup Unit Area in San Juan County?

A Yes, sir.

Q Are you familiar with the entire operation of Atlantic as Unit Operator in that area?

A Yes, sir.

Q Are you familiar with all the wells and the development and method that has been used in the pressure maintenance project?

A Yes, sir.

Q Have you been familiar with that since the inception?

A Yes, sir. I moved to Farmington area in the spring of 1962 and the Horseshoe Gallup Unit became effective in August of that year.

Q Are you familiar with the application which Atlantic has filed in this case?

A I am.

Q What is the purpose of Atlantic's application?

A Basically we are asking the Commission to strike certain



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1162

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

provisions in Rules 7 and 10 of the Order R-2210 which restricts the production of the edge wells that are offset, either diagonally or directly offset by other producing wells outside the unit boundary, and which restriction limits the production to twice the basic unit allowable. We are asking removal of those restrictions on these edge wells.

Q The restrictions you refer to appear in Rules 7 and 10 of Order R-2210, is that right?

A That is correct.

Q Have you prepared some exhibits in connection with this application?

A I have.

Q Refer to Atlantic's Exhibit 1 and explain what it is and what it shows.

A This exhibit marked No. 1 shows the original pilot flood area which was operated under the Order R-1699. The wells circled in red are the original pilot flood wells which were converted to injection at that time.

The purpose of this exhibit is to acknowledge the fact that a restriction was of the nature, in Rules 7 and 10, limiting the production of any boundary wells within the unit, restricting them to twice the basic allowable.

Now Atlantic acknowledges that that rule was necessary in the original pilot flood Order R-1699, in that there were many



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wells in the field and within the pilot flood area at that time that were capable of producing more than 140, or twice the unit allowable each day. Now this production at that time was a primary reservoir drive production and therefore, to protect the correlative rights of the offset operators, it was necessary for this rule to be in there.

Q Now refer to Atlantic's Exhibit No. 2 and explain that.

A This exhibit is primarily to show the present unit boundaries that are being operated as the Horseshoe Gallup Unit under the Order R-2210. It is to show how the original pilot flood area was expanded to this larger area.

Q Has the pilot been expanded to cover the entire unit area?

A The entire area shown outlined in red and hashed marks is now under pressure maintenance or waterflood operation.

Q That's the only purpose of this exhibit, to show the outline?

A To show the expansion of the project.

Q Now refer to Atlantic's Exhibit No. 3 and explain that to the Commission.

A Exhibit No. 3, there again the Horseshoe Gallup Unit Area is outlined in hashed marks and the wells identified by the green circles are the wells within the Unit boundary which are offset by wells either directly or diagonally outside the Unit



boundary. These wells are the ones that are directly influenced by the provisions of Rules 7 and 10.

In conjunction with Exhibit 3, I would like to draw your attention to Exhibit 3-B which is a tabulation -- there are five pages of this exhibit -- of the wells shown in green, and showing the current production and the production since the inception or the unitization in August of '62. It shows the oil and water production by months of each of these edge wells.

Now the primary purpose of this exhibit is to show that with only one exception, none of these edge wells shown on Exhibit 3 is capable of producing more than twice the project allowable or the unit allowable, 140 barrels a day.

Q Now refer to Exhibit No. 4.

A Exhibit No. 4 is a tabulation of the test data on our No. 266 Well. This well, what we're primarily trying to show here is that this well is producing in excess of 300 barrels of oil a day or will produce that amount, and this large volume of production is a direct result of water injection operation. In other words, this well has had a kick from the waterflood.

As you will note, back a year ago, in May of 1963, the production from this well was one to three barrels of oil per day. Later on in the year, we had an increase up to -- well, in July it was up to somewhere between 23 and 38 barrels a day. By the first of 1964, this production had continued to increase, so that

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at the present time, as of 5/14/64, the well was producing 374 barrels of oil and 204 barrels of water per day. It is our interpretation of this data that the primary production from this well had declined to a low of about three to one barrel of oil per day. As a result of water injection, the well has increased to the final figure shown on the exhibit.

Q Refer back to Exhibit 3 and point out which is Well 266 which you referred to.

A Well 266 is in Section 10 and it would be Unit C of Section 10, which is in the Northeast of the Northwest Quarter of Section 10.

Q Refer to Exhibit No. 4-B and state what that shows.

A Exhibit 4-B was included to show that the water being produced, currently being produced out of Well No. 266 is Morrison injection water. The first picture, as we might call it there, labeled Horseshoe Gallup 266, the sample was collected on the 5th and 21st of 1964. The second picture at the bottom of that page is an analysis from the Horseshoe Gallup Unit No. 3-WS, water supply well which is Morrison water.

From past experience we know that as you move Morrison water through the Gallup formation, the chemical composition of it changes to some degree, due to solution or picking up of solids, so that you do end up with a picture as shown at 266.

But this exhibit, as I said, is primarily to show that



the water being produced from 266 is a Morrison injected water and therefore we can conclude from this that the production resulting from this, or the production from No. 266, is a result of water injection secondary recovery efforts.

Q Rule No. 2 of the special rules and regulations of the Horseshoe Gallup Pressure Maintenance Project provides that the allowable from the project shall be the sum of the allowables for the several wells within the project area, including those wells which are shut-in, curtailed, or used as injection wells. Is there any intention on the part of Atlantic by the proposed amendments of Rules 7 and 10 to change the project allowable in any way?

A No, sir, there is not.

Q In your opinion, are the proposed changes of Rules 7 and 10 of Order R-2210 in the interest of conservation and the prevention of waste?

A They are in this respect. Theoretically, the nature of the waterflood in this field, the water injection pattern is set up so that if the oil is not produced from one well it would very logically be picked up and produced from another well. However, this is, as I say, this is a technical answer and there does exist a possibility that if we do not produce it as it comes into the producing wells, that in migrating or moving to the next pattern, that it might possibly be trapped in some impermeable zone and be prohibited by some barrier from reaching some of the

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other wells.

Q Are you familiar with the orders that have heretofore been issued by the Commission with respect to the other projects in the immediate vicinity?

A I am. There are approximately eight waterflood projects in this particular area, including Pan American's Hogback Unit, the Horseshoe Gallup Unit, Humble's Horseshoe Gallup Pressure Maintenance Project, and about five pressure maintenance projects within the Many Rocks Field. Of these, the Humble Many Rocks Pressure Maintenance Project No. 1, which is being operated under Order R-2541, in this case there is a time stipulation in Rule 10 of that order; it has a time limitation that the wells shall not produce in excess of top unit allowable until January 1st, 1964 or until the operators of such offset wells outside the project area have instituted a pressure maintenance project in the area of such wells, whichever shall occur first.

Order R-1876, which is a Honolulu Many Rocks Pressure Maintenance Project No. 3, has a similar provision in their order. Order R-1745, the Humble Horseshoe Gallup Pressure Maintenance Project No. 2, also has similar specifications; as well as the Atlantic Many Rocks Project No. 2 operated under Order R-2622, which has similar stipulations that whenever pressure maintenance projects are instituted offsetting these wells, these limitations are no longer in effect.



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Q Has Atlantic received a temporary suspension order of this provision in Rules 7 and 10?

A We have, from Emory C. Arnold, Supervisor of District No. 3, by letter of May 6, 1964, in which we were -- the Rules 7 and 10 were temporarily suspended so that we might test this well for data to present at this hearing.

Q As a result of the suspension order, do you have any suggestion as to when the order which you've requested be effective, if it is granted?

A Yes, sir, the temporary suspension as given in this letter from Emory Arnold May 6th was effective until the date of this hearing. Therefore, we would like, if the Commission sees fit to grant us this request, that the order be retroactive back to June 1st so that we might continue to produce this well at its capacity.

Q Have you received any notices of protests or objections to the proposed change in Order R-2210?

A No, sir, we have not. We have on the contrary received a number of communications from other operators and co-owners of the Horseshoe Gallup Unit which are agreeing to this proposal.

MR. HINKLE: We would like to offer in evidence Atlantic's Exhibits 1 through 4-B.

MR. UTZ: Without objection, Exhibits 1 through 4-B will be accepted into the record of this case.



(Whereupon, The Atlantic's Exhibits Nos. 1 through 4-B received in evidence.)

MR. HINKLE: That's all.

CROSS EXAMINATION

BY MR. UTZ:

Q How many wells of these edge wells did you actually test to see if they were capable of producing more than two times or not?

A All the wells marked in green on Exhibit 3 are tested monthly. At no time have the number shown in Exhibit 3 been, as a result of the monthly test. I say they are tested monthly, there may be some months in which a test was not run, but we try to test each one monthly. That exhibit was primarily to show that these wells, that none of the wells along the edge were capable of producing more than twice the unit allowable under primary production. The only exception to that is No. 266, which is producing or will produce greater than that, but that is a result of secondary recovery efforts in the area.

Q Since the temporary suspension, how many of the wells have you tested to see whether they are capable of producing now more than twice the allowable?

A Well 266 was tested almost continuously since the suspension, and none of the other wells along that boundary will produce anywhere near twice the unit allowable. They are all tested

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periodically.

Q So actually, you are in trouble as far as two times allowable on No. 266?

A That is correct.

Q No. 266 is offset by another waterflood project, is it not?

A It is. It is offset by the Pan American Hogback Unit.

MR. UTZ: Any other questions of the witness? The witness may be excused.

(Witness excused.)

MR. UTZ: You may proceed, Mr. Buell.

MR. BUELL: Thank you, Mr. Examiner.

GEORGE W. EATON, JR.

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

DIRECT EXAMINATION

BY MR. BUELL:

Q Mr. Eaton, would you state your complete name, by whom you are employed, in what capacity and what location?

A George W. Eaton, Jr., senior engineer for Pan American Petroleum Corporation in Farmington, New Mexico.

Q Have you testified at prior Commission hearings and are your qualifications as a petroleum engineer a matter of public record?



A Yes, I have testified previously and my qualifications are a matter of public record.

MR. BUELL: Any questions, Mr. Examiner?

MR. UTZ: No, sir, I believe Mr. Eaton is qualified.

(Whereupon, Pan American's Exhibits Nos. 1 through 4 marked for identification.)

Q (By Mr. Buell) In connection with this case, I wish you would direct your attention first to what has been marked as Pan American's Exhibit No. 1. What is that exhibit?

A Exhibit No. 1 is a map of the southeastern portion of the Horseshoe Gallup Pool in San Juan County, New Mexico, showing thereon a portion of the Pan American operated Northeast Hogback Unit, but showing in its entirety the Northeast Hogback Unit Gallup participating area, which is the same area as is contained in the pressure maintenance project area under New Mexico Oil Conservation Commission Order R-2026.

Q Is that the area enclosed within the x-ed line, I guess would be the best way to express it?

A Yes, that is that area.

Q Go ahead, Mr. Eaton.

A On this map certain wells have been designated by color. The green wells in the northwestern portion of the map are injection wells into which water is injected into the Gallup formation. The three blue wells in the center of the unit are other injection

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wells in the Northeast Hogback Unit. The big numbers adjacent to the wells colored in green represent the cumulative injection volumes that existed into each well as of May 1st, 1964. The sum total of those large numbers amounts to 1,354,421 barrels.

If we were to assume that this volume of water filled up the entire vertical height of the Gallup sand, it would occupy an area in the vicinity of those injection wells having a width of 735 feet. This is the area shown ideally on Exhibit No. 1 colored in red. It shows that there has been sufficient water injected along this common boundary between the Northeast Hogback Unit and the Horseshoe Gallup Unit to fully build a water bank in that area over a horizontal distance of 735 feet.

Q Mr. Eaton, with respect to the injection wells in green, I believe three of those injection wells are in the Pan American project and three of those are in the Atlantic project?

A That is correct.

Q With regard to the Pan American project as a whole, Mr. Eaton, have we received a response from our water injection efforts?

A Yes, sir, we have.

Q The well that has responded to our injection efforts, which well is that?

A The well which has shown the greatest response is Northeast Hogback Unit No. 26. That well is located in the Southwest Quarter Northeast Quarter, Section 10, Township 30 North,



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Range 16 West.

Q Mr. Eaton, in connection with that well I wish you would look now at what has been marked as our Exhibit No. 2 and briefly state what that exhibit reflects.

A Exhibit No. 2 is a graph showing the individual well test data that have been obtained on Northeast Hogback Unit Well No. 26 since its completion in 1959.

Q Would you briefly review the performance of this well both under primary and subsequent to water injection operations?

A During the early part of this well's life, it was tested at rates varying in 1959 from 60 to 67 barrels back down to 62 barrels. In the year 1960, slightly higher rates were achieved on up as high as above 80 barrels. This well went on a decline in 1961 to the extent that by the end of the year 1961 it was capable of only 48 barrels per day.

This primary decline continued until approximately mid 1963. The only thing that occurred in this interim period up to mid 1963 is that water injection was commenced in Well 23, Horseshoe Gallup Well 271, Northeast Hogback Unit No. 30, and Horseshoe Gallup Unit No. 274 in January, 1963. Approximately six months following the institution of this water injection, the well commenced a response and that has continued to the present day, and the last point that is shown on Exhibit 2 shows the well producing at a rate of 540 barrels per day.



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Also on Exhibit 2 I have drawn a straight line depicting my interpretation of what continued primary operation would have been had water injection not been started in this area.

Q Mr. Eaton, it's conclusive from this exhibit, is it not, that the ability of this well to produce in excess of the normal unit allowable is entirely attributable to the water injection efforts?

A That is correct.

Q Would you look now briefly at what has been marked as our Exhibit No. 3 and state for the record what that exhibit reflects?

A Exhibit No. 3 is a tabulation showing the same individual well tests that were obtained on Well No. 26, and in addition, tests that have been obtained during the last four weeks for which there is not room to plot these data on Exhibit No. 2.

Q What do you mean, not room; did you just run off the top of your exhibit?

A The space provided does not permit the placement of any additional points.

Q Go ahead. You might briefly state for the record these additional test data which are on Exhibit 3 that are not on Exhibit 2.

A Yes. This exhibit shows a test on May 7th, 1963, during which the well produced 472 barrels of oil and 31 barrels of water,



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with a gas-oil ratio of 48. One week later, on May 13th, a test of 471 barrels of oil and 38 barrels of water with a gas-oil ratio of 52 was obtained. On May 19th a test of 418 barrels of oil and 36 barrels of water was obtained. On Monday of this week, on May 25th, a test of 438 barrels of oil and 39 barrels of water was obtained. These rates are far in excess of two times the top unit allowable for the Horseshoe Gallup Pool.

Q Mr. Eaton, do we currently have available allowable to transfer to Well 26 which will more nearly allow it to produce at its ability to produce?

A Yes, sir, we do.

Q In connection with Pan American's recommendation here today, would you look briefly at Exhibit 4 and state what it reflects?

A Exhibit 4 is a copy of Order R-2026 setting forth the special rules and regulations for the Northeast Hogback Pressure Maintenance Project.

Q What change have you made on that order, which is Exhibit 4, Mr. Eaton?

A In Rules 7 and 10 of that order I have stricken with a red pencil the portions that restrict production for wells that diagonally or directly offset wells not in the project area to no more than two times top unit allowable for the pool. This is the only change that I have made. It is the only change that I am



recommending.

Q In Rules 7 and 10, are those the only rules in which this arbitrary two times limitation is found?

A Yes, sir.

Q Mr. Eaton, directing your attention back to Exhibit No. 1 and with particular reference to the injection pattern of Atlantic and Pan American in this area, in your opinion was this injection pattern designed to prevent net uncompensated drainage from one pressure maintenance project area to the other pressure maintenance project area?

A Yes, this pattern was particularly designed to make certain there would be no net migration of fluids across this common boundary.

Q Actually, as far as this boundary was concerned, there was never any necessity with an injection pattern of this type for such arbitrary restriction that is found in our order?

A No, that is true.

Q And certainly when the data are conclusive that the ability of Well 26 to produce in excess of the normal unit allowable is entirely due to the waterflood efforts, certainly there is no need for this arbitrary restriction to continue in the rule?

A No, sir. At the present time I can see no reason why these wells should be treated any differently from any other well in the project area; and under the rules, no other well is so

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restricted.

Q Certainly it is your opinion, based on your testimony, that there's no need whatsoever for this restriction at this time to protect correlative rights?

A No, sir.

Q Do you have anything else you would care to add at this time?

A Just this, which Mr. Beer has already mentioned, but like Atlantic, Pan American is also producing during the month of May with an administrative suspension of Rules 7 and 10 in so far as this particular restriction is concerned. The purpose of the administrative approval for suspension of these rules was to obtain data to present here at this hearing. This administrative approval is good for the month of May, and should the Commission see fit to grant us the amendment that we seek, we would urge that it be made effective on June 1st so that this well and any others that might respond can continue to be produced at capacity.

MR. BUELL: Mr. Examiner, that's all we have by way of direct at this time. I would like to formally offer Pan American's Exhibits 1 through 4, inclusive.

MR. UTZ: Without objection, Pan American's Exhibits 1 through 4 will be entered into the record of this case.

(Whereupon, Pan American's Exhibits Nos. 1 through 4 received in evidence.)

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CROSS EXAMINATION

BY MR. UTZ:

Q Are there any producing wells outside of your unit on the northeast, southwest, southeast ends of the unit?

A Pardon me?

Q Are there any producing wells, wells producing from the Hogback Gallup, outside of your unit on your northeast, southeast, or southwest sides?

A In a sense, there are none clear outside the unit until the well you see in the Southeast Quarter Southeast Quarter of Section 1 of Township 30 North, Range 16 West. The wells in Section 12, however, are within the unit area but are on land not committed to the unit.

MR. BUELL: Are these wells you are speaking of, are they classified as being in the Horseshoe Gallup Pool?

A Yes, sir, I believe they are, although they're right near the boundary between Horseshoe Gallup and Verde Gallup, but I believe these wells are in the Horseshoe Gallup Pool.

Likewise, in Section 11 in the Southwest Quarter Northeast Quarter and in the Northeast Quarter Southeast Quarter there are two wells labeled Wells 2 and 3 with the designation King Oil Company above them. These wells are in the Northeast Hogback Unit, they're even in the Northeast Hogback Unit Gallup participating area, but they are not committed to the unit agreement.

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Q Have those wells responded?

A Perhaps very slightly. They're in the five to six barrel a day class, and that may be more than they would have made, been making had there not been any injection in the area.

Q Are any of these outside wells which may be offset by other producing wells capable of producing in excess of two times the normal unit allowable?

A No, sir.

Q So in deleting these Rules 7 and 10, there would be no danger of drainage to any well outside the unit?

A No, sir.

Q If the wells did increase in their producing ability, it would be due to the waterflood within the unit?

A Absolutely, yes, sir.

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

MR. DURRETT: I have one question.

BY MR. DURRETT:

Q Mr. Eaton, referring to your Exhibit No. 3, the data that you referred to that was not on your other Exhibit 2.

A Yes, sir.

Q Your figure 5/7/63, is that supposed to be 5/7/64?

A Yes, sir. I'll move that this exhibit be corrected.

Q It should read 5/7/64, then?

A Yes, sir.



MR. DURRETT: Thank you.

MR. UTZ: Are there any other questions? The witness may be excused.

(Witness excused.)

MR. UTZ: Are there any other statements in this case? If nothing further, the case will be taken under advisement.

(Whereupon, the hearing was recessed until 1:30 o'clock P.M.)

* * *

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 10th day of June, 1964.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

I hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3051-652 heard by me on *May 22*, 1964.
Thurston R. [Signature], Examiner
New Mexico Oil Conservation Commission

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JMD/esr
June 2, 1964

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:

Order No. R- 2718

**APPLICATION OF PAN AMERICAN PETROLEUM
CORPORATION TO AMEND ORDER NO. R-2026,
SAN JUAN COUNTY, NEW MEXICO**

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on May 27, 1964, at Santa Fe, New Mexico, before Examiner 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 June, 1964, the Commission,
a quorum being present, having considered the application, ~~the~~^{and} testimony,
the record, ~~evidence adduced,~~ and the recommendations of the Examiner,
 , and being fully advised in the premises,

(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, Pan American Petroleum Corporation, seeks amendment of Rules 7 and 10 of the Special Rules and Regulations for the Northeast Hogback ~~Unit~~ Pressure Maintenance Project promulgated by Order No. R-2026 to delete the provision 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 two times top unit allowable for the pool.

(3) That approval of the subject application will afford ^{0:1} to the owner of each property in the Horseshoe-Gallup Pool the

opportunity to produce his just and equitable share of the oil or gas, or both, in the pool, and will otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That Rules 7 and 10 of the Special Rules and Regulations for the Northeast Hogback ~~Hot~~ Pressure Maintenance Project promulgated by Order No. R-2026 are hereby amended to read in their entirety as follows:

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 Horseshoe-Gallup Oil Pool, whichever is less. Each producing well shall be subject to the limiting gas-oil ratio (2,000 to 1) for the Horseshoe-Gallup Oil 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 Horseshoe-Gallup Oil 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 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.

(2) That this order shall be effective June 1, 1964.

(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.

Application of The Atlantic
Refining Company to
Amend Order No. R-2210
San Juan County, N. Mex

Applicant, in the above styled
cause seeks amendment
of Order Rules 7 and 10 of
Order No R-2210 to permit the
production of more than two
times top allowable from wells
in its Horseshoe Gashup, ^{Unit} Pressure
Maintenance Project even though
they offset wells outside the project
~~well~~ area.