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JASON KELLAHIN
OF COUNSEL

July 1, 1991

JUL 01 1991

OIL CONSERVATION DIVISION

Mr. William J. LeMay
Oil Conservation Division
State Land Office
Santa Fe, New Mexico 87501

HAND DELIVERED

Re: First Amended Application of
OXY USA, Inc. concerning
Citgo Empire-Abo Pressure
Maintenance Project (R-4808) and
ARCO Oil & Gas Company's Empire-Abo Pressure
Maintenance Project (R-4549), Eddy County,
New Mexico.

Case 10356

Dear Mr. LeMay:

In accordance with the direction of the Division as a result of the conference held on June 5, 1991, and on behalf of OXY USA Inc., please find enclosed an application for hearing concerning the Empire-Abo Pressure Maintenance Projects of both OXY and ARCO which we would request be set for hearing on July 25, 1991.

To aid in the preparation of the notice for hearing the following advertisement is suggested:

Application of OXY USA, Inc. for an order affecting its Citgo Empire-Abo Pressure Maintenance Project (R-4808) and affecting ARCO Oil & Gas Company's Empire-Abo Pressure Maintenance Project (R-4549), Eddy County, New Mexico. Applicant, in the above-styled cause, seeks to place its Citgo Empire-Abo Pressure Maintenance Project, located in portions of Section 35, T17S, R27E, and Section 2, T18S, R27E, N.M.P.M., under the provisions of Division Order A-261 (statewide oil prorationing) effective as of May 1, 1988 by rescinding Division Order R-4808 and by an exception to Rule 502 thereby establishing special assignment of allowables and adopting procedures concerning underproduction. Applicant further seeks a determination of the appropriate procedure to be applied by ARCO Oil & Gas Company in its Empire-Abo Pressure Maintenance Project,

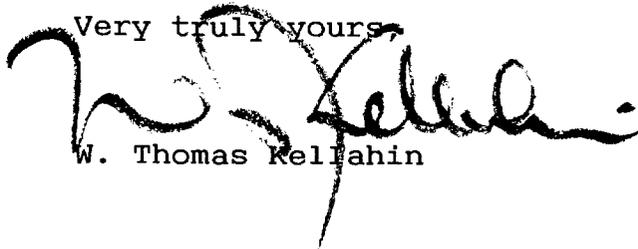
Mr. William J. LeMay
July 1, 1991
Page 2

being located in portions of Sections 34, 36, T17S, R27E; portions of Sections 25, 26, 27, 31-36, T17S, R28E; portions of Sections 29-30, T17S, R29E; portions of Sections 1-4, 8-11, 15-17, T18S, R27E; and portions of Sections 4-6, T18S, R28E, N.M.P.M., concerning the accumulation of unused allowable under Rule 3 and Rule 5 of Order R-4549, as amended, to ensure that the correlative rights of the parties involved in these two adjoining projects are not impaired, Eddy County, New Mexico.

By copy of this letter and enclosed application, sent certified mail-return receipt requested, we are notifying each of the operators of the pool of this application of their right to appear at the hearing either in support of or in opposition to this application. In addition, those potential parties are advised that Division guidelines require the filing by them of a pre-hearing statement by 4:00 P.M. on the Friday prior to the date of the hearing, with notification to the undersigned.

Should any potential party desire more information about this matter or about the procedures for hearing this application, they may call the Division, Mr. Richard Foppiano (915) 685-5913, or the undersigned.

Very truly yours,



W. Thomas Kellahin

WTK/tic
Enclosure

cc: Mr. Richard Foppiano
OXY USA, Inc.
Post Office Box 50250
Midland, Texas 79710

Certified mail return-receipt
All parties listed on Exhibit "E"
to application

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE
APPLICATION OF OXY USA, INC.
CONCERNING ITS CITGO EMPIRE-ABO
PRESSURE MAINTENANCE PROJECT (R-4808)
AND ARCO OIL & GAS COMPANY'S EMPIRE
ABO PRESSURE MAINTENANCE PROJECT
(R-4549), EDDY COUNTY, NEW MEXICO

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OIL CONSERVATION DIVISION
CASE NO. 10356

FIRST AMENDED
A P P L I C A T I O N

OXY USA, INC., ("OXY"), by and through its attorneys, Kellahin, Kellahin & Aubrey, applies to the New Mexico Oil Conservation Division for a Order affecting its Citgo Empire-Abo Pressure Maintenance Project comprising the following acreage in Eddy County, New Mexico:

Township 17 South, Range 27 East, N.M.P.M.
Section 35: SE/4, E/2SW/4, SW/4SW/4

Township 18 South, Range 27 East, N.M.P.M.
Section 2: NW/4NE/4, NE/4NW/4

containing approximately 360-acres.

Applicant further seeks a determination of the appropriate procedure to be applied by ARCO Oil & Gas

Company in its adjoining Empire-Abo Pressure Maintenance Project, concerning the accumulation of unused allowable under Rule 3 and Rule 5 of Order R-4549, as amended to ensure that the correlative rights of the parties involved in these two adjoining projects are not impaired. The ARCO Oil & Gas Company Empire-Abo Pressure Maintenance Project comprises the acreage in Eddy County, New Mexico as described in Exhibit "B."

OXY requests the Oil Conservation Division grant the following relief:

(1) To rescind Division Order R-4808, effective May 1, 1988;

(2) To place the Citgo Empire Abo Unit under the provisions of Division Order A-261, statewide oil proration order effective May 1, 1988;

(3) That each well in the current unit that is capable of production be assigned an allowable pursuant to Order A-261 effective as of May 1, 1988;

(4) That all underproduction accumulated on each well identified in item (3) above during each monthly proration period, beginning May 1, 1988 to the present, be reinstated effective the first month following the issuance of an order in this case;

(5) That OXY be granted an exception from Rule 502 and be provided a period of time not to exceed two years to make up the underproduction referenced in item (4) above;

(6) That any well that is overproduced after the reinstatement of said allowable be shut-in until the overproduction is made up;

(7) The Division approve the combining of the proration and spacing units within the Citgo Empire Abo Unit area pursuant to Rule 507 and OXY be afforded the flexibility to produce the allowable attributable to the wells within the unitized area from any well or wells or combinations thereof; and

(8) To determine that the provisions of Order R-4549 preclude ARCO Oil & Gas Company's Empire-Abo Pressure Maintenance Project from carrying forward unused allowable and using this accumulated allowable to offset subsequent overproduction.

In support of its application states:

1. OXY operates the Citgo Empire-Abo Pressure Maintenance Project pursuant to Division Order R-4808 dated June 11, 1974 in the Empire-Abo Pool. See Exhibit "A."

2. ARCO operates its Empire-Abo Unit Pressure Maintenance Project subject to the terms and conditions of Division Order R-4549, as amended. See Exhibit "B."

3. OXY and ARCO projects share a common boundary in the Abo formation and are in communication with each other. See plats enclosed as Exhibit "C" and "D."

4. OXY operated the Citgo Empire-Abo Pressure Maintenance Project pursuant to Division Order R-4808 dated June 11, 1974 in the Empire-Abo Pool until March, 1988 at which time it ceased the re-injection of gas in to the project area.

5. OXY determined that as of April 1, 1988, it was no longer economically feasible to continue the re-injection of gas into the project area.

6. Because of the economic situation which necessitated the ceasing of re-injection, OXY was forced to obtain a market for this gas, and this prevented OXY from producing its allowable for at least twelve months even though its wells were capable of doing so. Therefore, OXY should be allowed to carry forward allowable that was canceled after May 1, 1988.

7. OXY has further determined that Division Order R-4808, dated June 11, 1974, is outdated, adversely affects the ability of OXY to compete with other operators in the pool, is no longer necessary.

8. In the interests of prevention of waste and protection of correlative rights, Order R-4808 should be terminated using a procedure to provide an efficient transition from the pressure maintenance provisions and rules to rules applied to other operators in the Empire Abo Pool who are not subject to pressure maintenance procedures.

9. OXY seeks a procedure to replace the current pressure maintenance oil well production allowables with the same allowable limitations as the other operators of non-pressure maintenance projects are using in the Empire Abo Pool.

10. OXY seeks a procedure whereby allowables would be assigned on a unit basis to afford OXY the ability to produce the low GOR wells to maximize liquid recovery and thereby avoid the waste of hydrocarbons.

11. In order to provide an equitable transition from pressure maintenance rules to pool rules and to avoid impairing OXY's correlative rights, OXY seeks a

procedure to carry forward any underproduction that might be canceled by rescinding Order R-4808 and placing the unit under the operation of Division Order A-261.

12. OXY seeks the continuation of the unit approved by Division Order R-4791 to allow, among other things, the effective and efficient management of the unit hydrocarbon under unit recovery operations so that high GOR wells can be shut-in and low GOR wells produced thereby increasing ultimate recovery underlying the unit;

13. In order to attain equity between the Applicant's Citgo Empire-Abo Pressure Maintenance Project and the ARCO Oil & Gas Company Empire-Abo Pressure Maintenance Project a determination should be made concerning the accumulation and carrying forward of unused allowable month to month by ARCO.

14. A copy of this application and request for a hearing on May 30, 1991 are being sent certified mail return-receipt requested to the parties shown on Exhibit "E" as Pool Operators.

WHEREFORE OXY hereby requests that the New Mexico Oil Conservation Division set a hearing before a Division Examiner on July 25, 1991 for OXY to present its data concerning the operations of its Citgo Empire-Abo

Pressure Maintenance Project, the evidence in support of its request and that after notice and hearing, the Division enter its order approving this application and entering such provisions as are necessary to grant the relief requested.

Respectfully submitted,

KELLAHIN, KELLAHIN & AUBREY

By: 

W. Thomas Kellahin
Post Office Box 2265
Santa Fe, New Mexico 87504
(505) 982-4285

Attorneys for OXY USA, Inc.

(LEO (KERSEY & COMPANY CREEK-LEO WATERFLOOD) POOL - Cont'd.)

EMPIRE-ABO POOL
(Citgo Empire-Abo Pressure Maintenance Project)
Eddy County, New Mexico

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

IT IS THEREFORE ORDERED:

(1) That the applicant, Kersey & Company, is hereby authorized to institute a waterflood project in the Leo Pool, by the injection of water into the Grayburg formation through the following-described well in Section 23, Township 18 South, Range 30 East, NMPM, Eddy County, New Mexico:

WELL NAME	WELL NO.	LOCATION
Kersey & Company Creek	1	330' FNL & 1650' FWL

CASE NO. 5213
Order No. R-4808

(2) That injection into said well shall be through plastic or cement-lined tubing, set in a packer which shall be located as near as possible to the casing-shoe and that the casing-tubing annulus shall be filled with an inert fluid and equipped with a pressure gauge or left open at the surface in order to determine leakage in the casing, tubing or packer.

(3) That the operator shall immediately notify the supervisor of the Commission's Artesia district office of the failure of the tubing or packer in said injection well, the leakage of any water or oil from around any producing well or the leakage of water or oil from any plugged and abandoned well within the project area and shall take such timely steps as may be necessary or required to correct such failure or leakage.

(4) That the subject waterflood project is hereby designated the Kersey & Company Creek-Leo Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

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

(6) 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 herein above designated.

Order No. R-4808, Authorizing Cities Service Oil Company to Institute a Pressure Maintenance Project in the Empire-Abo Pool, Eddy County, New Mexico, June 11, 1974.

Application of Cities Service Oil Company for a Pressure Maintenance Project, Eddy County, New Mexico.

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on April 10, 1974, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 11th day of June, 1974, 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, Cities Service Oil Company, seeks authority to institute a pressure maintenance project in the Empire-Abo Pool in its Citgo Empire-Abo Unit Area, Eddy County, New Mexico, by the injection of gas into the Abo formation through a well to be drilled at an unorthodox location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East.

(3) That the applicant further seeks the designation of the project area and the promulgation of special rules and regulations governing said project, including provision for the operation of the project under a net GOR rule and the establishment of a gas injection credit "bank" against which injection credit could be drawn in order to maintain full allowables during such times as injection plant shut-downs and similar problems.

(4) That initially the project area should comprise the following described area:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 35: SE/4, S/2 SW/4, and NE/4 SW/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 2: NE/4 NW/4 and NW/4 NE/4

(5) That the applicant is the operator of the Citgo Empire-Abo Unit, which embraces the above-described lands.

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT) POOL - Cont'd.)

(6) That the Citgo Empire-Abo Unit embraces lands immediately adjacent to the Atlantic Richfield Empire-Abo Unit Area, which area is also under pressure maintenance by the injection of gas, and injection of gas in the Citgo Empire-Abo Unit Area is in the interest of more efficient operation of the pool as a whole.

(7) That the production permitted the Atlantic Richfield Empire-Abo Pressure Maintenance Project is limited to reservoir voidage equal to or less than the average reservoir voidage for the project area for the calendar year 1972.

(8) That the evidence indicates that the portion of the Empire-Abo Pool underlying the Citgo Empire-Abo Unit Area will be more efficiently produced by operating under a reservoir voidage formula similar to that used for said Atlantic Richfield project.

(9) That reinjection of produced gas at a location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East, will efficiently aid in maintaining pressures in the Abo formation in the unit area, and an injection well at that location should be approved.

(10) That the production from the project area should be limited to the average reservoir voidage for the project area for the calendar year 1972 (2213 reservoir barrels) or 852 barrels of oil per day, whichever is less.

(11) That special rules and regulations for the operation of the Citgo Empire-Abo Unit Pressure Maintenance Project should be promulgated and, for operational convenience, such rules should provide certain flexibility in authorizing the production of the project allowable from any well or wells in the project area in any proportion, provided that no well in the project area which directly or diagonally offsets a well not committed to said unit producing from the same common source of supply should be allowed to produce more than two top unit allowables for the Empire-Abo Pool.

(12) That an administrative procedure should be established whereby said project area may be contracted or expanded for good cause shown, and whereby additional injection wells and producing wells at orthodox and unorthodox locations in the project area may be approved without the necessity of notice and hearing.

(13) That approval of the application for a pressure maintenance project and the proposed special rules therefor is in the interest of sound conservation practices and will not cause waste nor harm correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Cities Service Oil Company, is hereby authorized to institute a pressure maintenance project in the Empire-Abo Pool in the Citgo Empire-Abo Unit Area, Eddy County, New Mexico, to be designated the Citgo Empire-Abo Unit Pressure Maintenance Project, by the shutting in or curtailment of production from less efficient wells and/or the reinjection of produced gas as raw gas or plant residue gas into the Abo formation.

(2) Initial injection of gas shall be through a well to be drilled at an unorthodox location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East, NMPM, which location is hereby approved.

(3) That the injection should be through 2-3/8-inch internally coated tubing installed in a packer set within 100 feet of the uppermost perforations, and that the casing-tubing annulus should be fitted with a pressure gauge in order to determine leakage in the casing, tubing, or packer.

(4) That Special Rules and Regulations governing the operation of the Citgo Empire-Abo Unit Pressure Maintenance Project, Eddy County, New Mexico, are hereby promulgated as follows:

**SPECIAL RULES AND REGULATIONS
FOR THE
CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT**

RULE 1. The project area of the Citgo Empire-Abo Unit Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise the area described as follows:

**EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 35: SE/4, S/2 SW/4, and NE/4 SW/4**

**TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 2: NE/4 NW/4 and NW/4 NE/4**

RULE 2. The allowable for the project shall be computed monthly based on the estimated net reservoir voidage for the succeeding month.

RULE 3. The maximum daily project allowable shall be an amount of oil which will result in reservoir voidage no greater than the average daily reservoir voidage for the project area for the calendar year 1972 (2213 reservoir barrels) or 852 barrels of oil per day, whichever is less.

RULE 4. The allowable assigned to the project area may be produced from any well or wells within the project area in any proportion, provided that no producing well in the project area which directly or diagonally offsets a well not committed to the Unit and producing from the same common source of supply, shall produce in excess of two times top unit allowable for the pool and provided that individual well allowables have been requested in accordance with Rule 5 below.

RULE 5. Each month the project operator shall submit to the Commission a Pressure Maintenance Project Operator's Report, on a form prescribed by the Commission, outlined 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 6. 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.

RULE 7. That the volume of gas required to be injected in any month to maintain average daily reservoir voidage in the project area at 2213 reservoir barrels shall be known as "Reservoir Voidage Balance Gas."

RULE 8. That all calculations of reservoir voidage shall be in accordance with the formula set out in Attachment "A" to this order utilizing the Table of Fluid Properties set out in Attachment "B" to this order.

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT) POOL - Cont'd.)

RULE 9. A gas "bank" shall be established for the project against which injection credit may be drawn in order to maintain allowable production during such times as injection compressor shutdowns and similar problems. The gas bank shall operate under and be subject to the following provisions:

(a) That volume of gas injected in the project in any month in excess of Reservoir Voidage Balance Gas shall be credited to the gas bank and be carried cumulatively forward.

(b) The gas bank balance shall not exceed a maximum of the average monthly total Reservoir Voidage Balance Gas volumes for the previous three (3) months, not including the month being reported.

(c) The operator shall report monthly to the Commission the status of the gas bank in a form acceptable to the Commission. The report shall be designed to show the status of the gas bank over a twelve (12) month period and shall be revised monthly to a current basis.

(d) The accumulated gas bank may be applied to the injection volume during any future month in which the gas injection volume is less than the Reservoir Voidage Balance Gas volume.

(e) In the event there are insufficient credits accrued to the gas bank to bring actual injection plus applied credits up to the Reservoir Voidage Balance Gas requirement during any given production month, production for that month shall be reduced to an amount commensurate with the average daily reservoir voidage set forth in Rule 3 above. Production beyond this amount shall be considered overproduction and shall be compensated for by underproduction during the following month.

RULE 10. The Secretary-Director of the Commission is hereby authorized to approve such additional producing wells and injection wells at orthodox and unorthodox locations within the boundaries of the Citgo Empire-Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided said producing wells are drilled no closer than 660 feet to the outer boundary of said unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary and provided that no well shall be approved for gas injection when such well is located closer than 1650 feet to a tract which is not committed to the unit and on which is located a well producing from the same common source of supply. 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 production or injection wells shall include the following:

(a) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(b) A schematic drawing of the proposed well which fully describes the casing, tubing, perforated interval, and depth.

(c) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

The Secretary-Director may approve the proposed 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.

RULE 11. Expansion or contractions of the project area may be approved by the Secretary-Director of the Commission administratively when good cause is shown therefor.

(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.

CITGO EMPIRE ABO UNIT AREA

Reservoir Voidage Formula - Gas Injection Credit

Equation 1:

$$Vrvb: Qo (Bo \cdot (Rpn - Rs) Bg)$$

Where:

Vrvb : Reservoir voidage, bbls. per day
 Qo : Oil Production rate, Stock tank bbls. per day
 Bo : Oil formation volume factor (1), reservoir volumetric bbls/stock tank bbl.
 Rpn : Net producing gas-oil ratio, NCF/S.T.B.O.

$$Rpn: Rp (1.0 - \frac{Gi}{Gp})$$

Where:

Rp : producing gas-oil ratio, MCF/BO
 Gi : daily volume of gas injected MCF/Day
 Gp : daily volume of gas produced, MCF/Day

Rs : Solution gas-oil ratio (2), MCF/STBO
 Bg : Gas formation volume factor (3), RVB/MCF

(1), (2), (3): These values calculated from Table of Fluid Properties, Attachment "B".

Attachment "A" Order No. R-4808

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE
MAINTENANCE PROJECT) POOL - Cont'd.)

CITGO EMPIRE ABO UNIT AREA

Table of Fluid Properties

P-base equals 15.025 psia, P-bp equals 2231 psia, Tres equals
109° F (569° R)

15.025	1.000	194.696	0	1.0
100	1.125	28.229	.180	.965
200	1.163	13.749	.235	.940
300	1.193	8.970	.290	.920
400	1.218	6.692	.349	.915
500	1.244	5.236	.395	.895
600	1.263	4.276	.445	.877
700	1.285	3.644	.495	.872
800	1.304	3.108	.540	.850
900	1.325	2.746	.585	.845
1000	1.344	2.437	.625	.833
1100	1.364	2.178	.675	.819
1200	1.384	1.962	.725	.805
1300	1.404	1.790	.775	.795
1400	1.425	1.649	.825	.789
1500	1.445	1.516	.875	.777
1600	1.465	1.404	.925	.768
1700	1.485	1.304	.975	.758
1800	1.505	1.220	1.025	.751
1900	1.525	1.147	1.075	.745
2000	1.548	1.053	1.125	.720
2100	1.573	1.000	1.175	.718
2200	1.597	.953	1.225	.717
2231	1.606	.939	1.250	.716

P-r equals Reservoir average pressure at datum -2264' sub-
sea, lbs/in absolute.

B-o equals Oil formation volume factor, reservoir volumetric
bbls/stock tank bbl.

B-g equals Gas formation volume factor, reservoir volumetric
bbls/thousand std. cu. ft.

R-s equals Solution Gas/Oil Ratio, Thousand std. cu. ft./stock
tank bbls. oil.

Z equals Gas Compressibility Factor

Attachment "B"
Order No. R-4808

(RHODES-YATES (TEXACO RHODES-YATES WATERFLOOD) POOL - Cont'd.)

(2) That the applicant, Texaco Inc., seeks authority to institute a waterflood project in the Rhodes Yates Unit Area, Rhodes-Yates Pool, by the injection of water into the Yates-Seven Rivers formations through seven injection wells in Sections 21, 27, and 28, Township 26 South, Range 37 East, NMPM, Lea County, New Mexico.

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

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

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

IT IS THEREFORE ORDERED:

(1) That the applicant, Texaco Inc., is hereby authorized to institute a waterflood project in the Rhodes Yates Unit Area, Rhodes-Yates Pool, by the injection of water into the Yates-Seven Rivers formations through the following-described seven wells in Township 26 South, Range 37 East, NMPM, Lea County, New Mexico:

Lease	Well No.	Location
State "JD" Unit	2	660' FNL and 660' FWL, Sec. 27
State "JD" Unit	4	650' FNL and 2310' FWL, Sec. 27
N. M. "AD" State	1	660' FNL and 1980' FWL, Sec. 28
Morris	2	1980' FNL and 660' FWL, Sec. 27
Morris	3	990' FSL and 2970' FEL, Sec. 27
State "A" 28	1	1980' FNL and 660' FEL, Sec. 28
H. G. Moberly "C" (NCT-2)	3	660' FSL and 660' FEL, Sec. 21

CASE NO. 4953
Order No. R-4549

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on April 25, 1973, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 15th day of June, 1973, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Atlantic Richfield Company, seeks authority to institute a pressure maintenance project in the Empire-Abo Pool in its Empire-Abo Unit Area, Eddy County, New Mexico, by initially limiting reservoir voidage, and within one year by reinjection of approximately 70 per cent of the produced gas, as plant residue gas, into the Abo formation through eight wells in Section 36, Township 17 South, Range 27 East, Sections 3, 4, and 9, Township 18 South, Range 27 East, and Sections 26, 31, 32, and 33, Township 17 South, Range 28 East.

(3) That the applicant further seeks the designation of the project area and the promulgation of special rules and regulations governing said project, including provision for the assignment of special allowables to wells in the project area based on reservoir voidage factors, net gas-oil ratios, the shutting in or curtailment of less efficient wells, and allowable credit for gas injection wells.

(4) (As Amended by Order No. R-4549-A, January 1, 1974) That initially the project area should comprise only the following described area:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 34: S/2 SE/4
Section 36: S/2

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
 Section 25: S/2 and S/2 N/2
 Section 26: S/2, S/2 NE/4, and SE/4 NW/4
 Section 27: S/2
 Section 31: S/2 and S/2 N/2
 Section 32: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
 Section 33: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
 Section 34: All
 Section 35: N/2 and N/2 S/2
 Section 36: N/2 NW/4 and SW/4 NW/4

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
 Section 29: S/2 NW/4 and N/2 SW/4
 Section 30: SW/4, S/2 N/2, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
 Section 1: All
 Section 2: S/2, NE/4 NE/4, SW/4 NE/4, S/2 NW/4, and NW/4 NW/4
 Section 3: All
 Section 4: SE/4, S/2 NE/4, S/2 SW/4, and NE/4 SW/4
 Section 8: E/2 SE/4 and SE/4 NE/4
 Section 9: All
 Section 10: W/2 and NE/4
 Section 11: NW/4, W/2 NE/4, and NE/4 NE/4
 Section 15: N/2 NW/4 and SW/4 NW/4
 Section 16: N/2, SW/4, N/2 SE/4, and SW/4 SE/4
 Section 17: S/2 NE/4, NE/4 NE/4, SE/4 NW/4, NE/4 SW/4, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 28 EAST, NMPM
 Section 4: N/2 N/2, SW/4 NW/4
 Section 5: NE/4, N/2 NW/4, NE/4 NW/4
 Section 6: NW/4, N/2 SW/4, SE/4 SW/4, N/2 SE/4, SW/4 SE/4, S/2 NE/4, NE/4 NE/4, NW/4 NE/4 (Lot 2)

(5) That the applicant has been a major operator in the Empire-Abo Pool and that with a majority of the other operators in said pool has conducted extensive reservoir evaluations and studies in and of said pool.

(6) That said evaluations and studies show that the Empire-Abo Pool will be more efficiently produced through the curtailment of production from high gas-oil ratio wells or by reinjection of plant residue gas or both, and operation of the pool on a net reservoir voidage basis.

(7) That said evaluations and studies show that production from the project area as described in Finding (4) of this order should be limited to the average reservoir voidage for the project area for the calendar year 1972 or 30,000 barrels of oil per day, whichever is less, except that after reinjection of approximately 70 percent of the produced gas has been achieved, the production from said project area should be limited to the average reservoir voidage for the calendar year 1972 or 40,192 barrels of oil per day, whichever is less.

(8) That to provide incentive for the reinjection of produced gas prior to achievement of the full 70 percent reinjection planned, production in excess of the aforementioned 30,000 barrels per day should be permitted within the project area. Said excess production should be computed in accordance with the following formula and should be limited to 10,192 barrels per day:

additional allowable in excess of 30,000 BOPD equals 97.07 $\left(\frac{2(\text{MCF gas inj. previous month} \times 10)}{\text{MCF gas prod. previous month}} \right)$

$$\frac{2(\text{MCF gas inj. previous month} \times 10)}{\text{MCF gas prod. previous month}}$$

(9) That the aforesaid pressure maintenance project, designated the ARCO Empire-Abo Unit Pressure Maintenance Project, and comprising the above-described area, is in the interest of conservation and should result in the recovery of approximately thirty million barrels of additional oil from said reservoir.

(10) That an administrative procedure should be established whereby said project area may be contracted or expanded for good cause shown and whereby additional injection wells and producing wells at orthodox and unorthodox locations in the project area may be approved without the necessity of notice and hearing.

(11) That special rules and regulations for the operation of the ARCO Empire-Abo Unit Pressure Maintenance Project should be promulgated and, for operational convenience, such rules should provide certain flexibility in authorizing the production of the project allowable from any well or wells in the project area in any proportion, provided that no well in the project area which directly or diagonally offsets a well not committed to said unit producing from the same common source of supply should be allowed to produce more than two top unit allowables for the Empire-Abo Pool.

(12) That approval of the application for a pressure maintenance project and the proposed special rules therefore is in the interest of sound conservation practices and will not cause waste or harm correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Atlantic Richfield Company, is hereby authorized to institute a pressure maintenance project in the Empire-Abo Pool in its Empire-Abo Unit Area, Eddy County, New Mexico, to be designated the ARCO Empire-Abo Unit Pressure Maintenance Project, initially by the shutting in or curtailment of production from less efficient wells within the project and within 12 months after the effective date of this order by the reinjection of approximately 70 percent of the produced gas, as plant residue gas, into the Abo formation, through the following described wells:

Operator	Lease Name	Well No.	Section	Location
Amoco	Malco "H" Federal	2	3	H
Amoco	Windfuhr Federal	4	4	J
Exxon	Chalk Bluff Draw Unit "A"	4	9	C
All in Township 18 South, Range 27 East, NMPM.				
M. Yates III	Dooley Abo State	2	36	J
In Township 17 South, Range 27 East, NMPM.				
Hondo	State "A"	21	26	K
Amoco	State "BM"	1	31	K
Amoco	State "BV"	1	32	F
Arco	M. Yates B (ARC)	8	33	G
All in Township 17 South, Range 28 East, NMPM.				

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

(2) That the injection should be through 2-3/8-inch internally coated tubing installed in a packer set within 100 feet of the uppermost perforations, and that the casing-tubing annulus should be fitted with a pressure gauge in order to determine leakage in the casing, tubing, or packer.

(3) That Special Rules and Regulations governing the operation of the ARCO Empire-Abo Unit Pressure Maintenance Project, Eddy County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE

EMPIRE-ABO PRESSURE MAINTENANCE PROJECT

RULE 1. (As Amended by Order No. R-4549-A, January 1, 1974, and Order No. R-4549-C, July 1, 1975.) The project area of the ARCO Empire-Abo Unit Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise the area described as follows:

EDDY COUNTY, NEW MEXICO

TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM

Section 34: S/2 SE/4

Section 36: S/2

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM

Section 25: S/2 and S/2 N/2

Section 26: S/2, S/2 NE/4, and SE/4 NW/4

Section 27: S/2

Section 31: S/2 and S/2 N/2

Section 32: S/2, NE/4, S/2 NW/4, and NE/4 NW/4

Section 33: S/2, NE/4, S/2 NW/4, and NE/4 NW/4

Section 34: All

Section 35: N/2 and N/2 S/2

Section 36: N/2 NW/4 and SW/4 NW/4

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM

Section 29: S/2 NW/4 and N/2 SW/4

Section 30: SW/4, S/2 N/2, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM

Section 1: All

Section 2: S/2, NE/4 NE/4, SW/4 NE/4,
NW/4

Section 3: All

Section 4: SE/4, S/2 NE/4, S/2 SW/4, and NE/4 SW/4

Section 8: E/2 SE/4 and SE/4 NE/4

Section 9: All

Section 10: W/2 and NE/4

Section 11: NW/4, W/2 NE/4, and NE/4 NE/4

Section 15: N/2, NW/4 and SW/4 NW/4

Section 16: N/2, SW/4, N/2 SE/4, and SW/4 SE/4

Section 17: S/2 NE/4, NE/4 NE/4, SE/4 NW/4,
NE/4 SW/4, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 28 EAST, NMPM

Section 4: N/2 N/2, SW/4 NW/4

Section 5: NE/4, N/2 NW/4, NE/4 NW/4

Section 6: NW/4, N/2 SW/4, SE/4 SW/4, N/2
SE/4, SW/4 SE/4, S/2 NE/4, NE/4 NE/4,
NW/4 NE/4 (Lot 2)

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. (As Added by Order No. R-4549-F, April 20, 1984.) That the maximum daily project allowable shall be an amount of oil which will result in monthly average associated gas production of no more than 65 MMCF per day.

For the purpose of these rules, "Available Residue Gas" shall be defined as being all gas produced from the unitized formation less plant shrinkage, plant fuel, and lease fuel required for operation of the lease.

RULE 4. (As Added by Order No. R-4549-F, April 20, 1984.) That all available unit residue gas shall be reinjected. No raw gas nor plant residue gas attributable to the project shall be sold or otherwise disposed of by any other means. That in addition to the injection of available residue gas, the project operator may inject up to and including 35 million cubic feet of extraneous gas per day into the Abo formation underlying the project area; further, that withdrawals of said extraneous gas may be made, but pending reservoir blow-down, during not more than 30 days in any one 180-day period; provided however, that pending blow-down, the daily rate of withdrawal shall not exceed the average daily rate of injection of such extraneous gas during the preceding 180-day period; provided further, that the project operator shall establish and maintain an "Extraneous Gas Bank Statement" which shall be filed with the Division each month concurrently with the project operator's "Empire-Abo Pressure Maintenance Project Monthly Report", and which shall show thereon each month the volume of extraneous gas injected, the cumulative volume of such gas injected, the volume of gas delivered back to the supplier of extraneous gas, the cumulative volume of gas delivered back to the supplier, and the net cumulative extraneous gas bank.

RULE 5. (As Added by Order No. R-4549-F, April 20, 1984.) Allowables shall be assigned to unit wells in accordance with nominations submitted by the unit operator during the months of March, July, and November of each year. That such nominations shall accompany the Pressure Maintenance Project Operator's Report filed for that month.

The allowables assigned shall result in production of casinghead gas averaging not more than 65 MMCF per day for the month, provided however, that on a cumulative basis, the unit operator may carry gas overproduction of 325 MMCF.

That no producing well in the project area which directly or diagonally offsets a well not committed to the unit, and producing from the same common source of supply, shall receive an allowable or produce in excess of two times the top unit allowable for the pool.

RULE 6. (As Added by Order No. R-4549-F, April 20, 1984.) Each month the project operator shall submit to the Division a Pressure Maintenance Project Operator's Report on a form prescribed by the Division. The report shall show all project wells, production of oil, gas, and water; volumes of water, residue gas, and extraneous gas injected; total production of oil, gas and water, and such other data as the Division may require.

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

RULE 7. A. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director of the Division is hereby authorized to approve such additional producing wells and gas injection and water injection wells at orthodox and unorthodox locations within the boundaries of the ARCO Empire Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided said wells are drilled no closer than 660 feet to any outer boundary of said unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary and provided that no well shall be approved for gas or water injection when such well is located closer than 1650 feet to a tract which is not committed to the unit and on which is located a well producing from the same common source of supply. To obtain such approval, the project operator shall file proper application with the Division Director, which application, if it seeks authorization to convert additional wells to injection or to drill additional production or injection wells shall include the following:

(1) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(2) A schematic drawing of the proposed well which fully describes the casing, tubing, perforated interval, and depth.

(3) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

RULE 7. B. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director of the Division is hereby authorized to approve the drilling of "horizontal drainholes" for the purposes of production or injection within the boundaries of the ARCO Empire Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided no perforated or openhole portion of said wells shall be closer than 330 feet to the outer boundary of said unit or to any tract not committed to such unit nor, in the case of a well to be used for injection closer than 1650 feet to such boundary or tract. To obtain such approval, the project operator shall file proper application with the Division Director, which application, if it seeks authorization to convert additional wells to injection or to drill additional production or injection wells shall include the following:

(1) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(2) Schematic drawings of the proposed well which fully describes the casing, tubing, perforated or open-hole interval, kick-off point, and proposed trajectory of the drainhole section.

(3) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

RULE 7. C. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director may approve the proposed well if, within 20 days after receiving the application, no objection to the proposal is received. The Director may grant immediate approval, provided waivers of objection are received from all offset operators.

RULE 7. D. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) Within 20 days following completion of any horizontal drainhole the operator shall submit a report to the Division Director with sufficient detail to locate the kick-off point and the trajectory of the deviated portion of the well bore with respect to any quarter-quarter section(s) penetrated by such well and any 40-acre tract directly or diagonally offsetting such quarter-quarter section(s).

The Director may approve the final location of the horizontal drainhole by acceptance of such report.

The Director may rescind the authority for any horizontal drainhole if the perforated or openhole portion of such hole is located closer to the unit boundary or any uncommitted tract than permitted by these rules or if it should appear that such rescission is necessary to prevent waste or protect correlative rights.

RULE 8. (As Amended and Renumbered by Order No. R-4549-F, April 20, 1984.) Expansion or contraction of the project area may be approved by the Director of the Division administratively when good cause is shown therefor.

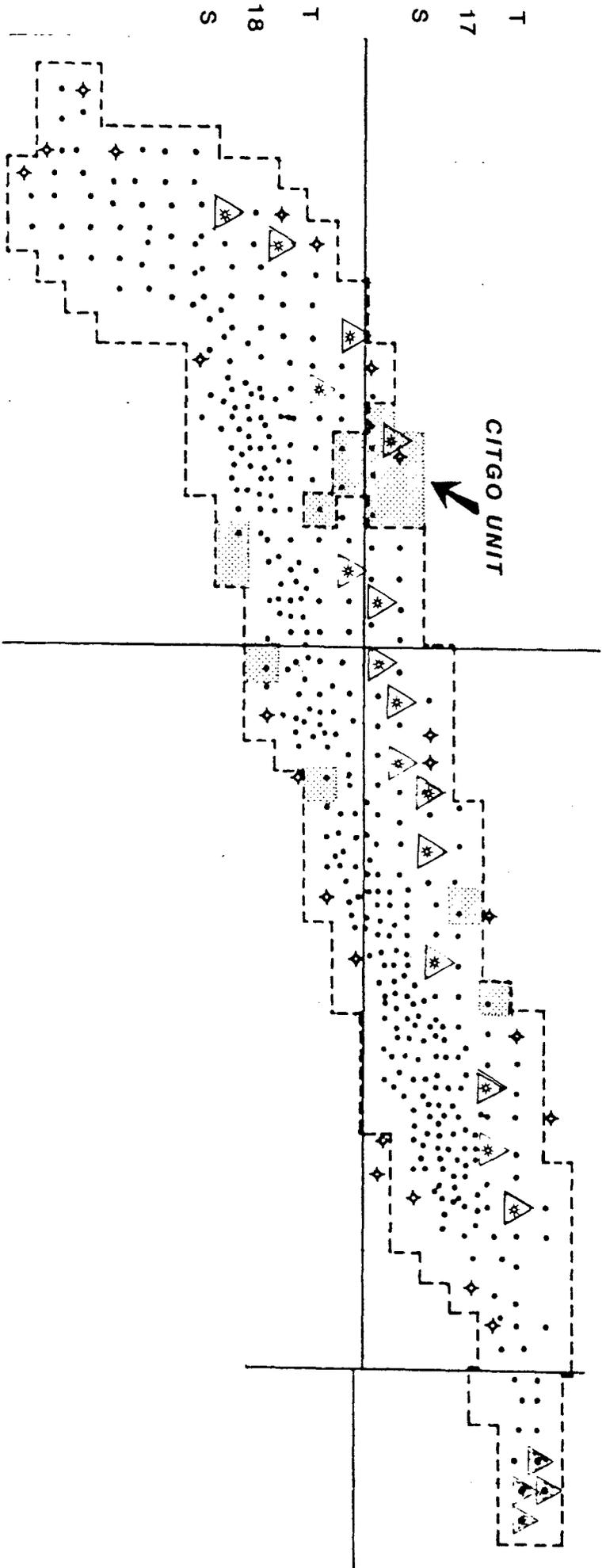
(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

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

R-27-E

R-28-E

R-29-E

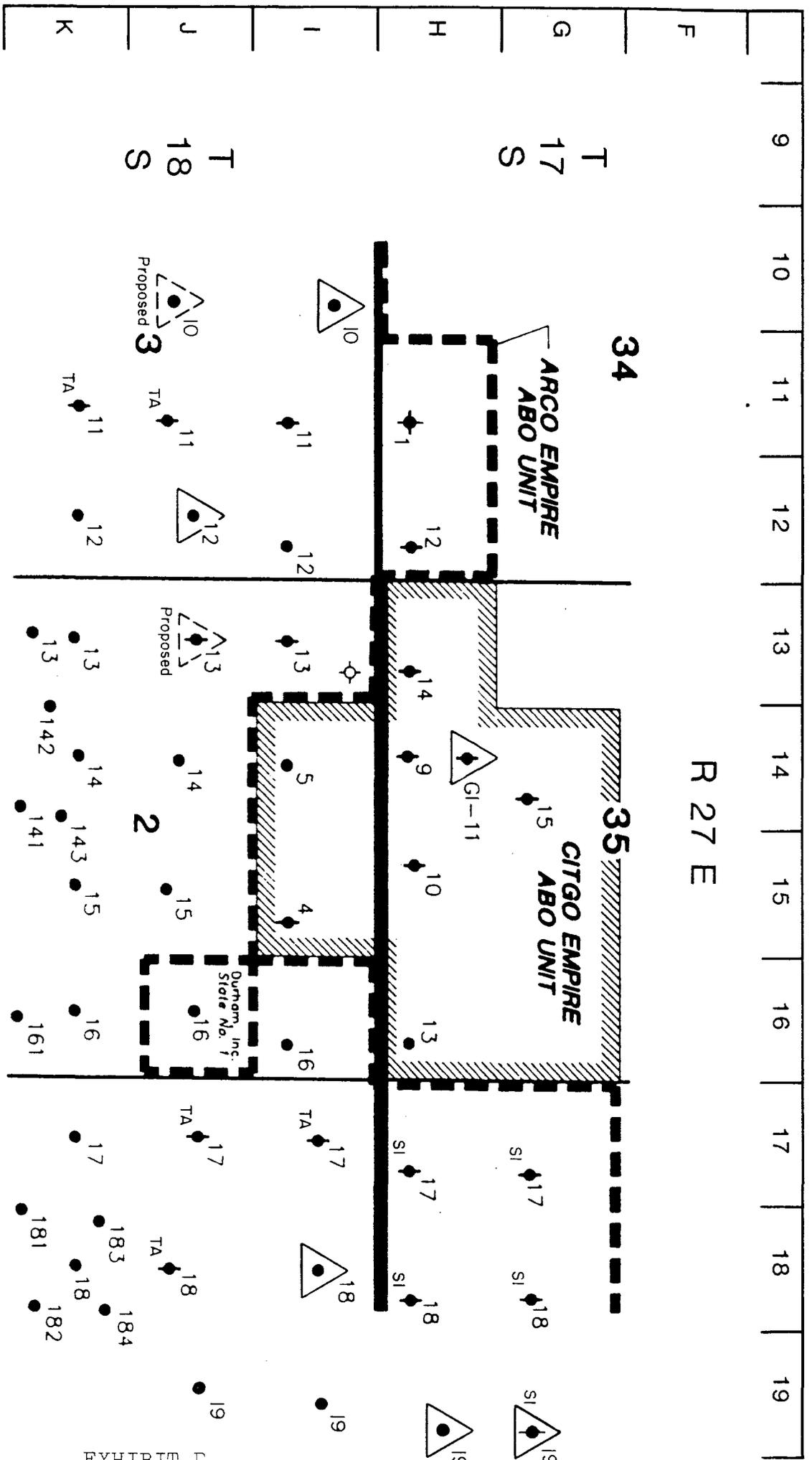


LEGEND

- ARCO PARTICIPATING UNIT
- ◆ DRY HOLE
- OIL PRODUCER
- ▲ GAS INJECTOR
- ▲ WATER INJECTOR
- ▤ NON PARTICIPATING TRACT IN ARCO EMPIRE UNIT

EMPIRE ABO REEF
Eddy County, New Mexico





R 27 E

EMPIRE ABO FIELD
 EDDY CO., NEW MEXICO
 WELL STATUS

SCALE: 1"=1500' MAY, 1990

EXHIBIT D

EMPIRE-ABO POOL

Operator List

ARCO Oil and Gas Co.
Division of Atlantic Richfield Co.
P.O. Box 1610
Midland, Texas 79701

Durham, Inc.
505 N. Big Spring St.
Midland, Texas 79702

Sidney Lanier
P.O. Box 755
Hobbs, New Mexico 88241

Marbob Energy Corp.
P.O. Box 304
Artesia, New Mexico 88210

Bridge Oil Co., L.P.
12377 Merit Drive, Suite 1600
Dallas, Texas 75251

Phillips Petroleum Co.
4001 Penbrook
Odessa, Texas 79762

EXHIBIT "E"

KELLAHIN, KELLAHIN AND AUBREY

ATTORNEYS AT LAW

EL PATIO BUILDING

117 NORTH GUADALUPE

POST OFFICE BOX 2265

SANTA FE, NEW MEXICO 87504-2265

TELEPHONE (505) 982-4285
TELEFAX (505) 982-2047

W. THOMAS KELLAHIN
KAREN AUBREY

JASON KELLAHIN
OF COUNSEL

July 1, 1991

RECEIVED

JUL 01 1991

Mr. William J. LeMay
Oil Conservation Division
State Land Office
Santa Fe, New Mexico 87501

OIL CONSERVATION DIVISION

HAND DELIVERED

Re: First Amended Application of
OXY USA, Inc. concerning
Citgo Empire-Abo Pressure
Maintenance Project (R-4808) and
ARCO Oil & Gas Company's Empire-Abo Pressure
Maintenance Project (R-4549), Eddy County,
New Mexico.

Case 10356

Dear Mr. LeMay:

In accordance with the direction of the Division as a result of the conference held on June 5, 1991, and on behalf of OXY USA Inc., please find enclosed an application for hearing concerning the Empire-Abo Pressure Maintenance Projects of both OXY and ARCO which we would request be set for hearing on July 25, 1991.

To aid in the preparation of the notice for hearing the following advertisement is suggested:

Application of OXY USA, Inc. for an order affecting its Citgo Empire-Abo Pressure Maintenance Project (R-4808) and affecting ARCO Oil & Gas Company's Empire-Abo Pressure Maintenance Project (R-4549), Eddy County, New Mexico. Applicant, in the above-styled cause, seeks to place its Citgo Empire-Abo Pressure Maintenance Project, located in portions of Section 35, T17S, R27E, and Section 2, T18S, R27E, N.M.P.M., under the provisions of Division Order A-261 (statewide oil prorationing) effective as of May 1, 1988 by rescinding Division Order R-4808 and by an exception to Rule 502 thereby establishing special assignment of allowables and adopting procedures concerning underproduction. Applicant further seeks a determination of the appropriate procedure to be applied by ARCO Oil & Gas Company in its Empire-Abo Pressure Maintenance Project,

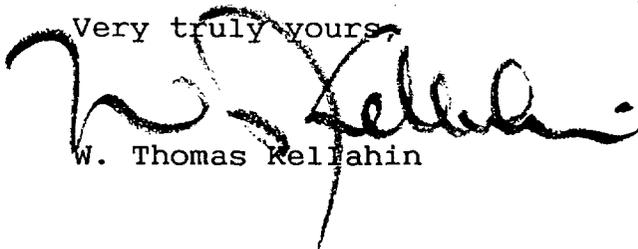
Mr. William J. LeMay
July 1, 1991
Page 2

being located in portions of Sections 34, 36, T17S, R27E; portions of Sections 25, 26, 27, 31-36, T17S, R28E; portions of Sections 29-30, T17S, R29E; portions of Sections 1-4, 8-11, 15-17, T18S, R27E; and portions of Sections 4-6, T18S, R28E, N.M.P.M., concerning the accumulation of unused allowable under Rule 3 and Rule 5 of Order R-4549, as amended, to ensure that the correlative rights of the parties involved in these two adjoining projects are not impaired, Eddy County, New Mexico.

By copy of this letter and enclosed application, sent certified mail-return receipt requested, we are notifying each of the operators of the pool of this application of their right to appear at the hearing either in support of or in opposition to this application. In addition, those potential parties are advised that Division guidelines require the filing by them of a pre-hearing statement by 4:00 P.M. on the Friday prior to the date of the hearing, with notification to the undersigned.

Should any potential party desire more information about this matter or about the procedures for hearing this application, they may call the Division, Mr. Richard Foppiano (915) 685-5913, or the undersigned.

Very truly yours,



W. Thomas Kellahin

WTK/tic
Enclosure

cc: Mr. Richard Foppiano
OXY USA, Inc.
Post Office Box 50250
Midland, Texas 79710

Certified mail return-receipt
All parties listed on Exhibit "E"
to application

1641/appt617.009

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

RECEIVED

JUL 01 1991

OIL CONSERVATION DIVISION

IN THE MATTER OF THE
APPLICATION OF OXY USA, INC.
CONCERNING ITS CITGO EMPIRE-ABO
PRESSURE MAINTENANCE PROJECT (R-4808)
AND ARCO OIL & GAS COMPANY'S EMPIRE
ABO PRESSURE MAINTENANCE PROJECT
(R-4549), EDDY COUNTY, NEW MEXICO

CASE NO. 10356

FIRST AMENDED
A P P L I C A T I O N

OXY USA, INC., ("OXY"), by and through its attorneys, Kellahin, Kellahin & Aubrey, applies to the New Mexico Oil Conservation Division for a Order affecting its Citgo Empire-Abo Pressure Maintenance Project comprising the following acreage in Eddy County, New Mexico:

Township 17 South, Range 27 East, N.M.P.M.
Section 35: SE/4, E/2SW/4, SW/4SW/4

. Township 18 South, Range 27 East, N.M.P.M.
Section 2: NW/4NE/4, NE/4NW/4

containing approximately 360-acres.

Applicant further seeks a determination of the appropriate procedure to be applied by ARCO Oil & Gas

Company in its adjoining Empire-Abo Pressure Maintenance Project, concerning the accumulation of unused allowable under Rule 3 and Rule 5 of Order R-4549, as amended to ensure that the correlative rights of the parties involved in these two adjoining projects are not impaired. The ARCO Oil & Gas Company Empire-Abo Pressure Maintenance Project comprises the acreage in Eddy County, New Mexico as described in Exhibit "B."

OXY requests the Oil Conservation Division grant the following relief:

(1) To rescind Division Order R-4808, effective May 1, 1988;

(2) To place the Citgo Empire Abo Unit under the provisions of Division Order A-261, statewide oil proration order effective May 1, 1988;

(3) That each well in the current unit that is capable of production be assigned an allowable pursuant to Order A-261 effective as of May 1, 1988;

(4) That all underproduction accumulated on each well identified in item (3) above during each monthly proration period, beginning May 1, 1988 to the present, be reinstated effective the first month following the issuance of an order in this case;

(5) That OXY be granted an exception from Rule 502 and be provided a period of time not to exceed two years to make up the underproduction referenced in item (4) above;

(6) That any well that is overproduced after the reinstatement of said allowable be shut-in until the overproduction is made up;

(7) The Division approve the combining of the proration and spacing units within the Citgo Empire Abo Unit area pursuant to Rule 507 and OXY be afforded the flexibility to produce the allowable attributable to the wells within the unitized area from any well or wells or combinations thereof; and

(8) To determine that the provisions of Order R-4549 preclude ARCO Oil & Gas Company's Empire-Abo Pressure Maintenance Project from carrying forward unused allowable and using this accumulated allowable to offset subsequent overproduction.

In support of its application states:

1. OXY operates the Citgo Empire-Abo Pressure Maintenance Project pursuant to Division Order R-4808 dated June 11, 1974 in the Empire-Abo Pool. See Exhibit "A."

2. ARCO operates its Empire-Abo Unit Pressure Maintenance Project subject to the terms and conditions of Division Order R-4549, as amended. See Exhibit "B."

3. OXY and ARCO projects share a common boundary in the Abo formation and are in communication with each other. See plats enclosed as Exhibit "C" and "D."

4. OXY operated the Citgo Empire-Abo Pressure Maintenance Project pursuant to Division Order R-4808 dated June 11, 1974 in the Empire-Abo Pool until March, 1988 at which time it ceased the re-injection of gas in to the project area.

5. OXY determined that as of April 1, 1988, it was no longer economically feasible to continue the re-injection of gas into the project area.

6. Because of the economic situation which necessitated the ceasing of re-injection, OXY was forced to obtain a market for this gas, and this prevented OXY from producing its allowable for at least twelve months even though its wells were capable of doing so. Therefore, OXY should be allowed to carry forward allowable that was canceled after May 1, 1988.

7. OXY has further determined that Division Order R-4808, dated June 11, 1974, is outdated, adversely affects the ability of OXY to compete with other operators in the pool, is no longer necessary.

8. In the interests of prevention of waste and protection of correlative rights, Order R-4808 should be terminated using a procedure to provide an efficient transition from the pressure maintenance provisions and rules to rules applied to other operators in the Empire Abo Pool who are not subject to pressure maintenance procedures.

9. OXY seeks a procedure to replace the current pressure maintenance oil well production allowables with the same allowable limitations as the other operators of non-pressure maintenance projects are using in the Empire Abo Pool.

10. OXY seeks a procedure whereby allowables would be assigned on a unit basis to afford OXY the ability to produce the low GOR wells to maximize liquid recovery and thereby avoid the waste of hydrocarbons.

11. In order to provide an equitable transition from pressure maintenance rules to pool rules and to avoid impairing OXY's correlative rights, OXY seeks a

procedure to carry forward any underproduction that might be canceled by rescinding Order R-4808 and placing the unit under the operation of Division Order A-261.

12. OXY seeks the continuation of the unit approved by Division Order R-4791 to allow, among other things, the effective and efficient management of the unit hydrocarbon under unit recovery operations so that high GOR wells can be shut-in and low GOR wells produced thereby increasing ultimate recovery underlying the unit;

13. In order to attain equity between the Applicant's Citgo Empire-Abo Pressure Maintenance Project and the ARCO Oil & Gas Company Empire-Abo Pressure Maintenance Project a determination should be made concerning the accumulation and carrying forward of unused allowable month to month by ARCO.

14. A copy of this application and request for a hearing on May 30, 1991 are being sent certified mail return-receipt requested to the parties shown on Exhibit "E" as Pool Operators.

WHEREFORE OXY hereby requests that the New Mexico Oil Conservation Division set a hearing before a Division Examiner on July 25, 1991 for OXY to present its data concerning the operations of its Citgo Empire-Abo

Pressure Maintenance Project, the evidence in support of its request and that after notice and hearing, the Division enter its order approving this application and entering such provisions as are necessary to grant the relief requested.

Respectfully submitted,

KELLAHIN, KELLAHIN & AUBREY

By: 

W. Thomas Kellahin
Post Office Box 2265
Santa Fe, New Mexico 87504
(505) 982-4285

Attorneys for OXY USA, Inc.

1641/appt617.009

(LEO (KERSEY & COMPANY CREEK-LEO WATERFLOOD) POOL - Cont'd.)

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

IT IS THEREFORE ORDERED:

(1) That the applicant, Kersey & Company, is hereby authorized to institute a waterflood project in the Leo Pool, by the injection of water into the Grayburg formation through the following-described well in Section 23, Township 18 South, Range 30 East, NMPM, Eddy County, New Mexico:

WELL NAME	WELL NO.	LOCATION
Kersey & Company Creek	1	330' FNL & 1650' FWL

(2) That injection into said well shall be through plastic or cement-lined tubing, set in a packer which shall be located as near as possible to the casing-shoe and that the casing-tubing annulus shall be filled with an inert fluid and equipped with a pressure gauge or left open at the surface in order to determine leakage in the casing, tubing or packer.

(3) That the operator shall immediately notify the supervisor of the Commission's Artesia district office of the failure of the tubing or packer in said injection well, the leakage of any water or oil from around any producing well or the leakage of water or oil from any plugged and abandoned well within the project area and shall take such timely steps as may be necessary or required to correct such failure or leakage.

(4) That the subject waterflood project is hereby designated the Kersey & Company Creek-Leo Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

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

(6) 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.

EMPIRE-ABO POOL
(Citgo Empire-Abo Pressure Maintenance Project)
Eddy County, New Mexico

Order No. R-4808, Authorizing Cities Service Oil Company to Institute a Pressure Maintenance Project in the Empire-Abo Pool, Eddy County, New Mexico, June 11, 1974.

Application of Cities Service Oil Company for a Pressure Maintenance Project, Eddy County, New Mexico.

CASE NO. 5213
Order No. R-4808

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on April 10, 1974, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 11th day of June, 1974, 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, Cities Service Oil Company, seeks authority to institute a pressure maintenance project in the Empire-Abo Pool in its Citgo Empire-Abo Unit Area, Eddy County, New Mexico, by the injection of gas into the Abo formation through a well to be drilled at an unorthodox location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East.

(3) That the applicant further seeks the designation of the project area and the promulgation of special rules and regulations governing said project, including provision for the operation of the project under a net GOR rule and the establishment of a gas injection credit "bank" against which injection credit could be drawn in order to maintain full allowables during such times as injection plant shut-downs and similar problems.

(4) That initially the project area should comprise the following described area:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 35: SE/4, S/2 SW/4, and NE/4 SW/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 2: NE/4 NW/4 and NW/4 NE/4

(5) That the applicant is the operator of the Citgo Empire-Abo Unit, which embraces the above-described lands.

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT) POOL - Cont'd.)

(6) That the Citgo Empire-Abo Unit embraces lands immediately adjacent to the Atlantic Richfield Empire-Abo Unit Area, which area is also under pressure maintenance by the injection of gas, and injection of gas in the Citgo Empire-Abo Unit Area is in the interest of more efficient operation of the pool as a whole.

(7) That the production permitted the Atlantic Richfield Empire-Abo Pressure Maintenance Project is limited to reservoir voidage equal to or less than the average reservoir voidage for the project area for the calendar year 1972.

(8) That the evidence indicates that the portion of the Empire-Abo Pool underlying the Citgo Empire-Abo Unit Area will be more efficiently produced by operating under a reservoir voidage formula similar to that used for said Atlantic Richfield project.

(9) That reinjection of produced gas at a location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East, will efficiently aid in maintaining pressures in the Abo formation in the unit area, and an injection well at that location should be approved.

(10) That the production from the project area should be limited to the average reservoir voidage for the project area for the calendar year 1972 (2213 reservoir barrels) or 852 barrels of oil per day, whichever is less.

(11) That special rules and regulations for the operation of the Citgo Empire-Abo Unit Pressure Maintenance Project should be promulgated and, for operational convenience, such rules should provide certain flexibility in authorizing the production of the project allowable from any well or wells in the project area in any proportion, provided that no well in the project area which directly or diagonally offsets a well not committed to said unit producing from the same common source of supply should be allowed to produce more than two top unit allowables for the Empire-Abo Pool.

(12) That an administrative procedure should be established whereby said project area may be contracted or expanded for good cause shown, and whereby additional injection wells and producing wells at orthodox and unorthodox locations in the project area may be approved without the necessity of notice and hearing.

(13) That approval of the application for a pressure maintenance project and the proposed special rules therefor is in the interest of sound conservation practices and will not cause waste nor harm correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Cities Service Oil Company, is hereby authorized to institute a pressure maintenance project in the Empire-Abo Pool in the Citgo Empire-Abo Unit Area, Eddy County, New Mexico, to be designated the Citgo Empire-Abo Unit Pressure Maintenance Project, by the shutting in or curtailment of production from less efficient wells and/or the reinjection of produced gas as raw gas or plant residue gas into the Abo formation.

(2) Initial injection of gas shall be through a well to be drilled at an unorthodox location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East, NMPM, which location is hereby approved.

(3) That the injection should be through 2-3/8-inch internally coated tubing installed in a packer set within 100 feet of the uppermost perforations, and that the casing-tubing annulus should be fitted with a pressure gauge in order to determine leakage in the casing, tubing, or packer.

(4) That Special Rules and Regulations governing the operation of the Citgo Empire-Abo Unit Pressure Maintenance Project, Eddy County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT

RULE 1. The project area of the Citgo Empire-Abo Unit Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise the area described as follows:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 35: SE/4, S/2 SW/4, and NE/4 SW/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 2: NE/4 NW/4 and NW/4 NE/4

RULE 2. The allowable for the project shall be computed monthly based on the estimated net reservoir voidage for the succeeding month.

RULE 3. The maximum daily project allowable shall be an amount of oil which will result in reservoir voidage no greater than the average daily reservoir voidage for the project area for the calendar year 1972 (2213 reservoir barrels) or 852 barrels of oil per day, whichever is less.

RULE 4. The allowable assigned to the project area may be produced from any well or wells within the project area in any proportion, provided that no producing well in the project area which directly or diagonally offsets a well not committed to the Unit and producing from the same common source of supply, shall produce in excess of two times top unit allowable for the pool and provided that individual well allowables have been requested in accordance with Rule 5 below.

RULE 5. Each month the project operator shall submit to the Commission a Pressure Maintenance Project Operator's Report, on a form prescribed by the Commission, outlined 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 6. 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.

RULE 7. That the volume of gas required to be injected in any month to maintain average daily reservoir voidage in the project area at 2213 reservoir barrels shall be known as "Reservoir Voidage Balance Gas."

RULE 8. That all calculations of reservoir voidage shall be in accordance with the formula set out in Attachment "A" to this order utilizing the Table of Fluid Properties set out in Attachment "B" to this order.

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT) POOL - Cont'd.)

RULE 9. A gas "bank" shall be established for the project against which injection credit may be drawn in order to maintain allowable production during such times as injection compressor shutdowns and similar problems. The gas bank shall operate under and be subject to the following provisions:

(a) That volume of gas injected in the project in any month in excess of Reservoir Voidage Balance Gas shall be credited to the gas bank and be carried cumulatively forward.

(b) The gas bank balance shall not exceed a maximum of the average monthly total Reservoir Voidage Balance Gas volumes for the previous three (3) months, not including the month being reported.

(c) The operator shall report monthly to the Commission the status of the gas bank in a form acceptable to the Commission. The report shall be designed to show the status of the gas bank over a twelve (12) month period and shall be revised monthly to a current basis.

(d) The accumulated gas bank may be applied to the injection volume during any future month in which the gas injection volume is less than the Reservoir Voidage Balance Gas volume.

(e) In the event there are insufficient credits accrued to the gas bank to bring actual injection plus applied credits up to the Reservoir Voidage Balance Gas requirement during any given production month, production for that month shall be reduced to an amount commensurate with the average daily reservoir voidage set forth in Rule 3 above. Production beyond this amount shall be considered overproduction and shall be compensated for by underproduction during the following month.

RULE 10. The Secretary-Director of the Commission is hereby authorized to approve such additional producing wells and injection wells at orthodox and unorthodox locations within the boundaries of the Citgo Empire-Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided said producing wells are drilled no closer than 660 feet to the outer boundary of said unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary and provided that no well shall be approved for gas injection when such well is located closer than 1650 feet to a tract which is not committed to the unit and on which is located a well producing from the same common source of supply. 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 production or injection wells shall include the following:

(a) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(b) A schematic drawing of the proposed well which fully describes the casing, tubing, perforated interval, and depth.

(c) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

The Secretary-Director may approve the proposed 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.

RULE 11. Expansion or contractions of the project area may be approved by the Secretary-Director of the Commission administratively when good cause is shown therefor.

(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.

CITGO EMPIRE ABO UNIT AREA

Reservoir Voidage Formula - Gas Injection Credit

Equation 1:

$$Vrvb: Q_o (B_o / (R_{pn} - R_s) B_g)$$

Where:

Vrvb : Reservoir voidage, bbls. per day
 Qo : Oil Production rate, Stock tank bbls. per day
 Bo : Oil formation volume factor (1), reservoir volumetric bbls/stock tank bbl.
 Rpn : Net producing gas-oil ratio, NCF/S.T.B.O.

$$R_{pn} = R_p (1.0 - \frac{G_i}{G_p})$$

Where:

Rp : producing gas-oil ratio, MCF/BO
 Gi : daily volume of gas injected MCF/Day
 Gp : daily volume of gas produced, MCF/Day

Rs : Solution gas-oil ratio (2), MCF/STBO
 Bg : Gas formation volume factor (3), RVB/MCF

(1), (2), (3): These values calculated from Table of Fluid Properties, Attachment "B".

Attachment "A" Order No. R-4808

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE
MAINTENANCE PROJECT) POOL - Cont'd.)

CITGO EMPIRE ABO UNIT AREA

Table of Fluid Properties

P-base equals 15.025 psia, P-bp equals 2231 psia, Tres equals

109° F (569° R)

15.025	1.000	194.696	0	1.0
100	1.125	28.229	.180	.965
200	1.163	13.749	.235	.940
300	1.193	8.970	.290	.920
400	1.218	6.692	.349	.915
500	1.244	5.236	.395	.895
600	1.263	4.276	.445	.877
700	1.285	3.644	.495	.872
800	1.304	3.108	.540	.850
900	1.325	2.746	.585	.845
1000	1.344	2.437	.625	.833
1100	1.364	2.178	.675	.819
1200	1.384	1.962	.725	.805
1300	1.404	1.790	.775	.795
1400	1.425	1.649	.825	.789
1500	1.445	1.516	.875	.777
1600	1.465	1.404	.925	.768
1700	1.485	1.304	.975	.758
1800	1.505	1.220	1.025	.751
1900	1.525	1.147	1.075	.745
2000	1.548	1.053	1.125	.720
2100	1.573	1.000	1.175	.718
2200	1.597	.953	1.225	.717
2231	1.606	.939	1.250	.716

P-r equals Reservoir average pressure at datum -2264' sub-sea, lbs/in absolute.

B-o equals Oil formation volume factor, reservoir volumetric bbls/stock tank bbl.

B-g equals Gas formation volume factor, reservoir volumetric bbls/thousand std. cu. ft.

R-s equals Solution Gas/Oil Ratio, Thousand std. cu. ft./stock tank bbls. oil.

Z equals Gas Compressibility Factor

Attachment "B"
Order No. R-4808

(RHODES-YATES (TEXACO RHODES-YATES WATERFLOOD) POOL - Cont'd.)

(2) That the applicant, Texaco Inc., seeks authority to institute a waterflood project in the Rhodes Yates Unit Area, Rhodes-Yates Pool, by the injection of water into the Yates-Seven Rivers formations through seven injection wells in Sections 21, 27, and 28, Township 26 South, Range 37 East, NMPM, Lea County, New Mexico.

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

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

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

IT IS THEREFORE ORDERED:

(1) That the applicant, Texaco Inc., is hereby authorized to institute a waterflood project in the Rhodes Yates Unit Area, Rhodes-Yates Pool, by the injection of water into the Yates-Seven Rivers formations through the following-described seven wells in Township 26 South, Range 37 East, NMPM, Lea County, New Mexico:

Lease	Well No.	Location
State "JD" Unit	2	660' FNL and 660' FWL, Sec. 27
State "JD" Unit	4	650' FNL and 2310' FWL, Sec. 27
N. M. "AD" State	1	660' FNL and 1980' FWL, Sec. 28
Morris	2	1980' FNL and 660' FWL, Sec. 27
Morris	3	990' FSL and 2970' FEL, Sec. 27
State "A" 28	1	1980' FNL and 660' FEL, Sec. 28
H. G. Moberly "C" (NCT-2)	3	660' FSL and 660' FEL, Sec. 21

(2) That injection into each of said wells shall be through internally plastic-coated tubing set in a packer which shall be located as near as is practicable to the uppermost perforation, or in the case of open-hole completions, as near as is practicable to the casing-shoe; that the casing-tubing annulus of each injection well shall be loaded with an inert fluid and equipped with a pressure gauge at the surface.

(3) That the subject waterflood project is hereby designated the Texaco Rhodes-Yates Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

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

(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.

**EMPIRE-ABO POOL
(Pressure Maintenance)
Eddy County, New Mexico**

Order No. R-4549, Authorizing Atlantic Richfield Company to Institute a Pressure Maintenance Project in the Empire-Abo Pool, Eddy County, New Mexico, June 15, 1973, as Amended by Order No. R-4549-A, January 1, 1974, Order No. R-4549-B, April 30, 1974, Order No. R-4549-C, July 1, 1975, Order No. R-4549-D, November 17, 1975, Order No. R-4549-E, January 28, 1980, and Order No. R-4549-F, April 20, 1984.

Order No. R-4549-A, January 1, 1974, extends the project area to include 200.13 acres and increases project allowable to 33,000 barrels per day.

Order No. R-4549-F, April 20, 1984, rescinds Rules 3, 4, 4(A), 5, 6, 7, 8, 9, 10, 11, 12, and 13, adopted by Order No. R-4549, and amended by Orders Nos. R-4549-B through R-4549-E, providing for well allowables based upon reservoir voidage; adopts new Rules 3, 4, 5, and 6; and, redesignates Rules 14A through 14D as Rules 7A through 7D and Rule 15 as Rule 8.

Application of Atlantic Richfield Company for a Pressure Maintenance Project, Eddy County, New Mexico.

CASE NO. 4953
Order No. R-4549

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on April 25, 1973, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 15th day of June, 1973, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Atlantic Richfield Company, seeks authority to institute a pressure maintenance project in the Empire-Abo Pool in its Empire-Abo Unit Area, Eddy County, New Mexico, by initially limiting reservoir voidage, and within one year by reinjection of approximately 70 per cent of the produced gas, as plant residue gas, into the Abo formation through eight wells in Section 36; Township 17 South, Range 27 East, Sections 3, 4, and 9, Township 18 South, Range 27 East, and Sections 26, 31, 32, and 33, Township 17 South, Range 28 East.

(3) That the applicant further seeks the designation of the project area and the promulgation of special rules and regulations governing said project, including provision for the assignment of special allowables to wells in the project area based on reservoir voidage factors, net gas-oil ratios, the shutting in or curtailment of less efficient wells, and allowable credit for gas injection wells.

(4) (As Amended by Order No. R-4549-A, January 1, 1974) That initially the project area should comprise only the following described area:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 34: S/2 SE/4
Section 36: S/2

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
 Section 25: S/2 and S/2 N/2
 Section 26: S/2, S/2 NE/4, and SE/4 NW/4
 Section 27: S/2
 Section 31: S/2 and S/2 N/2
 Section 32: S/2, NE/4, S/2 NW/4, and NE/4NW/4
 Section 33: S/2, NE/4, S/2 NW/4, and NE/4NW/4
 Section 34: All
 Section 35: N/2 and N/2 S/2
 Section 36: N/2 NW/4 and SW/4 NW/4

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
 Section 29: S/2 NW/4 and N/2 SW/4
 Section 30: SW/4, S, S/2 N/2, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
 Section 1: All
 Section 2: S/2, NE/4 NE/4, SW/4 NE/4, S/2 NW/4, and NW/4 NW/4
 Section 3: All
 Section 4: SE/4, S/2 NE/4, S/2 SW/4, and NE/4 SW/4
 Section 8: E/2 SE/4 and SE/4 NE/4
 Section 9: All
 Section 10: W/2 and NE/4
 Section 11: NW/4, W/2 NE/4, and NE/4 NE/4
 Section 15: N/2 NW/4 and SW/4 NW/4
 Section 16: N/2, SW/4, N/2 SE/4, and SW/4 SE/4
 Section 17: S/2 NE/4, NE/4 NE/4, SE/4 NW/4, NE/4 SW/4, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 28 EAST, NMPM
 Section 4: N/2 N/2, SW/4 NW/4
 Section 5: NE/4, N/2 NW/4, NE/4 NW/4
 Section 6: NW/4, N/2 SW/4, SE/4 SW/4, N/2 SE/4, SW/4 SE/4, S/2 NE/4, NE/4 NE/4, NW/4 NE/4 (Lot 2)

(5) That the applicant has been a major operator in the Empire-Abo Pool and that with a majority of the other operators in said pool has conducted extensive reservoir evaluations and studies in and of said pool.

(6) That said evaluations and studies show that the Empire-Abo Pool will be more efficiently produced through the curtailment of production from high gas-oil ratio wells or by reinjection of plant residue gas or both, and operation of the pool on a net reservoir voidage basis.

(7) That said evaluations and studies show that production from the project area as described in Finding (4) of this order should be limited to the average reservoir voidage for the project area for the calendar year 1972 or 30,000 barrels of oil per day, whichever is less, except that after reinjection of approximately 70 percent of the produced gas has been achieved, the production from said project area should be limited to the average reservoir voidage for the calendar year 1972 or 40,192 barrels of oil per day, whichever is less.

(8) That to provide incentive for the reinjection of produced gas prior to achievement of the full 70 percent reinjection planned, production in excess of the aforementioned 30,000 barrels per day should be permitted within the project area. Said excess production should be computed in accordance with the following formula and should be limited to 10,192 barrels per day:

additional allowable in $(\frac{2(\text{MCF gas inj. previous month} \times 10)}{\text{excess of 30,000}})$ 2
 BOPD equals 97.07 $(\frac{\text{MCF gas prod. previous month}}{\text{MCF gas prod. previous month}})$

$$\frac{2(\text{MCF gas inj. previous month} \times 10)}{\text{MCF gas prod. previous month}}$$

(9) That the aforesaid pressure maintenance project, designated the ARCO Empire-Abo Unit Pressure Maintenance Project, and comprising the above-described area, is in the interest of conservation and should result in the recovery of approximately thirty million barrels of additional oil from said reservoir.

(10) That an administrative procedure should be established whereby said project area may be contracted or expanded for good cause shown and whereby additional injection wells and producing wells at orthodox and unorthodox locations in the project area may be approved without the necessity of notice and hearing.

(11) That special rules and regulations for the operation of the ARCO Empire-Abo Unit Pressure Maintenance Project should be promulgated and, for operational convenience, such rules should provide certain flexibility in authorizing the production of the project allowable from any well or wells in the project area in any proportion, provided that no well in the project area which directly or diagonally offsets a well not committed to said unit producing from the same common source of supply should be allowed to produce more than two top unit allowables for the Empire-Abo Pool.

(12) That approval of the application for a pressure maintenance project and the proposed special rules therefore is in the interest of sound conservation practices and will not cause waste or harm correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Atlantic Richfield Company, is hereby authorized to institute a pressure maintenance project in the Empire-Abo Pool in its Empire-Abo Unit Area, Eddy County, New Mexico, to be designated the ARCO Empire-Abo Unit Pressure Maintenance Project, initially by the shutting in or curtailment of production from less efficient wells within the project and within 12 months after the effective date of this order by the reinjection of approximately 70 percent of the produced gas, as plant residue gas, into the Abo formation, through the following described wells:

Operator	Lease Name	Well No.	Section	Location
Amoco	Malco "H" Federal	2	3	H
Amoco	Windfuhr Federal	4	4	J
Exxon	Chalk Bluff Draw Unit "A"	4	9	C
All in Township 18 South, Range 27 East, NMPM.				
M. Yates III	Dooley Abo State	2	36	J
In Township 17 South, Range 27 East, NMPM.				
Hondo	State "A"	21	26	K
Amoco	State "BM"	1	31	K
Amoco	State "BV"	1	32	F
Arco	M. Yates B (ARC)	8	33	G

All in Township 17 South, Range 28 East, NMPM.

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

(2) That the injection should be through 2-3/8-inch internally coated tubing installed in a packer set within 100 feet of the uppermost perforations, and that the casing-tubing annulus should be fitted with a pressure gauge in order to determine leakage in the casing, tubing, or packer.

(3) That Special Rules and Regulations governing the operation of the ARCO Empire-Abo Unit Pressure Maintenance Project, Eddy County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
EMPIRE-ABO PRESSURE MAINTENANCE PROJECT

RULE 1. (As Amended by Order No. R-4549-A, January 1, 1974, and Order No. R-4549-C, July 1, 1975.) The project area of the ARCO Empire-Abo Unit Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise the area described as follows:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 34: S/2 SE/4
Section 36: S/2

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
Section 25: S/2 and S/2 N/2
Section 26: S/2, S/2 NE/4, and SE/4 NW/4
Section 27: S/2
Section 31: S/2 and S/2 N/2
Section 32: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
Section 33: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
Section 34: All
Section 35: N/2 and N/2 S/2
Section 36: N/2 NW/4 and SW/4 NW/4

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
Section 29: S/2 NW/4 and N/2 SW/4
Section 30: SW/4, S/2 N/2, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 1: All
Section 2: S/2, NE/4 NE/4, SW/4 NE/4,
NW/4
Section 3: All
Section 4: SE/4, S/2 NE/4, S/2 SW/4, and NE/4 SW/4
Section 8: E/2 SE/4 and SE/4 NE/4
Section 9: All
Section 10: W/2 and NE/4
Section 11: NW/4, W/2 NE/4, and NE/4 NE/4
Section 15: N/2, NW/4 and SW/4 NW/4
Section 16: N/2, SW/4, N/2 SE/4, and SW/4 SE/4
Section 17: S/2 NE/4, NE/4 NE/4, SE/4 NW/4,
NE/4 SW/4, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 28 EAST, NMPM
Section 4: N/2 N/2, SW/4 NW/4
Section 5: NE/4, N/2 NW/4, NE/4 NW/4
Section 6: NW/4, N/2 SW/4, SE/4 SW/4, N/2
SE/4, SW/4 SE/4, S/2 NE/4, NE/4 NE/4,
NW/4 NE/4 (Lot 2)

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. (As Added by Order No. R-4549-F, April 20, 1984.) That the maximum daily project allowable shall be an amount of oil which will result in monthly average associated gas production of no more than 65 MMCF per day.

For the purpose of these rules, "Available Residue Gas" shall be defined as being all gas produced from the unitized formation less plant shrinkage, plant fuel, and lease fuel required for operation of the lease.

RULE 4. (As Added by Order No. R-4549-F, April 20, 1984.) That all available unit residue gas shall be reinjected. No raw gas nor plant residue gas attributable to the project shall be sold or otherwise disposed of by any other means. That in addition to the injection of available residue gas, the project operator may inject up to and including 35 million cubic feet of extraneous gas per day into the Abo formation underlying the project area; further, that withdrawals of said extraneous gas may be made, but pending reservoir blow-down, during not more than 30 days in any one 180-day period; provided however, that pending blow-down, the daily rate of withdrawal shall not exceed the average daily rate of injection of such extraneous gas during the preceding 180-day period; provided further, that the project operator shall establish and maintain an "Extraneous Gas Bank Statement" which shall be filed with the Division each month concurrently with the project operator's "Empire-Abo Pressure Maintenance Project Monthly Report", and which shall show thereon each month the volume of extraneous gas injected, the cumulative volume of such gas injected, the volume of gas delivered back to the supplier of extraneous gas, the cumulative volume of gas delivered back to the supplier, and the net cumulative extraneous gas bank.

RULE 5. (As Added by Order No. R-4549-F, April 20, 1984.) Allowables shall be assigned to unit wells in accordance with nominations submitted by the unit operator during the months of March, July, and November of each year. That such nominations shall accompany the Pressure Maintenance Project Operator's Report filed for that month.

The allowables assigned shall result in production of casinghead gas averaging not more than 65 MMCF per day for the month, provided however, that on a cumulative basis, the unit operator may carry gas overproduction of 325 MMCF.

That no producing well in the project area which directly or diagonally offsets a well not committed to the unit, and producing from the same common source of supply, shall receive an allowable or produce in excess of two times the top unit allowable for the pool.

RULE 6. (As Added by Order No. R-4549-F, April 20, 1984.) Each month the project operator shall submit to the Division a Pressure Maintenance Project Operator's Report on a form prescribed by the Division. The report shall show all project wells, production of oil, gas, and water; volumes of water, residue gas, and extraneous gas injected; total production of oil, gas and water, and such other data as the Division may require.

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

RULE 7. A. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director of the Division is hereby authorized to approve such additional producing wells and gas injection and water injection wells at orthodox and unorthodox locations within the boundaries of the ARCO Empire Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided said wells are drilled no closer than 660 feet to any outer boundary of said unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary and provided that no well shall be approved for gas or water injection when such well is located closer than 1650 feet to a tract which is not committed to the unit and on which is located a well producing from the same common source of supply. To obtain such approval, the project operator shall file proper application with the Division Director, which application, if it seeks authorization to convert additional wells to injection or to drill additional production or injection wells shall include the following:

(1) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(2) A schematic drawing of the proposed well which fully describes the casing, tubing, perforated interval, and depth.

(3) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

RULE 7. B. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director of the Division is hereby authorized to approve the drilling of "horizontal drainholes" for the purposes of production or injection within the boundaries of the ARCO Empire Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided no perforated or openhole portion of said wells shall be closer than 330 feet to the outer boundary of said unit or to any tract not committed to such unit nor, in the case of a well to be used for injection closer than 1650 feet to such boundary or tract. To obtain such approval, the project operator shall file proper application with the Division Director, which application, if it seeks authorization to convert additional wells to injection or to drill additional production or injection wells shall include the following:

(1) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(2) Schematic drawings of the proposed well which fully describes the casing, tubing, perforated or open-hole interval, kick-off point, and proposed trajectory of the drainhole section.

(3) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

RULE 7. C. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director may approve the proposed well if, within 20 days after receiving the application, no objection to the proposal is received. The Director may grant immediate approval, provided waivers of objection are received from all offset operators.

RULE 7. D. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) Within 20 days following completion of any horizontal drainhole the operator shall submit a report to the Division Director with sufficient detail to locate the kick-off point and the trajectory of the deviated portion of the well bore with respect to any quarter-quarter section(s) penetrated by such well and any 40-acre tract directly or diagonally offsetting such quarter-quarter section(s).

The Director may approve the final location of the horizontal drainhole by acceptance of such report.

The Director may rescind the authority for any horizontal drainhole if the perforated or openhole portion of such hole is located closer to the unit boundary or any uncommitted tract than permitted by these rules or if it should appear that such rescission is necessary to prevent waste or protect correlative rights.

RULE 8. (As Amended and Renumbered by Order No. R-4549-F, April 20, 1984.) Expansion or contraction of the project area may be approved by the Director of the Division administratively when good cause is shown therefor.

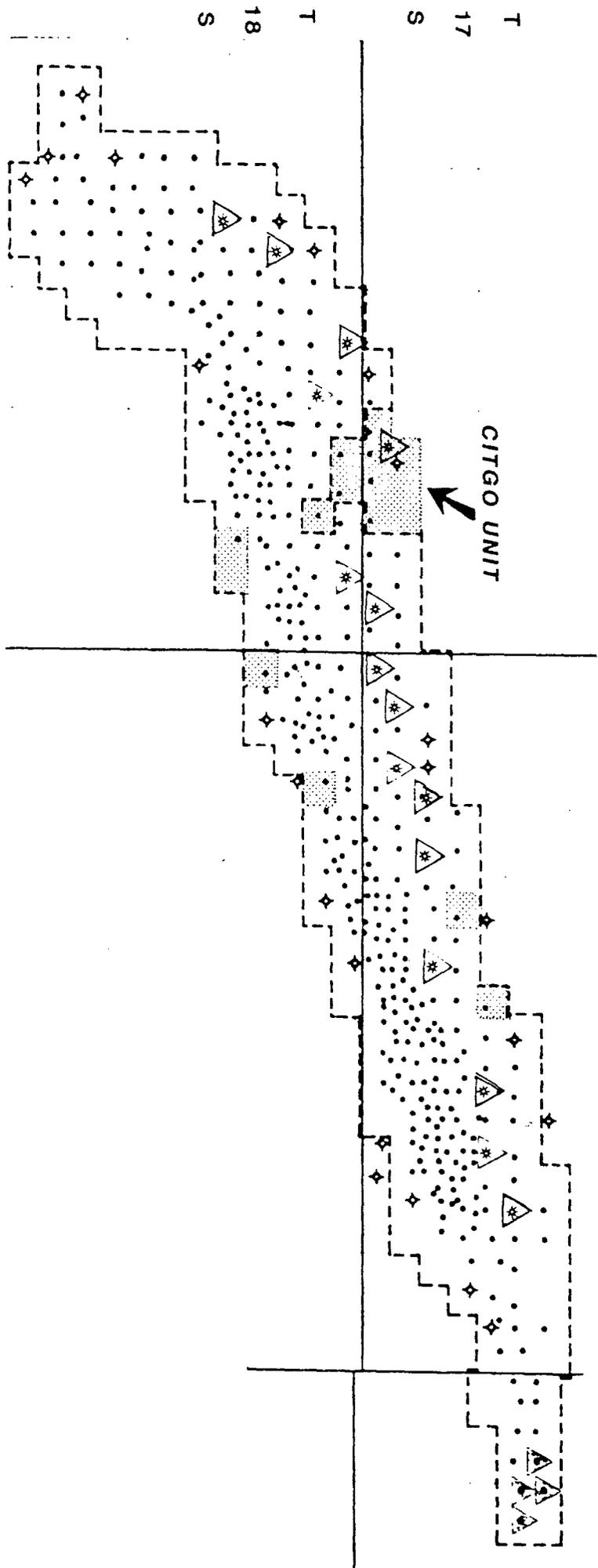
(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

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

R-27-E

R-28-E

R-29-E

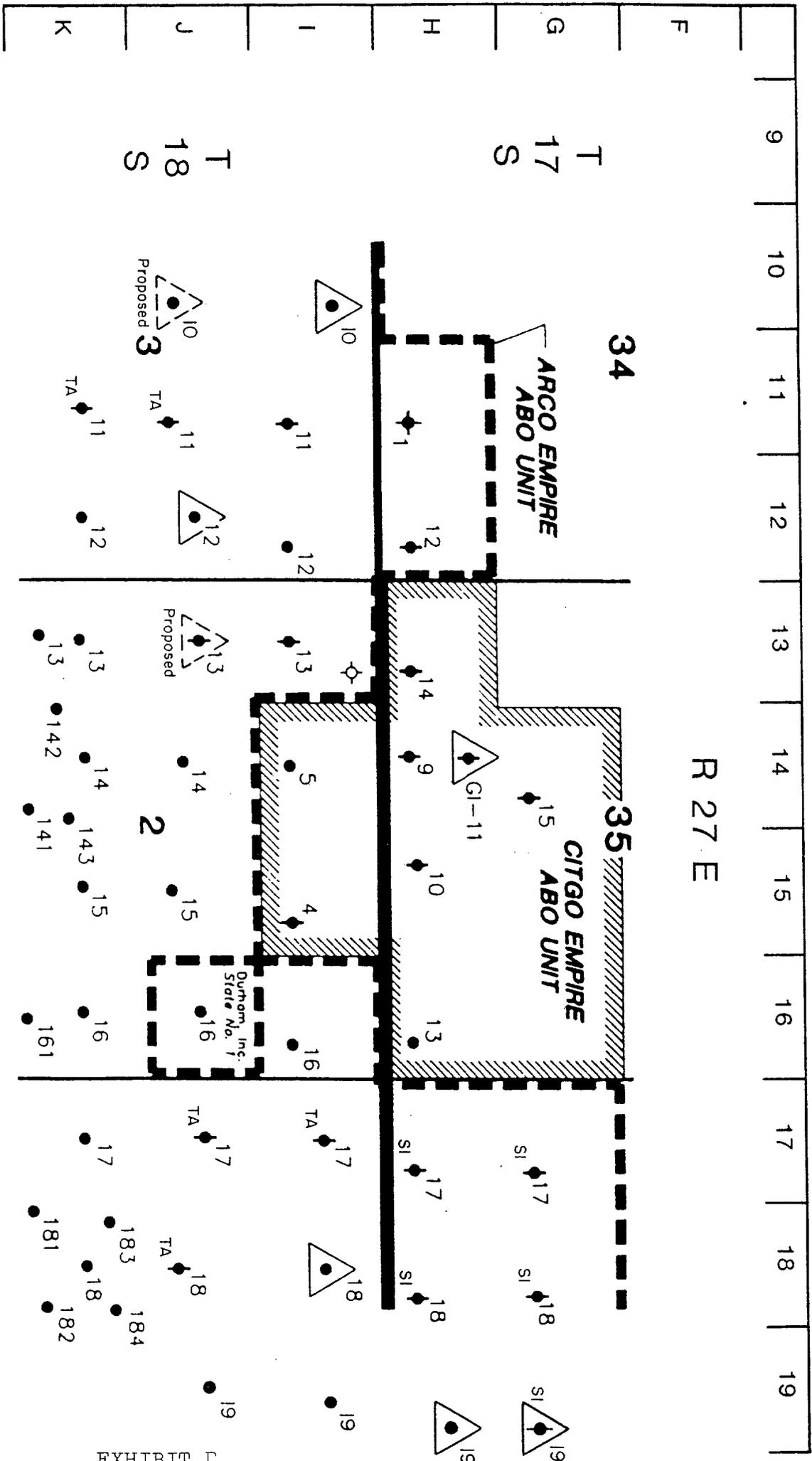


LEGEND

- ARCO PARTICIPATING UNIT
- ◆ DRY HOLE
- OIL PRODUCER
- ▲* GAS INJECTOR
- ▲○ WATER INJECTOR
- ▨ NON PARTICIPATING TRACT IN ARCO EMPIRE UNIT

EMPIRE ABO REEF
Eddy County, New Mexico





R 27 E

EMPIRE ABO FIELD
 EDDY CO., NEW MEXICO
 WELL STATUS

SCALE: 1"=1500' MAY, 1990

EXHIBIT D

EMPIRE-ABO POOL

Operator List

ARCO Oil and Gas Co.
Division of Atlantic Richfield Co.
P.O. Box 1610
Midland, Texas 79701

Durham, Inc.
505 N. Big Spring St.
Midland, Texas 79702

Sidney Lanier
P.O. Box 755
Hobbs, New Mexico 88241

Marbob Energy Corp.
P.O. Box 304
Artesia, New Mexico 88210

Bridge Oil Co., L.P.
12377 Merit Drive, Suite 1600
Dallas, Texas 75251

Phillips Petroleum Co.
4001 Penbrook
Odessa, Texas 79762

EXHIBIT "E"

KELLAHIN, KELLAHIN AND AUBREY

ATTORNEYS AT LAW

EL PATIO BUILDING

117 NORTH GUADALUPE

POST OFFICE BOX 2265

SANTA FE, NEW MEXICO 87504-2265

TELEPHONE (505) 982-4285
TELEFAX (505) 982-2047

W. THOMAS KELLAHIN
KAREN AUBREY

JASON KELLAHIN
OF COUNSEL

July 1, 1991

RECEIVED

JUL 01 1991

OIL CONSERVATION DIVISION

HAND DELIVERED

Mr. William J. LeMay
Oil Conservation Division
State Land Office
Santa Fe, New Mexico 87501

Re: First Amended Application of
OXY USA, Inc. concerning
Citgo Empire-Abo Pressure
Maintenance Project (R-4808) and
ARCO Oil & Gas Company's Empire-Abo Pressure
Maintenance Project (R-4549), Eddy County,
New Mexico.

Case 10356

Dear Mr. LeMay:

In accordance with the direction of the Division as a result of the conference held on June 5, 1991, and on behalf of OXY USA Inc., please find enclosed an application for hearing concerning the Empire-Abo Pressure Maintenance Projects of both OXY and ARCO which we would request be set for hearing on July 25, 1991.

To aid in the preparation of the notice for hearing the following advertisement is suggested:

Application of OXY USA, Inc. for an order affecting its Citgo Empire-Abo Pressure Maintenance Project (R-4808) and affecting ARCO Oil & Gas Company's Empire-Abo Pressure Maintenance Project (R-4549), Eddy County, New Mexico. Applicant, in the above-styled cause, seeks to place its Citgo Empire-Abo Pressure Maintenance Project, located in portions of Section 35, T17S, R27E, and Section 2, T18S, R27E, N.M.P.M., under the provisions of Division Order A-261 (statewide oil prorationing) effective as of May 1, 1988 by rescinding Division Order R-4808 and by an exception to Rule 502 thereby establishing special assignment of allowables and adopting procedures concerning underproduction. Applicant further seeks a determination of the appropriate procedure to be applied by ARCO Oil & Gas Company in its Empire-Abo Pressure Maintenance Project,

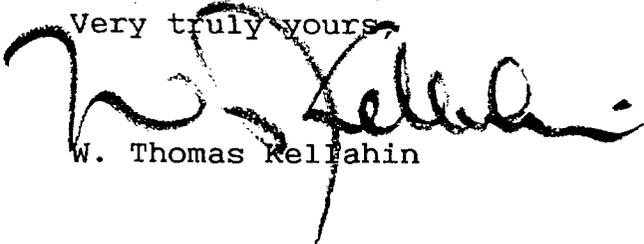
Mr. William J. LeMay
July 1, 1991
Page 2

being located in portions of Sections 34, 36, T17S, R27E; portions of Sections 25, 26, 27, 31-36, T17S, R28E; portions of Sections 29-30, T17S, R29E; portions of Sections 1-4, 8-11, 15-17, T18S, R27E; and portions of Sections 4-6, T18S, R28E, N.M.P.M., concerning the accumulation of unused allowable under Rule 3 and Rule 5 of Order R-4549, as amended, to ensure that the correlative rights of the parties involved in these two adjoining projects are not impaired, Eddy County, New Mexico.

By copy of this letter and enclosed application, sent certified mail-return receipt requested, we are notifying each of the operators of the pool of this application of their right to appear at the hearing either in support of or in opposition to this application. In addition, those potential parties are advised that Division guidelines require the filing by them of a pre-hearing statement by 4:00 P.M. on the Friday prior to the date of the hearing, with notification to the undersigned.

Should any potential party desire more information about this matter or about the procedures for hearing this application, they may call the Division, Mr. Richard Foppiano (915) 685-5913, or the undersigned.

Very truly yours,


W. Thomas Kellahin

WTK/tic
Enclosure

cc: Mr. Richard Foppiano
OXY USA, Inc.
Post Office Box 50250
Midland, Texas 79710

Certified mail return-receipt
All parties listed on Exhibit "E"
to application

1641/appt617.009

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

RECEIVED

JUL 01 1991

OIL CONSERVATION DIVISION

CASE NO. 10356

IN THE MATTER OF THE
APPLICATION OF OXY USA, INC.
CONCERNING ITS CITGO EMPIRE-ABO
PRESSURE MAINTENANCE PROJECT (R-4808)
AND ARCO OIL & GAS COMPANY'S EMPIRE
ABO PRESSURE MAINTENANCE PROJECT
(R-4549), EDDY COUNTY, NEW MEXICO

FIRST AMENDED
A P P L I C A T I O N

OXY USA, INC., ("OXY"), by and through its attorneys, Kellahin, Kellahin & Aubrey, applies to the New Mexico Oil Conservation Division for a Order affecting its Citgo Empire-Abo Pressure Maintenance Project comprising the following acreage in Eddy County, New Mexico:

Township 17 South, Range 27 East, N.M.P.M.
Section 35: SE/4, E/2SW/4, SW/4SW/4

Township 18 South, Range 27 East, N.M.P.M.
Section 2: NW/4NE/4, NE/4NW/4

containing approximately 360-acres.

Applicant further seeks a determination of the appropriate procedure to be applied by ARCO Oil & Gas

Company in its adjoining Empire-Abo Pressure Maintenance Project, concerning the accumulation of unused allowable under Rule 3 and Rule 5 of Order R-4549, as amended to ensure that the correlative rights of the parties involved in these two adjoining projects are not impaired. The ARCO Oil & Gas Company Empire-Abo Pressure Maintenance Project comprises the acreage in Eddy County, New Mexico as described in Exhibit "B."

OXY requests the Oil Conservation Division grant the following relief:

(1) To rescind Division Order R-4808, effective May 1, 1988;

(2) To place the Citgo Empire Abo Unit under the provisions of Division Order A-261, statewide oil proration order effective May 1, 1988;

(3) That each well in the current unit that is capable of production be assigned an allowable pursuant to Order A-261 effective as of May 1, 1988;

(4) That all underproduction accumulated on each well identified in item (3) above during each monthly proration period, beginning May 1, 1988 to the present, be reinstated effective the first month following the issuance of an order in this case;

(5) That OXY be granted an exception from Rule 502 and be provided a period of time not to exceed two years to make up the underproduction referenced in item (4) above;

(6) That any well that is overproduced after the reinstatement of said allowable be shut-in until the overproduction is made up;

(7) The Division approve the combining of the proration and spacing units within the Citgo Empire Abo Unit area pursuant to Rule 507 and OXY be afforded the flexibility to produce the allowable attributable to the wells within the unitized area from any well or wells or combinations thereof; and

(8) To determine that the provisions of Order R-4549 preclude ARCO Oil & Gas Company's Empire-Abo Pressure Maintenance Project from carrying forward unused allowable and using this accumulated allowable to offset subsequent overproduction.

In support of its application states:

1. OXY operates the Citgo Empire-Abo Pressure Maintenance Project pursuant to Division Order R-4808 dated June 11, 1974 in the Empire-Abo Pool. See Exhibit "A."

2. ARCO operates its Empire-Abo Unit Pressure Maintenance Project subject to the terms and conditions of Division Order R-4549, as amended. See Exhibit "B."

3. OXY and ARCO projects share a common boundary in the Abo formation and are in communication with each other. See plats enclosed as Exhibit "C" and "D."

4. OXY operated the Citgo Empire-Abo Pressure Maintenance Project pursuant to Division Order R-4808 dated June 11, 1974 in the Empire-Abo Pool until March, 1988 at which time it ceased the re-injection of gas in to the project area.

5. OXY determined that as of April 1, 1988, it was no longer economically feasible to continue the re-injection of gas into the project area.

6. Because of the economic situation which necessitated the ceasing of re-injection, OXY was forced to obtain a market for this gas, and this prevented OXY from producing its allowable for at lease twelve months even though its wells were capable of doing so. Therefore, OXY should be allowed to carry forward allowable that was canceled after May 1, 1988.

7. OXY has further determined that Division Order R-4808, dated June 11, 1974, is outdated, adversely affects the ability of OXY to compete with other operators in the pool, is no longer necessary.

8. In the interests of prevention of waste and protection of correlative rights, Order R-4808 should be terminated using a procedure to provide an efficient transition from the pressure maintenance provisions and rules to rules applied to other operators in the Empire Abo Pool who are not subject to pressure maintenance procedures.

9. OXY seeks a procedure to replace the current pressure maintenance oil well production allowables with the same allowable limitations as the other operators of non-pressure maintenance projects are using in the Empire Abo Pool.

10. OXY seeks a procedure whereby allowables would be assigned on a unit basis to afford OXY the ability to produce the low GOR wells to maximize liquid recovery and thereby avoid the waste of hydrocarbons.

11. In order to provide an equitable transition from pressure maintenance rules to pool rules and to avoid impairing OXY's correlative rights, OXY seeks a

procedure to carry forward any underproduction that might be canceled by rescinding Order R-4808 and placing the unit under the operation of Division Order A-261.

12. OXY seeks the continuation of the unit approved by Division Order R-4791 to allow, among other things, the effective and efficient management of the unit hydrocarbon under unit recovery operations so that high GOR wells can be shut-in and low GOR wells produced thereby increasing ultimate recovery underlying the unit;

13. In order to attain equity between the Applicant's Citgo Empire-Abo Pressure Maintenance Project and the ARCO Oil & Gas Company Empire-Abo Pressure Maintenance Project a determination should be made concerning the accumulation and carrying forward of unused allowable month to month by ARCO.

14. A copy of this application and request for a hearing on May 30, 1991 are being sent certified mail return-receipt requested to the parties shown on Exhibit "E" as Pool Operators.

WHEREFORE OXY hereby requests that the New Mexico Oil Conservation Division set a hearing before a Division Examiner on July 25, 1991 for OXY to present its data concerning the operations of its Citgo Empire-Abo

Pressure Maintenance Project, the evidence in support of its request and that after notice and hearing, the Division enter its order approving this application and entering such provisions as are necessary to grant the relief requested.

Respectfully submitted,

KELLAHIN, KELLAHIN & AUBREY

By: 

W. Thomas Kellahin
Post Office Box 2265
Santa Fe, New Mexico 87504
(505) 982-4285

Attorneys for OXY USA, Inc.

1641/appt617.009

(LEO (KERSEY & COMPANY CREEK-LEO WATERFLOOD) POOL - Cont'd.)

EMPIRE-ABO POOL
(Citgo Empire-Abo Pressure Maintenance Project)
Eddy County, New Mexico

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

IT IS THEREFORE ORDERED:

(1) That the applicant, Kersey & Company, is hereby authorized to institute a waterflood project in the Leo Pool, by the injection of water into the Grayburg formation through the following-described well in Section 23, Township 18 South, Range 30 East, NMPM, Eddy County, New Mexico:

WELL NAME	WELL NO.	LOCATION
Kersey & Company Creek	1	330' FNL & 1650' FWL

CASE NO. 5213
Order No. R-4808

(2) That injection into said well shall be through plastic or cement-lined tubing, set in a packer which shall be located as near as possible to the casing-shoe and that the casing-tubing annulus shall be filled with an inert fluid and equipped with a pressure gauge or left open at the surface in order to determine leakage in the casing, tubing or packer.

(3) That the operator shall immediately notify the supervisor of the Commission's Artesia district office of the failure of the tubing or packer in said injection well, the leakage of any water or oil from around any producing well or the leakage of water or oil from any plugged and abandoned well within the project area and shall take such timely steps as may be necessary or required to correct such failure or leakage.

(4) That the subject waterflood project is hereby designated the Kersey & Company Creek-Leo Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

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

(6) 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.

Order No. R-4808, Authorizing Cities Service Oil Company to Institute a Pressure Maintenance Project in the Empire-Abo Pool, Eddy County, New Mexico, June 11, 1974.

Application of Cities Service Oil Company for a Pressure Maintenance Project, Eddy County, New Mexico.

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on April 10, 1974, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 11th day of June, 1974, 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, Cities Service Oil Company, seeks authority to institute a pressure maintenance project in the Empire-Abo Pool in its Citgo Empire-Abo Unit Area, Eddy County, New Mexico, by the injection of gas into the Abo formation through a well to be drilled at an unorthodox location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East.

(3) That the applicant further seeks the designation of the project area and the promulgation of special rules and regulations governing said project, including provision for the operation of the project under a net GOR rule and the establishment of a gas injection credit "bank" against which injection credit could be drawn in order to maintain full allowables during such times as injection plant shut-downs and similar problems.

(4) That initially the project area should comprise the following described area:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 35: SE/4, S/2 SW/4, and NE/4 SW/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 2: NE/4 NW/4 and NW/4 NE/4

(5) That the applicant is the operator of the Citgo Empire-Abo Unit, which embraces the above-described lands.

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT) POOL - Cont'd.)

(6) That the Citgo Empire-Abo Unit embraces lands immediately adjacent to the Atlantic Richfield Empire-Abo Unit Area, which area is also under pressure maintenance by the injection of gas, and injection of gas in the Citgo Empire-Abo Unit Area is in the interest of more efficient operation of the pool as a whole.

(7) That the production permitted the Atlantic Richfield Empire-Abo Pressure Maintenance Project is limited to reservoir voidage equal to or less than the average reservoir voidage for the project area for the calendar year 1972.

(8) That the evidence indicates that the portion of the Empire-Abo Pool underlying the Citgo Empire-Abo Unit Area will be more efficiently produced by operating under a reservoir voidage formula similar to that used for said Atlantic Richfield project.

(9) That reinjection of produced gas at a location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East, will efficiently aid in maintaining pressures in the Abo formation in the unit area, and an injection well at that location should be approved.

(10) That the production from the project area should be limited to the average reservoir voidage for the project area for the calendar year 1972 (2213 reservoir barrels) or 852 barrels of oil per day, whichever is less.

(11) That special rules and regulations for the operation of the Citgo Empire-Abo Unit Pressure Maintenance Project should be promulgated and, for operational convenience, such rules should provide certain flexibility in authorizing the production of the project allowable from any well or wells in the project area in any proportion, provided that no well in the project area which directly or diagonally offsets a well not committed to said unit producing from the same common source of supply should be allowed to produce more than two top unit allowables for the Empire-Abo Pool.

(12) That an administrative procedure should be established whereby said project area may be contracted or expanded for good cause shown, and whereby additional injection wells and producing wells at orthodox and unorthodox locations in the project area may be approved without the necessity of notice and hearing.

(13) That approval of the application for a pressure maintenance project and the proposed special rules therefor is in the interest of sound conservation practices and will not cause waste nor harm correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Cities Service Oil Company, is hereby authorized to institute a pressure maintenance project in the Empire-Abo Pool in the Citgo Empire-Abo Unit Area, Eddy County, New Mexico, to be designated the Citgo Empire-Abo Unit Pressure Maintenance Project, by the shutting in or curtailment of production from less efficient wells and/or the reinjection of produced gas as raw gas or plant residue gas into the Abo formation.

(2) Initial injection of gas shall be through a well to be drilled at an unorthodox location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East, NMPM, which location is hereby approved.

(3) That the injection should be through 2-3/8-inch internally coated tubing installed in a packer set within 100 feet of the uppermost perforations, and that the casing-tubing annulus should be fitted with a pressure gauge in order to determine leakage in the casing, tubing, or packer.

(4) That Special Rules and Regulations governing the operation of the Citgo Empire-Abo Unit Pressure Maintenance Project, Eddy County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT

RULE 1. The project area of the Citgo Empire-Abo Unit Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise the area described as follows:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 35: SE/4, S/2 SW/4, and NE/4 SW/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 2: NE/4 NW/4 and NW/4 NE/4

RULE 2. The allowable for the project shall be computed monthly based on the estimated net reservoir voidage for the succeeding month.

RULE 3. The maximum daily project allowable shall be an amount of oil which will result in reservoir voidage no greater than the average daily reservoir voidage for the project area for the calendar year 1972 (2213 reservoir barrels) or 852 barrels of oil per day, whichever is less.

RULE 4. The allowable assigned to the project area may be produced from any well or wells within the project area in any proportion, provided that no producing well in the project area which directly or diagonally offsets a well not committed to the Unit and producing from the same common source of supply, shall produce in excess of two times top unit allowable for the pool and provided that individual well allowables have been requested in accordance with Rule 5 below.

RULE 5. Each month the project operator shall submit to the Commission a Pressure Maintenance Project Operator's Report, on a form prescribed by the Commission, outlined 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 6. 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.

RULE 7. That the volume of gas required to be injected in any month to maintain average daily reservoir voidage in the project area at 2213 reservoir barrels shall be known as "Reservoir Voidage Balance Gas."

RULE 8. That all calculations of reservoir voidage shall be in accordance with the formula set out in Attachment "A" to this order utilizing the Table of Fluid Properties set out in Attachment "B" to this order.

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT) POOL - Cont'd.)

RULE 9. A gas "bank" shall be established for the project against which injection credit may be drawn in order to maintain allowable production during such times as injection compressor shutdowns and similar problems. The gas bank shall operate under and be subject to the following provisions:

(a) That volume of gas injected in the project in any month in excess of Reservoir Voidage Balance Gas shall be credited to the gas bank and be carried cumulatively forward.

(b) The gas bank balance shall not exceed a maximum of the average monthly total Reservoir Voidage Balance Gas volumes for the previous three (3) months, not including the month being reported.

(c) The operator shall report monthly to the Commission the status of the gas bank in a form acceptable to the Commission. The report shall be designed to show the status of the gas bank over a twelve (12) month period and shall be revised monthly to a current basis.

(d) The accumulated gas bank may be applied to the injection volume during any future month in which the gas injection volume is less than the Reservoir Voidage Balance Gas volume.

(e) In the event there are insufficient credits accrued to the gas bank to bring actual injection plus applied credits up to the Reservoir Voidage Balance Gas requirement during any given production month, production for that month shall be reduced to an amount commensurate with the average daily reservoir voidage set forth in Rule 3 above. Production beyond this amount shall be considered overproduction and shall be compensated for by underproduction during the following month.

RULE 10. The Secretary-Director of the Commission is hereby authorized to approve such additional producing wells and injection wells at orthodox and unorthodox locations within the boundaries of the Citgo Empire-Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided said producing wells are drilled no closer than 660 feet to the outer boundary of said unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary and provided that no well shall be approved for gas injection when such well is located closer than 1650 feet to a tract which is not committed to the unit and on which is located a well producing from the same common source of supply. 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 production or injection wells shall include the following:

(a) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(b) A schematic drawing of the proposed well which fully describes the casing, tubing, perforated interval, and depth.

(c) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

The Secretary-Director may approve the proposed 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.

RULE 11. Expansion or contractions of the project area may be approved by the Secretary-Director of the Commission administratively when good cause is shown therefor.

(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.

CITGO EMPIRE ABO UNIT AREA

Reservoir Voidage Formula - Gas Injection Credit

Equation 1:

$$Vrvb: Qo (Bo / (Rpn - Rs) Bg)$$

Where:

- Vrvb : Reservoir voidage, bbls. per day
- Qo : Oil Production rate, Stock tank bbls. per day
- Bo : Oil formation volume factor (1), reservoir volumetric bbls/stock tank bbl.
- Rpn : Net producing gas-oil ratio, NCF/S.T.B.O.

$$Rpn: Rp (1.0 - \frac{Gi}{Gp})$$

Where:

- Rp : producing gas-oil ratio, MCF/BO
- Gi : daily volume of gas injected MCF/Day
- Gp : daily volume of gas produced, MCF/Day

- Rs : Solution gas-oil ratio (2), MCF/STBO
- Bg : Gas formation volume factor (3), RVB/MCF

(1), (2), (3): These values calculated from Table of Fluid Properties, Attachment "B".

Attachment "A" Order No. R-4808

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE
MAINTENANCE PROJECT) POOL - Cont'd.)

CITGO EMPIRE ABO UNIT AREA

Table of Fluid Properties

P-base equals 15.025 psia, P-bp equals 2231 psia, Tres equals
109° F (569° R)

15.025	1.000	194.696	0	1.0
100	1.125	28.229	.180	.965
200	1.163	13.749	.235	.940
300	1.193	8.970	.290	.920
400	1.218	6.692	.349	.915
500	1.244	5.236	.395	.895
600	1.263	4.276	.445	.877
700	1.285	3.644	.495	.872
800	1.304	3.108	.540	.850
900	1.325	2.746	.585	.845
1000	1.344	2.437	.625	.833
1100	1.364	2.178	.675	.819
1200	1.384	1.962	.725	.805
1300	1.404	1.790	.775	.795
1400	1.425	1.649	.825	.789
1500	1.445	1.516	.875	.777
1600	1.465	1.404	.925	.768
1700	1.485	1.304	.975	.758
1800	1.505	1.220	1.025	.751
1900	1.525	1.147	1.075	.745
2000	1.548	1.053	1.125	.720
2100	1.573	1.000	1.175	.718
2200	1.597	.953	1.225	.717
2231	1.606	.939	1.250	.716

P-r equals Reservoir average pressure at datum -2264' sub-
sea, lbs/in absolute.

B-o equals Oil formation volume factor, reservoir volumetric
bbls/stock tank bbl.

B-g equals Gas formation volume factor, reservoir volumetric
bbls/thousand std. cu. ft.

R-s equals Solution Gas/Oil Ratio, Thousand std. cu. ft./stock
tank bbls. oil.

Z equals Gas Compressibility Factor

Attachment "B"
Order No. R-4808

(RHODES-YATES (TEXACO RHODES-YATES WATERFLOOD) POOL - Cont'd.)

**EMPIRE-ABO POOL
(Pressure Maintenance)
Eddy County, New Mexico**

(2) That the applicant, Texaco Inc., seeks authority to institute a waterflood project in the Rhodes Yates Unit Area, Rhodes-Yates Pool, by the injection of water into the Yates-Seven Rivers formations through seven injection wells in Sections 21, 27, and 28, Township 26 South, Range 37 East, NMPM, Lea County, New Mexico.

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

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

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

IT IS THEREFORE ORDERED:

(1) That the applicant, Texaco Inc., is hereby authorized to institute a waterflood project in the Rhodes Yates Unit Area, Rhodes-Yates Pool, by the injection of water into the Yates-Seven Rivers formations through the following-described seven wells in Township 26 South, Range 37 East, NMPM, Lea County, New Mexico:

Lease	Well No.	Location
State "JD" Unit	2	660' FNL and 660' FWL, Sec. 27
State "JD" Unit	4	650' FNL and 2310' FWL, Sec. 27
N. M. "AD" State	1	660' FNL and 1980' FWL, Sec. 28
Morris	2	1980' FNL and 660' FWL, Sec. 27
Morris	3	990' FSL and 2970' FEL, Sec. 27
State "A" 28	1	1980' FNL and 660' FEL, Sec. 28
H. G. Moberly "C" (NCT-2)	3	660' FSL and 660' FEL, Sec. 21

(2) That injection into each of said wells shall be through internally plastic-coated tubing set in a packer which shall be located as near as is practicable to the uppermost perforation, or in the case of open-hole completions, as near as is practicable to the casing-shoe; that the casing-tubing annulus of each injection well shall be loaded with an inert fluid and equipped with a pressure gauge at the surface.

(3) That the subject waterflood project is hereby designated the Texaco Rhodes-Yates Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

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

(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.

Order No. R-4549, Authorizing Atlantic Richfield Company to Institute a Pressure Maintenance Project in the Empire-Abo Pool, Eddy County, New Mexico, June 15, 1973, as Amended by Order No. R-4549-A, January 1, 1974, Order No. R-4549-B, April 30, 1974, Order No. R-4549-C, July 1, 1975, Order No. R-4549-D, November 17, 1975, Order No. R-4549-E, January 28, 1980, and Order No. R-4549-F, April 20, 1984.

Order No. R-4549-A, January 1, 1974, extends the project area to include 200.13 acres and increases project allowable to 33,000 barrels per day.

Order No. R-4549-F, April 20, 1984, rescinds Rules 3, 4, 4(A), 5, 6, 7, 8, 9, 10, 11, 12, and 13, adopted by Order No. R-4549, and amended by Orders Nos. R-4549-B through R-4549-E, providing for well allowables based upon reservoir voidage; adopts new Rules 3, 4, 5, and 6; and redesignates Rules 14A through 14D as Rules 7A through 7D and Rule 15 as Rule 8.

Application of Atlantic Richfield Company for a Pressure Maintenance Project, Eddy County, New Mexico.

CASE NO. 4953
Order No. R-4549

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on April 25, 1973, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 15th day of June, 1973, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Atlantic Richfield Company, seeks authority to institute a pressure maintenance project in the Empire-Abo Pool in its Empire-Abo Unit Area, Eddy County, New Mexico, by initially limiting reservoir voidage, and within one year by reinjection of approximately 70 per cent of the produced gas, as plant residue gas, into the Abo formation through eight wells in Section 36, Township 17 South, Range 27 East, Sections 3, 4, and 9, Township 18 South, Range 27 East, and Sections 26, 31, 32, and 33, Township 17 South, Range 28 East.

(3) That the applicant further seeks the designation of the project area and the promulgation of special rules and regulations governing said project, including provision for the assignment of special allowables to wells in the project area based on reservoir voidage factors, net gas-oil ratios, the shutting in or curtailment of less efficient wells, and allowable credit for gas injection wells.

(4) (As Amended by Order No. R-4549-A, January 1, 1974) That initially the project area should comprise only the following described area:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 34: S/2 SE/4
Section 36: S/2

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
 Section 25: S/2 and S/2 N/2
 Section 26: S/2, S/2 NE/4, and SE/4 NW/4
 Section 27: S/2
 Section 31: S/2 and S/2 N/2
 Section 32: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
 Section 33: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
 Section 34: All
 Section 35: N/2 and N/2 S/2
 Section 36: N/2 NW/4 and SW/4 NW/4

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
 Section 29: S/2 NW/4 and N/2 SW/4
 Section 30: SW/4, S/2 N/2, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
 Section 1: All
 Section 2: S/2, NE/4 NE/4, SW/4 NE/4,
 S/2 NW/4, and NW/4 NW/4
 Section 3: All
 Section 4: SE/4, S/2 NE/4, S/2 SW/4,
 and NE/4 SW/4
 Section 8: E/2 SE/4 and SE/4 NE/4
 Section 9: All
 Section 10: W/2 and NE/4
 Section 11: NW/4, W/2 NE/4, and NE/4 NE/4
 Section 15: N/2 NW/4 and SW/4 NW/4
 Section 16: N/2, SW/4, N/2 SE/4, and
 SW/4 SE/4
 Section 17: S/2 NE/4, NE/4 NE/4, SE/4
 NW/4, NE/4 SW/4, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 28 EAST, NMPM
 Section 4: N/2 N/2, SW/4 NW/4
 Section 5: NE/4, N/2 NW/4, NE/4 NW/4
 Section 6: NW/4, N/2 SW/4, SE/4 SW/4, N/2 SE/4,
 SW/4 SE/4, S/2 NE/4, NE/4 NE/4,
 NW/4 NE/4 (Lot 2)

(5) That the applicant has been a major operator in the Empire-Abo Pool and that with a majority of the other operators in said pool has conducted extensive reservoir evaluations and studies in and of said pool.

(6) That said evaluations and studies show that the Empire-Abo Pool will be more efficiently produced through the curtailment of production from high gas-oil ratio wells or by reinjection of plant residue gas or both, and operation of the pool on a net reservoir voidage basis.

(7) That said evaluations and studies show that production from the project area as described in Finding (4) of this order should be limited to the average reservoir voidage for the project area for the calendar year 1972 or 30,000 barrels of oil per day, whichever is less, except that after reinjection of approximately 70 percent of the produced gas has been achieved, the production from said project area should be limited to the average reservoir voidage for the calendar year 1972 or 40,192 barrels of oil per day, whichever is less.

(8) That to provide incentive for the reinjection of produced gas prior to achievement of the full 70 percent reinjection planned, production in excess of the aforementioned 30,000 barrels per day should be permitted within the project area. Said excess production should be computed in accordance with the following formula and should be limited to 10,192 barrels per day:

additional allowable in (2(MCF gas inj. previous month x 10) 2
 excess of 30,000 ((MCF gas prod. previous month)
 BOPD equals 97.07 ((MCF gas prod. previous month)

$$\frac{(MCF \text{ gas inj. previous month } \times 10)}{(MCF \text{ gas prod. previous month })}$$

(9) That the aforesaid pressure maintenance project, designated the ARCO Empire-Abo Unit Pressure Maintenance Project, and comprising the above-described area, is in the interest of conservation and should result in the recovery of approximately thirty million barrels of additional oil from said reservoir.

(10) That an administrative procedure should be established whereby said project area may be contracted or expanded for good cause shown and whereby additional injection wells and producing wells at orthodox and unorthodox locations in the project area may be approved without the necessity of notice and hearing.

(11) That special rules and regulations for the operation of the ARCO Empire-Abo Unit Pressure Maintenance Project should be promulgated and, for operational convenience, such rules should provide certain flexibility in authorizing the production of the project allowable from any well or wells in the project area in any proportion, provided that no well in the project area which directly or diagonally offsets a well not committed to said unit producing from the same common source of supply should be allowed to produce more than two top unit allowables for the Empire-Abo Pool.

(12) That approval of the application for a pressure maintenance project and the proposed special rules therefore is in the interest of sound conservation practices and will not cause waste or harm correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Atlantic Richfield Company, is hereby authorized to institute a pressure maintenance project in the Empire-Abo Pool in its Empire-Abo Unit Area, Eddy County, New Mexico, to be designated the ARCO Empire-Abo Unit Pressure Maintenance Project, initially by the shutting in or curtailment of production from less efficient wells within the project and within 12 months after the effective date of this order by the reinjection of approximately 70 percent of the produced gas, as plant residue gas, into the Abo formation, through the following described wells:

Operator	Lease Name	Well No.	Section	Location
Amoco	Malco "H" Federal	2	3	H
Amoco	Windfuhr Federal	4	4	J
Exxon	Chalk Bluff Draw Unit "A"	4	9	C
All in Township 18 South, Range 27 East, NMPM.				
M. Yates III	Dooley Abo State	2	36	J
In Township 17 South, Range 27 East, NMPM.				
Hondo	State "A"	21	26	K
Amoco	State "BM"	1	31	K
Amoco	State "BV"	1	32	F
Arco	M. Yates B (ARC)	8	33	G

All in Township 17 South, Range 28 East, NMPM.

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

(2) That the injection should be through 2-3/8-inch internally coated tubing installed in a packer set within 100 feet of the uppermost perforations, and that the casing-tubing annulus should be fitted with a pressure gauge in order to determine leakage in the casing, tubing, or packer.

(3) That Special Rules and Regulations governing the operation of the ARCO Empire-Abo Unit Pressure Maintenance Project, Eddy County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
EMPIRE-ABO PRESSURE MAINTENANCE PROJECT

RULE 1. (As Amended by Order No. R-4549-A, January 1, 1974, and Order No. R-4549-C, July 1, 1975.) The project area of the ARCO Empire-Abo Unit Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise the area described as follows:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 34: S/2 SE/4
Section 36: S/2

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
Section 25: S/2 and S/2 N/2
Section 26: S/2, S/2 NE/4, and SE/4 NW/4
Section 27: S/2
Section 31: S/2 and S/2 N/2
Section 32: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
Section 33: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
Section 34: All
Section 35: N/2 and N/2 S/2
Section 36: N/2 NW/4 and SW/4 NW/4

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
Section 29: S/2 NW/4 and N/2 SW/4
Section 30: SW/4, S/2 N/2, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 1: All
Section 2: S/2, NE/4 NE/4, SW/4 NE/4,
NW/4
Section 3: All
Section 4: SE/4, S/2 NE/4, S/2 SW/4, and NE/4 SW/4
Section 8: E/2 SE/4 and SE/4 NE/4
Section 9: All
Section 10: W/2 and NE/4
Section 11: NW/4, W/2 NE/4, and NE/4 NE/4
Section 15: N/2, NW/4 and SW/4 NW/4
Section 16: N/2, SW/4, N/2 SE/4, and SW/4 SE/4
Section 17: S/2 NE/4, NE/4 NE/4, SE/4 NW/4,
NE/4 SW/4, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 28 EAST, NMPM
Section 4: N/2 N/2, SW/4 NW/4
Section 5: NE/4, N/2 NW/4, NE/4 NW/4
Section 6: NW/4, N/2 SW/4, SE/4 SW/4, N/2
SE/4, SW/4 SE/4, S/2 NE/4, NE/4 NE/4,
NW/4 NE/4 (Lot 2)

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. (As Added by Order No. R-4549-F, April 20, 1984.) That the maximum daily project allowable shall be an amount of oil which will result in monthly average associated gas production of no more than 65 MMCF per day.

For the purpose of these rules, "Available Residue Gas" shall be defined as being all gas produced from the unitized formation less plant shrinkage, plant fuel, and lease fuel required for operation of the lease.

RULE 4. (As Added by Order No. R-4549-F, April 20, 1984.) That all available unit residue gas shall be reinjected. No raw gas nor plant residue gas attributable to the project shall be sold or otherwise disposed of by any other means. That in addition to the injection of available residue gas, the project operator may inject up to and including 35 million cubic feet of extraneous gas per day into the Abo formation underlying the project area; further, that withdrawals of said extraneous gas may be made, but pending reservoir blow-down, during not more than 30 days in any one 180-day period; provided however, that pending blow-down, the daily rate of withdrawal shall not exceed the average daily rate of injection of such extraneous gas during the preceding 180-day period; provided further, that the project operator shall establish and maintain an "Extraneous Gas Bank Statement" which shall be filed with the Division each month concurrently with the project operator's "Empire-Abo Pressure Maintenance Project Monthly Report", and which shall show thereon each month the volume of extraneous gas injected, the cumulative volume of such gas injected, the volume of gas delivered back to the supplier of extraneous gas, the cumulative volume of gas delivered back to the supplier, and the net cumulative extraneous gas bank.

RULE 5. (As Added by Order No. R-4549-F, April 20, 1984.) Allowables shall be assigned to unit wells in accordance with nominations submitted by the unit operator during the months of March, July, and November of each year. That such nominations shall accompany the Pressure Maintenance Project Operator's Report filed for that month.

The allowables assigned shall result in production of casinghead gas averaging not more than 65 MMCF per day for the month, provided however, that on a cumulative basis, the unit operator may carry gas overproduction of 325 MMCF.

That no producing well in the project area which directly or diagonally offsets a well not committed to the unit, and producing from the same common source of supply, shall receive an allowable or produce in excess of two times the top unit allowable for the pool.

RULE 6. (As Added by Order No. R-4549-F, April 20, 1984.) Each month the project operator shall submit to the Division a Pressure Maintenance Project Operator's Report on a form prescribed by the Division. The report shall show all project wells, production of oil, gas, and water; volumes of water, residue gas, and extraneous gas injected; total production of oil, gas and water, and such other data as the Division may require.

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

RULE 7. A. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director of the Division is hereby authorized to approve such additional producing wells and gas injection and water injection wells at orthodox and unorthodox locations within the boundaries of the ARCO Empire Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided said wells are drilled no closer than 660 feet to any outer boundary of said unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary and provided that no well shall be approved for gas or water injection when such well is located closer than 1650 feet to a tract which is not committed to the unit and on which is located a well producing from the same common source of supply. To obtain such approval, the project operator shall file proper application with the Division Director, which application, if it seeks authorization to convert additional wells to injection or to drill additional production or injection wells shall include the following:

(1) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(2) A schematic drawing of the proposed well which fully describes the casing, tubing, perforated interval, and depth.

(3) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

RULE 7. B. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director of the Division is hereby authorized to approve the drilling of "horizontal drainholes" for the purposes of production or injection within the boundaries of the ARCO Empire Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided no perforated or openhole portion of said wells shall be closer than 330 feet to the outer boundary of said unit or to any tract not committed to such unit nor, in the case of a well to be used for injection closer than 1650 feet to such boundary or tract. To obtain such approval, the project operator shall file proper application with the Division Director, which application, if it seeks authorization to convert additional wells to injection or to drill additional production or injection wells shall include the following:

(1) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(2) Schematic drawings of the proposed well which fully describes the casing, tubing, perforated or open-hole interval, kick-off point, and proposed trajectory of the drainhole section.

(3) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

RULE 7. C. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director may approve the proposed well if, within 20 days after receiving the application, no objection to the proposal is received. The Director may grant immediate approval, provided waivers of objection are received from all offset operators.

RULE 7. D. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) Within 20 days following completion of any horizontal drainhole the operator shall submit a report to the Division Director with sufficient detail to locate the kick-off point and the trajectory of the deviated portion of the well bore with respect to any quarter-quarter section(s) penetrated by such well and any 40-acre tract directly or diagonally offsetting such quarter-quarter section(s).

The Director may approve the final location of the horizontal drainhole by acceptance of such report.

The Director may rescind the authority for any horizontal drainhole if the perforated or openhole portion of such hole is located closer to the unit boundary or any uncommitted tract than permitted by these rules or if it should appear that such rescission is necessary to prevent waste or protect correlative rights.

RULE 8. (As Amended and Renumbered by Order No. R-4549-F, April 20, 1984.) Expansion or contraction of the project area may be approved by the Director of the Division administratively when good cause is shown therefor.

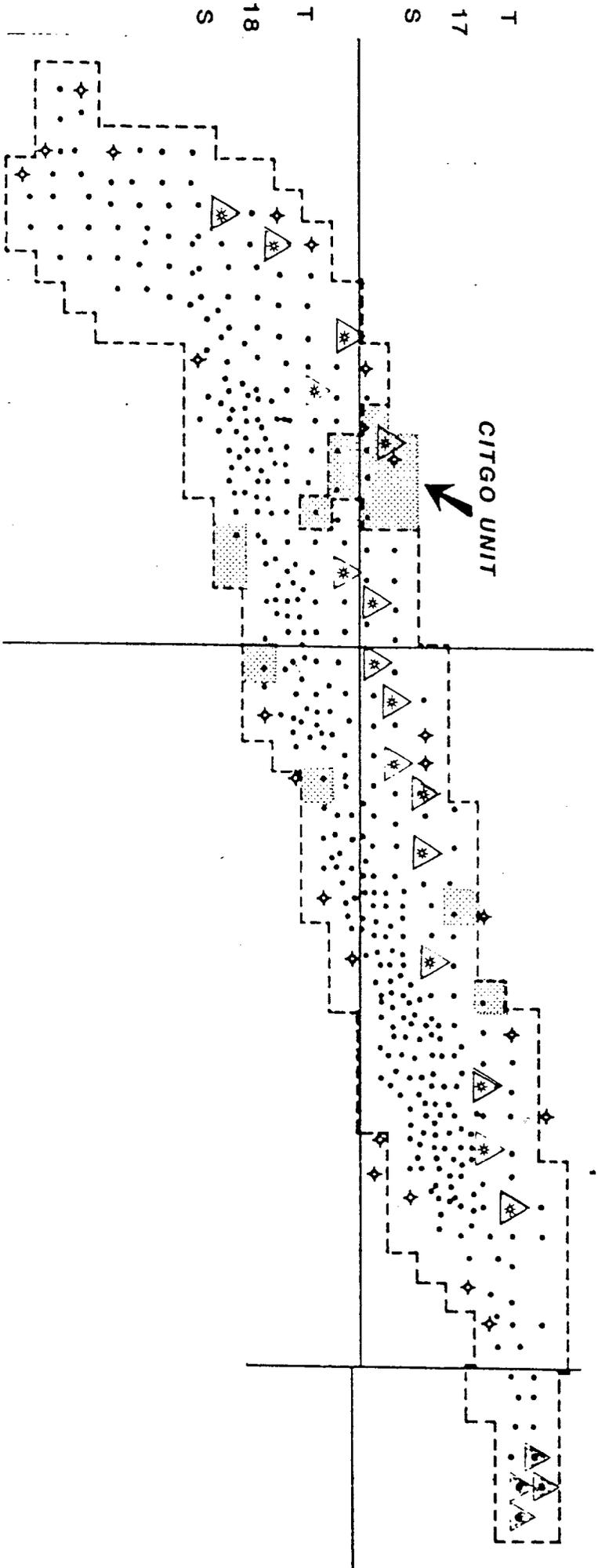
(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

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

R-27-E

R-28-E

R-29-E

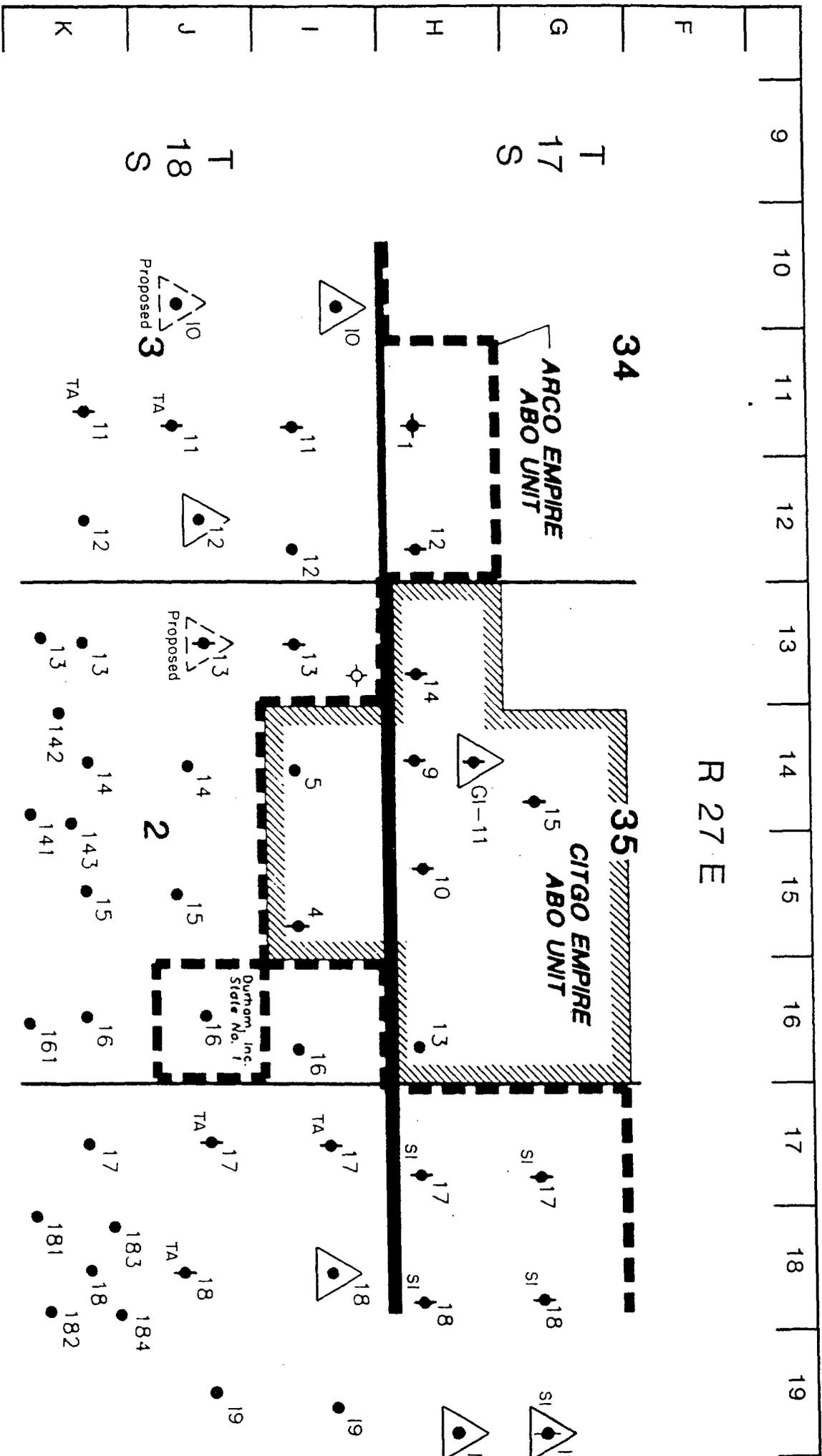


LEGEND

- ARCO PARTICIPATING UNIT
- ◆ DRY HOLE
- OIL PRODUCER
- ▲ GAS INJECTOR
- ▲ WATER INJECTOR
- ▨ NON PARTICIPATING TRACT IN ARCO EMPIRE UNIT

EMPIRE ABO REEF
Eddy County, New Mexico





• SCALE: 1":1500' MAY, 1990

EMPIRE ABO FIELD
 EDDY CO., NEW MEXICO
 WELL STATUS

EMPIRE-ABO POOL

Operator List

ARCO Oil and Gas Co.
Division of Atlantic Richfield Co.
P.O. Box 1610
Midland, Texas 79701

Durham, Inc.
505 N. Big Spring St.
Midland, Texas 79702

Sidney Lanier
P.O. Box 755
Hobbs, New Mexico 88241

Marbob Energy Corp.
P.O. Box 304
Artesia, New Mexico 88210

Bridge Oil Co., L.P.
12377 Merit Drive, Suite 1600
Dallas, Texas 75251

Phillips Petroleum Co.
4001 Penbrook
Odessa, Texas 79762

EXHIBIT "E"

EMPIRE ABO UNIT

BOTTOMHOLE PRESSURES

WELL NAME & NO.	TEST DATE	DATUM -2264
H-17	10/77	1145
H-17	10/80	1057
H-17	10/83	952
H-17	10/84	954
H-17	10/85	879
H-17	10/88	868
H-17	10/90	871
I-13	09/76	1174
I-13	10/77	1180
I-13	10/80	1103
I-13	10/83	967
I-13	10/84	952
I-13	10/85	888
I-13	10/86	882
I-13	10/88	840
I-13	10/89	857
I-13	10/90	857
I-16	09/76	1291
I-16	10/77	1173
I-16	10/80	1114
I-16	10/83	929
I-16	10/84	903
I-16	10/85	856
J-14	09/76	1293
J-14	10/77	1123
J-14	10/80	1084
J-14	10/83	951
J-14	10/84	911
J-14	10/86	834
J-14	10/88	784
J-14	10/89	752
J-14	10/90	729

EMPIRE ABO UNIT BOTTOMHOLE PRESSURES

WELL NAME & NO.	TEST DATE	DATUM -2264
H-17	10/77	1145
H-17	10/80	1057
H-17	10/83	952
H-17	10/84	954
H-17	10/85	879
H-17	10/88	868
H-17	10/90	871
I-13	09/76	1174
I-13	10/77	1180
I-13	10/80	1103
I-13	10/83	967
I-13	10/84	952
I-13	10/85	888
I-13	10/86	882
I-13	10/88	840
I-13	10/89	857
I-13	10/90	857
I-16	09/76	1291
I-16	10/77	1173
I-16	10/80	1114
I-16	10/83	929
I-16	10/84	903
I-16	10/85	856
J-14	09/76	1293
J-14	10/77	1123
J-14	10/80	1084
J-14	10/83	951
J-14	10/84	911
J-14	10/86	834
J-14	10/88	784
J-14	10/89	752
J-14	10/90	729

EXPENSE - AGRICULTURE:

AGRI OIL & GAS - (continued):

Expire Also Unit B

361	P	27-17-70		
37	M	28-17-70		Input
38	M			\$1
39	D			
40	P			
41	M	29-17-70		\$1
42	M			
43	D			
44	P			

Expire Also Unit E

26	C	12-17-70		\$1
27	B	12-17-70		\$1
28	A			\$1
30	C	11-17-70		\$1
31	B			\$1
32	A			\$1
33	B	14-17-70		\$1
34	C			\$1
35	B			\$1
36	A			\$1
37	B	15-17-70		\$1
38	C			\$1
39	A			\$1
40	B	15-17-70		\$1
41	C			\$1
42	A			\$1
43	B	15-17-70		\$1
44	C			\$1
45	A			\$1
46	B	15-17-70		\$1
47	C			\$1
48	A			\$1
49	B	15-17-70		\$1
50	C			\$1
51	A			\$1
52	B	15-17-70		\$1
53	C			\$1
54	A			\$1
55	B	15-17-70		\$1
56	C			\$1
57	A			\$1
58	B	15-17-70		\$1
59	C			\$1
60	A			\$1
61	B	15-17-70		\$1
62	C			\$1
63	A			\$1
64	B	15-17-70		\$1
65	C			\$1
66	A			\$1
67	B	15-17-70		\$1
68	C			\$1
69	A			\$1
70	B	15-17-70		\$1
71	C			\$1
72	A			\$1
73	B	15-17-70		\$1
74	C			\$1
75	A			\$1
76	B	15-17-70		\$1
77	C			\$1
78	A			\$1
79	B	15-17-70		\$1
80	C			\$1
81	A			\$1
82	B	15-17-70		\$1
83	C			\$1
84	A			\$1
85	B	15-17-70		\$1
86	C			\$1
87	A			\$1
88	B	15-17-70		\$1
89	C			\$1
90	A			\$1
91	B	15-17-70		\$1
92	C			\$1
93	A			\$1
94	B	15-17-70		\$1
95	C			\$1
96	A			\$1
97	B	15-17-70		\$1
98	C			\$1
99	A			\$1
100	B	15-17-70		\$1

EXPENSE - AGR

Top Allowable 147

Top Categorical Gas Unit 294 M2

AGRI OIL & GAS CO. DIVISION OF ATLANTIC REEFIELD CO.

M 1548

Expire Also Pressure Maintenance Project

Maximum Allowable Formula:

281 & 147 = 40,338

Expire Also Unit				
B	40	M	26-17-70	\$1
	43	E	26-17-70	\$1
	46	F		Input
	47	G	26-17-70	\$1
	48	M		Input
	49	E	29-17-70	\$1
Expire Also Unit				
C	34	M	27-17-70	\$1
	35	J		\$1
	36	T		\$1
	37	L	28-17-70	\$1
	38	K		Input
	39	J		\$1
	40	I		\$1
	41	L	29-17-70	\$1
	42	K		\$1
	43	J		\$1
	44	I		\$1
	45	L	30-17-70	\$1
	46	K		\$1
	47	J		\$1
	48	L	29-17-70	Input
	49	E		\$1
Expire Also Unit				
G	13	M	27-17-70	\$1
	14	M		\$1
	15	P		\$1

Expire Also Unit F

22	F	11-17-70		\$1
23	E	12-17-70		Input
24	F			\$1
25	E	12-17-70		\$1
26	F			Input
27	G			\$1
28	M			\$1
29	E	13-17-70		\$1
30	F			\$1
31	G	13-17-70		Input
32	M			\$1
33	M			\$1
34	E	14-17-70		\$1
35	E			\$1
36	F			\$1
37	E			\$1
38	F			\$1
39	E			\$1
40	F			\$1
41	E			\$1
42	F			\$1
43	E			\$1
44	F			\$1
45	E			\$1
46	F			\$1
47	E			\$1
48	F			\$1
49	E			\$1
50	F			\$1
51	E			\$1
52	F			\$1
53	E			\$1
54	F			\$1
55	E			\$1
56	F			\$1
57	E			\$1
58	F			\$1
59	E			\$1
60	F			\$1
61	E			\$1
62	F			\$1
63	E			\$1
64	F			\$1
65	E			\$1
66	F			\$1
67	E			\$1
68	F			\$1
69	E			\$1
70	F			\$1
71	E			\$1
72	F			\$1
73	E			\$1
74	F			\$1
75	E			\$1
76	F			\$1
77	E			\$1
78	F			\$1
79	E			\$1
80	F			\$1
81	E			\$1
82	F			\$1
83	E			\$1
84	F			\$1
85	E			\$1
86	F			\$1
87	E			\$1
88	F			\$1
89	E			\$1
90	F			\$1
91	E			\$1
92	F			\$1
93	E			\$1
94	F			\$1
95	E			\$1
96	F			\$1
97	E			\$1
98	F			\$1
99	E			\$1
100	F			\$1

Empire AEG Unit Continues:

Empire Oil & Gas Co. (Empire)

Empire Oil Unit

10 1 10 18 27

SI

Empire Oil Unit

4 1 0 18 27

SI

Empire Oil Unit

5 1 9 18 27

SI

Empire Oil Unit

6 1 7 27

SI

Empire Oil Unit

0 1 10 18 27

SI

Empire Oil Unit

4 1 0 18 27

SI

Empire Oil Unit

5 1 9 18 27

SI

Empire Oil Unit

6 1 7 27

SI

Empire Oil Unit

0 1 10 18 27

SI

Empire Oil Unit

5 0 18 18 27

SI

Empire Oil Unit

4 1 0 18 27

SI

Empire Oil Unit

7 0 18 27

SI

Empire Oil Unit

0 1 10 18 27

SI

Empire Oil Unit

9 0 15 18 27

SI

Empire Oil Unit

5 6 17 18 27

SI

Empire Oil Unit

4 1 0 18 27

SI

Empire Oil Unit

5 1 18 18 27

SI

Empire Oil Unit

6 1 7 27

SI

Empire Oil Unit

0 1 10 18 27

SI

Empire Oil Unit

0 1 10 18 27

SI

Empire Oil Unit

4 1 18 18 27

SI

Empire Oil Unit

7 0 18 18 27

SI

Empire Oil Unit

2 1 17 18 27

SI

Empire Oil Unit

3 2 18 18 27

SI

Empire Oil Unit

5 1 18 18 27

SI

Empire Oil Unit

4 1 18 27

SI

Empire Oil Unit

7 2 27

SI

Empire Oil Unit

0 1 10 18 27

SI

Empire Oil Unit

4 1 18 18 27

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Empire Oil Unit

7 0 18 18 27

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1 1 2 10 27

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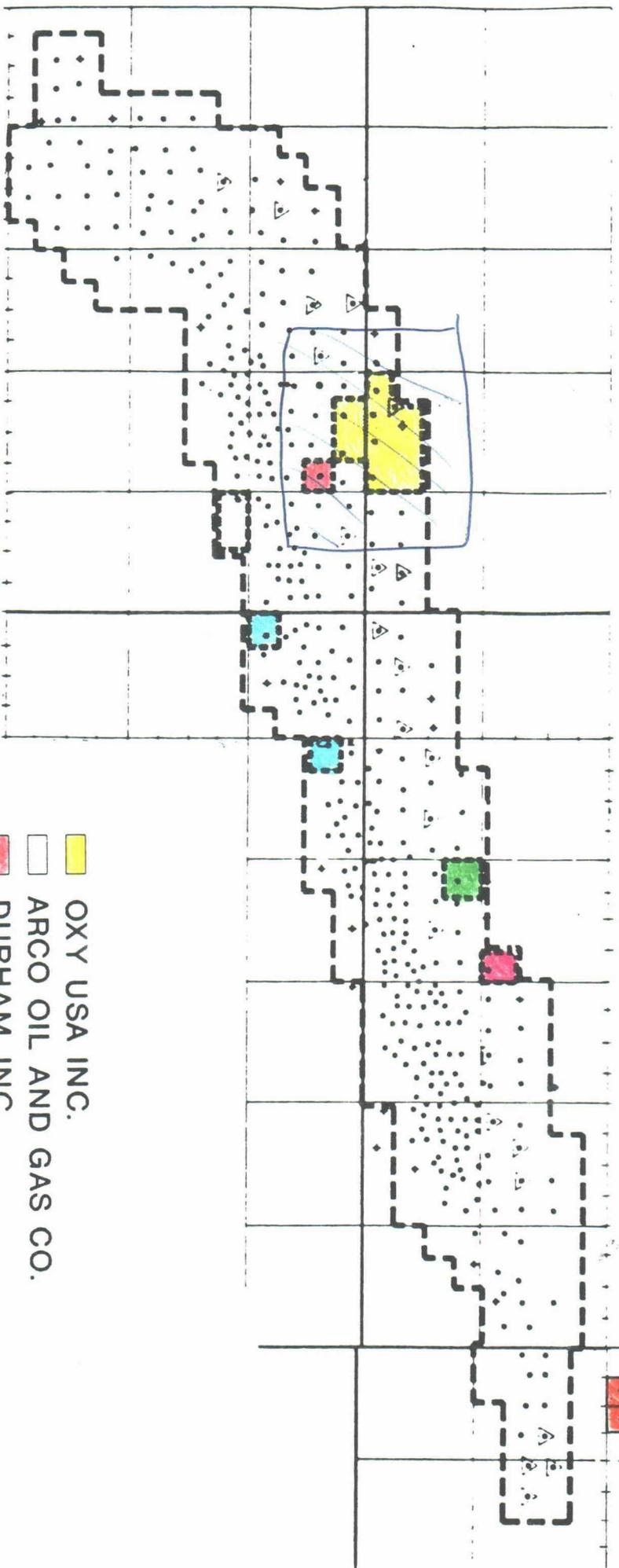
SI

EMPIRE ABO POOL

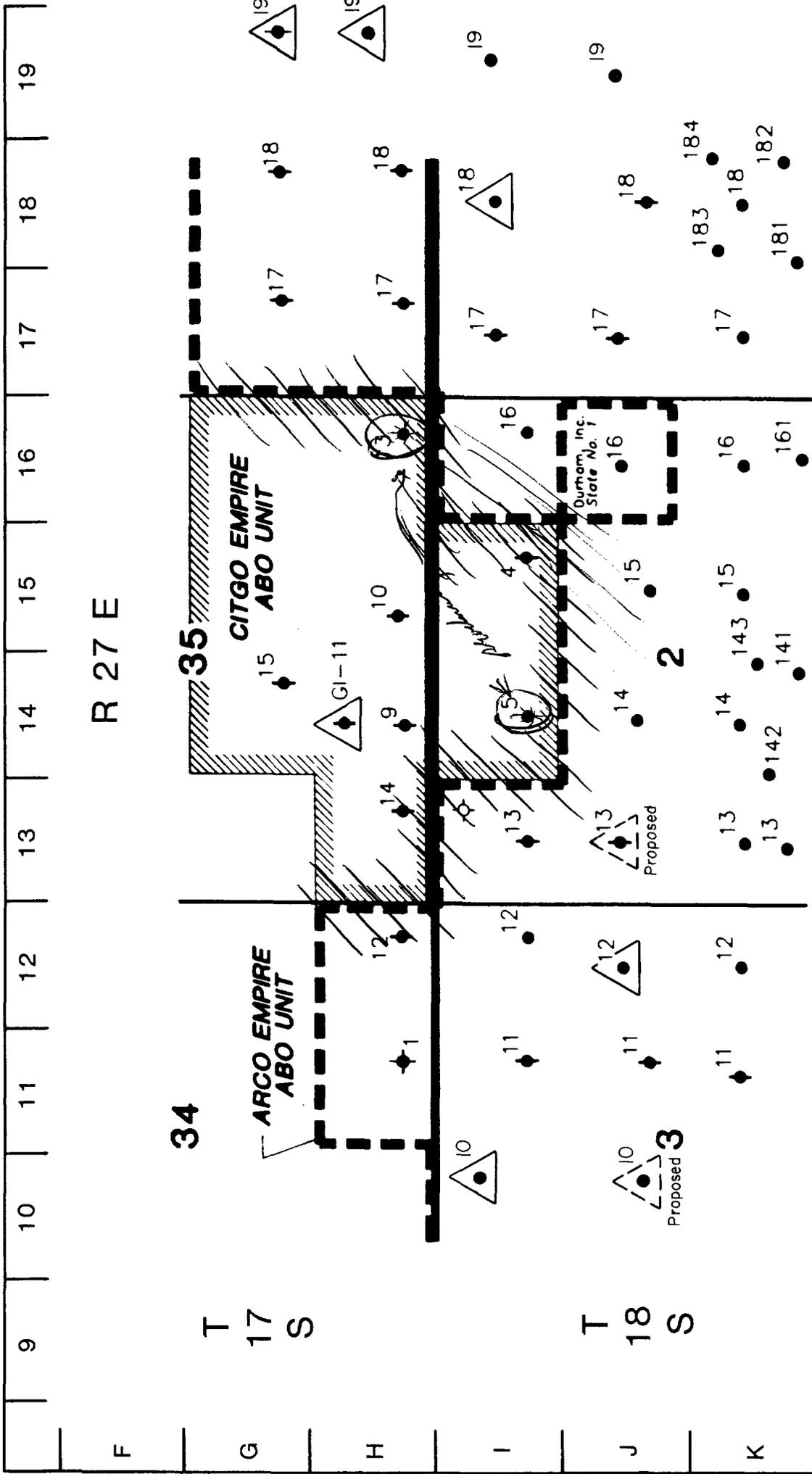
Eddy County, New Mexico

R 27 E

R 28 E



- OXY USA INC.
- ARCO OIL AND GAS CO.
- DURHAM, INC.
- SIDNEY LANIER
- MARBOB ENERGY CORP.
- BRIDGE OIL CO., L.P.
- PHILLIPS PETROLEUM CORP.



EMPIRE ABO FIELD
 EDDY CO., NEW MEXICO

WELL STATUS

SCALE: 1"=1500' JUNE, 1990

(LEO (KERSEY & COMPANY CREEK-LEO WATERFLOOD) POOL - Cont'd.)

EMPIRE-ABO POOL
(Citgo Empire-Abo Pressure Maintenance Project)
Eddy County, New Mexico

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

Order No. R-4808, Authorizing Cities Service Oil Company to Institute a Pressure Maintenance Project in the Empire-Abo Pool, Eddy County, New Mexico, June 11, 1974.

IT IS THEREFORE ORDERED:

(1) That the applicant, Kersey & Company, is hereby authorized to institute a waterflood project in the Leo Pool, by the injection of water into the Grayburg formation through the following-described well in Section 23, Township 18 South, Range 30 East, NMPM, Eddy County, New Mexico:

Application of Cities Service Oil Company for a Pressure Maintenance Project, Eddy County, New Mexico.

WELL NAME	WELL NO.	LOCATION
Kersey & Company Creek	1	330' FNL & 1650' FWL

CASE NO. 5213
Order No. R-4808

(2) That injection into said well shall be through plastic or cement-lined tubing, set in a packer which shall be located as near as possible to the casing-shoe and that the casing-tubing annulus shall be filled with an inert fluid and equipped with a pressure gauge or left open at the surface in order to determine leakage in the casing, tubing or packer.

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on April 10, 1974, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

(3) That the operator shall immediately notify the supervisor of the Commission's Artesia district office of the failure of the tubing or packer in said injection well, the leakage of any water or oil from around any producing well or the leakage of water or oil from any plugged and abandoned well within the project area and shall take such timely steps as may be necessary or required to correct such failure or leakage.

NOW, on this 11th day of June, 1974, 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:

(4) That the subject waterflood project is hereby designated the Kersey & Company Creek-Leo Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

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

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

(2) That the applicant, Cities Service Oil Company, seeks authority to institute a pressure maintenance project in the Empire-Abo Pool in its Citgo Empire-Abo Unit Area, Eddy County, New Mexico, by the injection of gas into the Abo formation through a well to be drilled at an unorthodox location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East.

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

(3) That the applicant further seeks the designation of the project area and the promulgation of special rules and regulations governing said project, including provision for the operation of the project under a net GOR rule and the establishment of a gas injection credit "bank" against which injection credit could be drawn in order to maintain full allowables during such times as injection plant shut-downs and similar problems.

DONE at Santa Fe, New Mexico, on the day and year herein-above designated.

(4) That initially the project area should comprise the following described area:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 35: SE/4, S/2 SW/4, and NE/4 SW/4
TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 2: NE/4 NW/4 and NW/4 NE/4

(5) That the applicant is the operator of the Citgo Empire-Abo Unit, which embraces the above-described lands.

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT) POOL - Cont'd.)

(6) That the Citgo Empire-Abo Unit embraces lands immediately adjacent to the Atlantic Richfield Empire-Abo Unit Area, which area is also under pressure maintenance by the injection of gas, and injection of gas in the Citgo Empire-Abo Unit Area is in the interest of more efficient operation of the pool as a whole.

(7) That the production permitted the Atlantic Richfield Empire-Abo Pressure Maintenance Project is limited to reservoir voidage equal to or less than the average reservoir voidage for the project area for the calendar year 1972.

(8) That the evidence indicates that the portion of the Empire-Abo Pool underlying the Citgo Empire-Abo Unit Area will be more efficiently produced by operating under a reservoir voidage formula similar to that used for said Atlantic Richfield project.

(9) That reinjection of produced gas at a location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East, will efficiently aid in maintaining pressures in the Abo formation in the unit area, and an injection well at that location should be approved.

(10) That the production from the project area should be limited to the average reservoir voidage for the project area for the calendar year 1972 (2213 reservoir barrels) or 852 barrels of oil per day, whichever is less.

(11) That special rules and regulations for the operation of the Citgo Empire-Abo Unit Pressure Maintenance Project should be promulgated and, for operational convenience, such rules should provide certain flexibility in authorizing the production of the project allowable from any well or wells in the project area in any proportion, provided that no well in the project area which directly or diagonally offsets a well not committed to said unit producing from the same common source of supply should be allowed to produce more than two top unit allowables for the Empire-Abo Pool.

(12) That an administrative procedure should be established whereby said project area may be contracted or expanded for good cause shown, and whereby additional injection wells and producing wells at orthodox and unorthodox locations in the project area may be approved without the necessity of notice and hearing.

(13) That approval of the application for a pressure maintenance project and the proposed special rules therefor is in the interest of sound conservation practices and will not cause waste nor harm correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Cities Service Oil Company, is hereby authorized to institute a pressure maintenance project in the Empire-Abo Pool in the Citgo Empire-Abo Unit Area, Eddy County, New Mexico, to be designated the Citgo Empire-Abo Unit Pressure Maintenance Project, by the shutting in or curtailment of production from less efficient wells and/or the reinjection of produced gas as raw gas or plant residue gas into the Abo formation.

(2) Initial injection of gas shall be through a well to be drilled at an unorthodox location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East, NMPM, which location is hereby approved.

(3) That the injection should be through 2-3/8-inch internally coated tubing installed in a packer set within 100 feet of the uppermost perforations, and that the casing-tubing annulus should be fitted with a pressure gauge in order to determine leakage in the casing, tubing, or packer.

(4) That Special Rules and Regulations governing the operation of the Citgo Empire-Abo Unit Pressure Maintenance Project, Eddy County, New Mexico, are hereby promulgated as follows:

**SPECIAL RULES AND REGULATIONS
FOR THE
CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT**

RULE 1. The project area of the Citgo Empire-Abo Unit Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise the area described as follows:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 35: SE/4, S/2 SW/4, and NE/4 SW/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 2: NE/4 NW/4 and NW/4 NE/4

RULE 2. The allowable for the project shall be computed monthly based on the estimated net reservoir voidage for the succeeding month.

RULE 3. The maximum daily project allowable shall be an amount of oil which will result in reservoir voidage no greater than the average daily reservoir voidage for the project area for the calendar year 1972 (2213 reservoir barrels) or 852 barrels of oil per day, whichever is less.

RULE 4. The allowable assigned to the project area may be produced from any well or wells within the project area in any proportion, provided that no producing well in the project area which directly or diagonally offsets a well not committed to the Unit and producing from the same common source of supply, shall produce in excess of two times top unit allowable for the pool and provided that individual well allowables have been requested in accordance with Rule 5 below.

RULE 5. Each month the project operator shall submit to the Commission a Pressure Maintenance Project Operator's Report, on a form prescribed by the Commission, outlined 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 6. 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.

RULE 7. That the volume of gas required to be injected in any month to maintain average daily reservoir voidage in the project area at 2213 reservoir barrels shall be known as "Reservoir Voidage Balance Gas."

RULE 8. That all calculations of reservoir voidage shall be in accordance with the formula set out in Attachment "A" to this order utilizing the Table of Fluid Properties set out in Attachment "B" to this order.

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT) POOL - Cont'd.)

RULE 9. A gas "bank" shall be established for the project against which injection credit may be drawn in order to maintain allowable production during such times as injection compressor shutdowns and similar problems. The gas bank shall operate under and be subject to the following provisions:

(a) That volume of gas injected in the project in any month in excess of Reservoir Voidage Balance Gas shall be credited to the gas bank and be carried cumulatively forward.

(b) The gas bank balance shall not exceed a maximum of the average monthly total Reservoir Voidage Balance Gas volumes for the previous three (3) months, not including the month being reported.

(c) The operator shall report monthly to the Commission the status of the gas bank in a form acceptable to the Commission. The report shall be designed to show the status of the gas bank over a twelve (12) month period and shall be revised monthly to a current basis.

(d) The accumulated gas bank may be applied to the injection volume during any future month in which the gas injection volume is less than the Reservoir Voidage Balance Gas volume.

(e) In the event there are insufficient credits accrued to the gas bank to bring actual injection plus applied credits up to the Reservoir Voidage Balance Gas requirement during any given production month, production for that month shall be reduced to an amount commensurate with the average daily reservoir voidage set forth in Rule 3 above. Production beyond this amount shall be considered overproduction and shall be compensated for by underproduction during the following month.

RULE 10. The Secretary-Director of the Commission is hereby authorized to approve such additional producing wells and injection wells at orthodox and unorthodox locations within the boundaries of the Citgo Empire-Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided said producing wells are drilled no closer than 660 feet to the outer boundary of said unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary and provided that no well shall be approved for gas injection when such well is located closer than 1650 feet to a tract which is not committed to the unit and on which is located a well producing from the same common source of supply. 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 production or injection wells shall include the following:

(a) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(b) A schematic drawing of the proposed well which fully describes the casing, tubing, perforated interval, and depth.

(c) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

The Secretary-Director may approve the proposed 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.

RULE 11. Expansion or contractions of the project area may be approved by the Secretary-Director of the Commission administratively when good cause is shown therefor.

(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.

CITGO EMPIRE ABO UNIT AREA**Reservoir Voidage Formula - Gas Injection Credit**

Equation 1:

$$Vrvb: Qo (Bo / (Rpn - Rs) Bg)$$

Where:

Vrvb : Reservoir voidage, bbls. per day
 Qo : Oil Production rate, Stock tank bbls. per day
 Bo : Oil formation volume factor (1), reservoir volumetric bbls/stock tank bbl.
 Rpn : Net producing gas-oil ratio, NCF/S.T.B.O.

$$Rpn: Rp (1.0 - \frac{Gi}{Gp})$$

Where:

Rp : producing gas-oil ratio, MCF/BO
 Gi : daily volume of gas injected MCF/Day
 Gp : daily volume of gas produced, MCF/Day

Rs : Solution gas-oil ratio (2), MCF/STBO
 Bg : Gas formation volume factor (3), RVB/MCF

(1), (2), (3): These values calculated from Table of Fluid Properties, Attachment "B".

Attachment "A" Order No. R-4808

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE
MAINTENANCE PROJECT) POOL - Cont'd.)

CITGO EMPIRE ABO UNIT AREA

Table of Fluid Properties

P-base equals 15.025 psia. P-bp equals 2231 psia, Tres equals

109° F (569° R)

15.025	1.000	194.696	0	1.0
100	1.125	28.229	.180	.965
200	1.163	13.749	.235	.940
300	1.193	8.970	.290	.920
400	1.218	6.692	.349	.915
500	1.244	5.236	.395	.895
600	1.263	4.276	.445	.877
700	1.285	3.644	.495	.872
800	1.304	3.108	.540	.850
900	1.325	2.746	.585	.845
1000	1.344	2.437	.625	.833
1100	1.364	2.178	.675	.819
1200	1.384	1.962	.725	.805
1300	1.404	1.790	.775	.795
1400	1.425	1.649	.825	.789
1500	1.445	1.516	.875	.777
1600	1.465	1.404	.925	.768
1700	1.485	1.304	.975	.758
1800	1.505	1.220	1.025	.751
1900	1.525	1.147	1.075	.745
2000	1.548	1.053	1.125	.720
2100	1.573	1.000	1.175	.718
2200	1.597	.953	1.225	.717
2231	1.606	.939	1.250	.716

P-r equals Reservoir average pressure at datum -2264' sub-sea, lbs/in absolute.

B-o equals Oil formation volume factor, reservoir volumetric bbls/stock tank bbl.

B-g equals Gas formation volume factor, reservoir volumetric bbls/thousand std. cu. ft.

R-s equals Solution Gas/Oil Ratio, Thousand std. cu. ft/stock tank bbls. oil.

Z equals Gas Compressibility Factor

Attachment "B"
Order No. R-4808LANGLIE-MATTIX POOL
(Skelly Johnson Langlie-Mattix Waterflood Project)
Lea County, New Mexico

Order No. R-4785, Authorizing Skelly Oil Company to Institute a Waterflood Project in the Seven Rivers-Queen Formation in the Langlie-Mattix Pool, Lea County, New Mexico, May 21, 1974.

Application of Skelly Oil Company for a Waterflood Project and a Dual Completion, Lea County, New Mexico.

CASE NO. 5197
Order No. R-4785

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on March 27, 1974, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 21st day of May, 1974, 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, Skelly Oil Company, seeks authority to institute a waterflood project by injection of water into the Seven Rivers-Queen formation in its J. C. Johnson Well No. 4, located in Unit D of Section 20, Township 23 South, Range 37 East, NMPM, Langlie-Mattix Pool, Lea County, New Mexico.

(3) That the applicant further seeks authority to recompleat said J. C. Johnson Well No. 4, located in Unit D of Section 20, Township 23 South, Range 37 East, NMPM, Lea County, New Mexico, as a dual completion (conventional) to also produce gas from the Jalmat gas pool through the casing-tubing annulus with separation of the zones by means of a packer set at approximately 3375 feet.

(4) That the applicant further seeks the establishment of an administrative procedure whereby additional wells may be converted to injection and the project area expanded without notice and hearing.

(5) That the well in the proposed waterflood project area is in an advanced state of depletion and may properly be classified as a "stripper" well.

(RHODES-YATES (TEXACO RHODES-YATES WATERFLOOD) POOL - Cont'd.)

(2) That the applicant, Texaco Inc., seeks authority to institute a waterflood project in the Rhodes Yates Unit Area, Rhodes-Yates Pool, by the injection of water into the Yates-Seven Rivers formations through seven injection wells in Sections 21, 27, and 28, Township 26 South, Range 37 East, NMPM, Lea County, New Mexico.

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

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

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

IT IS THEREFORE ORDERED:

(1) That the applicant, Texaco Inc., is hereby authorized to institute a waterflood project in the Rhodes Yates Unit Area, Rhodes-Yates Pool, by the injection of water into the Yates-Seven Rivers formations through the following-described seven wells in Township 26 South, Range 37 East, NMPM, Lea County, New Mexico:

Lease	Well No.	Location
State "JD" Unit	2	660' FNL and 660' FWL, Sec. 27
State "JD" Unit	4	650' FNL and 2310' FWL, Sec. 27
N. M. "AD" State	1	660' FNL and 1980' FWL, Sec. 28
Morris	2	1980' FNL and 660' FWL, Sec. 27
Morris	3	990' FSL and 2970' FEL, Sec. 27
State "A" 28	1	1980' FNL and 660' FEL, Sec. 28
H. G. Moberly "C" (NCT-2)	3	660' FSL and 660' FEL, Sec. 21

(2) That injection into each of said wells shall be through internally plastic-coated tubing set in a packer which shall be located as near as is practicable to the uppermost perforation, or in the case of open-hole completions, as near as is practicable to the casing-shoe; that the casing-tubing annulus of each injection well shall be loaded with an inert fluid and equipped with a pressure gauge at the surface.

(3) That the subject waterflood project is hereby designated the Texaco Rhodes-Yates Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

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

(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.

"EMPIRE-ABO POOL" (Pressure Maintenance) Eddy County, New Mexico

Order No. R-4549, Authorizing Atlantic Richfield Company to Institute a Pressure Maintenance Project in the Empire-Abo Pool, Eddy County, New Mexico, June 15, 1973, as Amended by Order No. R-4549-A, January 1, 1974, Order No. R-4549-B, April 30, 1974, Order No. R-4549-C, July 1, 1975, Order No. R-4549-D, November 17, 1975, Order No. R-4549-E, January 28, 1980, and Order No. R-4549-F, April 20, 1984.

Order No. R-4549-A, January 1, 1974, extends the project area to include 200.13 acres and increases project allowable to 33,000 barrels per day.

Order No. R-4549-F, April 20, 1984, rescinds Rules 3, 4, 4(A), 5, 6, 7, 8, 9, 10, 11, 12, and 13, adopted by Order No. R-4549, and amended by Orders Nos. R-4549-B through R-4549-E, providing for well allowables based upon reservoir voidage; adopts new Rules 3, 4, 5, and 6; and, redesignates Rules 14A through 14D as Rules 7A through 7D and Rule 15 as Rule 8.

Application of Atlantic Richfield Company for a Pressure Maintenance Project, Eddy County, New Mexico.

CASE NO. 4953
Order No. R-4549

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on April 25, 1973, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 15th day of June, 1973, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Atlantic Richfield Company, seeks authority to institute a pressure maintenance project in the Empire-Abo Pool in its Empire-Abo Unit Area, Eddy County, New Mexico, by initially limiting reservoir voidage, and within one year by reinjection of approximately 70 per cent of the produced gas, as plant residue gas, into the Abo formation through eight wells in Section 36, Township 17 South, Range 27 East, Sections 3, 4, and 9, Township 18 South, Range 27 East, and Sections 26, 31, 32, and 33, Township 17 South, Range 28 East.

(3) That the applicant further seeks the designation of the project area and the promulgation of special rules and regulations governing said project, including provision for the assignment of special allowables to wells in the project area based on reservoir voidage factors, net gas-oil ratios, the shutting in or curtailment of less efficient wells, and allowable credit for gas injection wells.

(4) (As Amended by Order No. R-4549-A, January 1, 1974) That initially the project area should comprise only the following described area:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 34: S/2 SE/4
Section 36: S/2

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
 Section 25: S 2 and S/2 N/2
 Section 26: S/2, S/2 NE/4, and SE/4 NW/4
 Section 27: S/2
 Section 31: S/2 and S/2 N/2
 Section 32: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
 Section 33: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
 Section 34: All
 Section 35: N 2 and N/2 S/2
 Section 36: N 2 NW/4 and SW/4 NW/4

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
 Section 29: S/2 NW/4 and N/2 SW/4
 Section 30: SW/4, S 2 N/2, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
 Section 1: All
 Section 2: S 2, NE/4 NE/4, SW/4 NE/4, S/2 NW/4, and NW/4 NW/4
 Section 3: All
 Section 4: SE/4, S/2 NE/4, S/2 SW/4, and NE/4 SW/4
 Section 8: E 2 SE/4 and SE/4 NE 4
 Section 9: All
 Section 10: W/2 and NE/4
 Section 11: NW 4, W/2 NE/4, and NE/4 NE/4
 Section 15: N/2 NW/4 and SW/4 NW/4
 Section 16: N/2, SW/4, N/2 SE/4, and SW 4 SE/4
 Section 17: S/2 NE/4, NE/4 NE/4, SE/4 NW 4, NE/4 SW/4, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 28 EAST, NMPM
 Section 4: N 2 N/2, SW/4 NW/4
 Section 5: NE/4, N/2 NW/4, NE/4 NW/4
 Section 6: NW 4, N/2 SW/4, SE/4 SW/4, N/2 SE/4, SW 4 SE/4, S/2 NE/4, NE/4 NE/4, NW 4 NE 4 (Lot 2)

(5) That the applicant has been a major operator in the Empire-Abo Pool and that with a majority of the other operators in said pool has conducted extensive reservoir evaluations and studies in and of said pool.

(6) That said evaluations and studies show that the Empire-Abo Pool will be more efficiently produced through the curtailment of production from high gas-oil ratio wells or by reinjection of plant residue gas or both, and operation of the pool on a net reservoir voidage basis.

(7) That said evaluations and studies show that production from the project area as described in Finding (4) of this order should be limited to the average reservoir voidage for the project area for the calendar year 1972 or 30,000 barrels of oil per day, whichever is less, except that after reinjection of approximately 70 percent of the produced gas has been achieved, the production from said project area should be limited to the average reservoir voidage for the calendar year 1972 or 40,192 barrels of oil per day, whichever is less.

(8) That to provide incentive for the reinjection of produced gas prior to achievement of the full 70 percent reinjection planned, production in excess of the aforementioned 30,000 barrels per day should be permitted within the project area. Said excess production should be computed in accordance with the following formula and should be limited to 10,192 barrels per day:

additional allowable in (2(MCF gas inj. previous month x 10) 2 excess of 30,000 ((MCF gas prod. previous month))
 BOPD equals 97.07 ((MCF gas prod. previous month))

$$\frac{2 \text{ (MCF gas inj. previous month x 10) }}{\text{(MCF gas prod. previous month)}}$$

(9) That the aforesaid pressure maintenance project, designated the ARCO Empire-Abo Unit Pressure Maintenance Project, and comprising the above-described area, is in the interest of conservation and should result in the recovery of approximately thirty million barrels of additional oil from said reservoir.

(10) That an administrative procedure should be established whereby said project area may be contracted or expanded for good cause shown and whereby additional injection wells and producing wells at orthodox and unorthodox locations in the project area may be approved without the necessity of notice and hearing.

(11) That special rules and regulations for the operation of the ARCO Empire-Abo Unit Pressure Maintenance Project should be promulgated and, for operational convenience, such rules should provide certain flexibility in authorizing the production of the project allowable from any well or wells in the project area in any proportion, provided that no well in the project area which directly or diagonally offsets a well not committed to said unit producing from the same common source of supply should be allowed to produce more than two top unit allowables for the Empire-Abo Pool.

(12) That approval of the application for a pressure maintenance project and the proposed special rules therefore is in the interest of sound conservation practices and will not cause waste or harm correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Atlantic Richfield Company, is hereby authorized to institute a pressure maintenance project in the Empire-Abo Pool in its Empire-Abo Unit Area, Eddy County, New Mexico, to be designated the ARCO Empire-Abo Unit Pressure Maintenance Project, initially by the shutting in or curtailment of production from less efficient wells within the project and within 12 months after the effective date of this order by the reinjection of approximately 70 percent of the produced gas, as plant residue gas, into the Abo formation, through the following described wells:

Operator	Lease Name	Well No.	Section	Location
Amoco	Malco "H" Federal	2	3	H
Amoco	Windfuhr Federal	4	4	J
Exxon	Chalk Bluff Draw Unit "A"	4	9	C
All in Township 18 South, Range 27 East, NMPM.				
M. Yates III	Dooley Abo State	2	36	J
In Township 17 South, Range 27 East, NMPM.				
Hondo	State "A"	21	26	K
Amoco	State "BM"	1	31	K
Amoco	State "BV"	1	32	F
Arco	M. Yates B (ARC)	8	33	G

All in Township 17 South, Range 28 East, NMPM.

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

(2) That the injection should be through 2-3/8-inch internally coated tubing installed in a packer set within 100 feet of the uppermost perforations, and that the casing-tubing annulus should be fitted with a pressure gauge in order to determine leakage in the casing, tubing, or packer.

(3) That Special Rules and Regulations governing the operation of the ARCO Empire-Abo Unit Pressure Maintenance Project, Eddy County, New Mexico, are hereby promulgated as follows:

**SPECIAL RULES AND REGULATIONS
FOR THE
EMPIRE-ABO PRESSURE MAINTENANCE PROJECT**

RULE 1. (As Amended by Order No. R-4549-A, January 1, 1974, and Order No. R-4549-C, July 1, 1975.) The project area of the ARCO Empire-Abo Unit Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise the area described as follows:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 34: S/2 SE/4
Section 36: S/2

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
Section 25: S/2 and S/2 N/2
Section 26: S/2, S/2 NE/4, and SE/4 NW/4
Section 27: S/2
Section 31: S/2 and S/2 N/2
Section 32: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
Section 33: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
Section 34: All
Section 35: N/2 and N/2 S/2
Section 36: N/2 NW/4 and SW/4 NW/4

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
Section 29: S/2 NW/4 and N/2 SW/4
Section 30: SW/4, S/2 N/2, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 1: All
Section 2: S/2, NE/4 NE/4, SW/4 NE/4,
NW/4
Section 3: All
Section 4: SE/4, S/2 NE/4, S/2 SW/4, and NE/4 SW/4
Section 8: E/2 SE/4 and SE/4 NE/4
Section 9: All
Section 10: W/2 and NE/4
Section 11: NW/4, W/2 NE/4, and NE/4 NE/4
Section 15: N/2, NW/4 and SW/4 NW/4
Section 16: N/2, SW/4, N/2 SE/4, and SW/4 SE/4
Section 17: S/2 NE/4, NE/4 NE/4, SE/4 NW/4,
NE/4 SW/4, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 28 EAST, NMPM
Section 4: N/2 N/2, SW/4 NW/4
Section 5: NE/4, N/2 NW/4, NE/4 NW/4
Section 6: NW/4, N/2 SW/4, SE/4 SW/4, N/2
SE/4, SW/4 SE/4, S/2 NE/4, NE/4 NE/4,
NW/4 NE/4 (Lot 2)

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. (As Added by Order No. R-4549-F, April 20, 1984.) That the maximum daily project allowable shall be an amount of oil which will result in monthly average associated gas production of no more than 65 MMCF per day.

For the purpose of these rules, "Available Residue Gas" shall be defined as being all gas produced from the unitized formation less plant shrinkage, plant fuel, and lease fuel required for operation of the lease.

RULE 4. (As Added by Order No. R-4549-F, April 20, 1984.) That all available unit residue gas shall be reinjected. No raw gas nor plant residue gas attributable to the project shall be sold or otherwise disposed of by any other means. That in addition to the injection of available residue gas, the project operator may inject up to and including 35 million cubic feet of extraneous gas per day into the Abo formation underlying the project area; further, that withdrawals of said extraneous gas may be made, but pending reservoir blow-down, during not more than 30 days in any one 180-day period; provided however, that pending blow-down, the daily rate of withdrawal shall not exceed the average daily rate of injection of such extraneous gas during the preceding 180-day period; provided further, that the project operator shall establish and maintain an "Extraneous Gas Bank Statement" which shall be filed with the Division each month concurrently with the project operator's "Empire-Abo Pressure Maintenance Project Monthly Report", and which shall show thereon each month the volume of extraneous gas injected, the cumulative volume of such gas injected, the volume of gas delivered back to the supplier of extraneous gas, the cumulative volume of gas delivered back to the supplier, and the net cumulative extraneous gas bank.

RULE 5. (As Added by Order No. R-4549-F, April 20, 1984.) Allowables shall be assigned to unit wells in accordance with nominations submitted by the unit operator during the months of March, July, and November of each year. That such nominations shall accompany the Pressure Maintenance Project Operator's Report filed for that month.

The allowables assigned shall result in production of casinghead gas averaging not more than 65 MMCF per day for the month, provided however, that on a cumulative basis, the unit operator may carry gas overproduction of 325 MMCF.

That no producing well in the project area which directly or diagonally offsets a well not committed to the unit, and producing from the same common source of supply, shall receive an allowable or produce in excess of two times the top unit allowable for the pool.

RULE 6. (As Added by Order No. R-4549-F, April 20, 1984.) Each month the project operator shall submit to the Division a Pressure Maintenance Project Operator's Report on a form prescribed by the Division. The report shall show all project wells, production of oil, gas, and water; volumes of water, residue gas, and extraneous gas injected; total production of oil, gas and water, and such other data as the Division may require.

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

RULE 7. A. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director of the Division is hereby authorized to approve such additional producing wells and gas injection and water injection wells at orthodox and unorthodox locations within the boundaries of the ARCO Empire Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided said wells are drilled no closer than 660 feet to any outer boundary of said unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary and provided that no well shall be approved for gas or water injection when such well is located closer than 1650 feet to a tract which is not committed to the unit and on which is located a well producing from the same common source of supply. To obtain such approval, the project operator shall file proper application with the Division Director, which application, if it seeks authorization to convert additional wells to injection or to drill additional production or injection wells shall include the following:

- (1) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.
- (2) A schematic drawing of the proposed well which fully describes the casing, tubing, perforated interval, and depth.
- (3) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

RULE 7. B. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director of the Division is hereby authorized to approve the drilling of "horizontal drainholes" for the purposes of production or injection within the boundaries of the ARCO Empire Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided no perforated or openhole portion of said wells shall be closer than 330 feet to the outer boundary of said unit or to any tract not committed to such unit nor, in the case of a well to be used for injection closer than 1650 feet to such boundary or tract. To obtain such approval, the project operator shall file proper application with the Division Director, which application, if it seeks authorization to convert additional wells to injection or to drill additional production or injection wells shall include the following:

(1) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(2) Schematic drawings of the proposed well which fully describes the casing, tubing, perforated or open-hole interval, kick-off point, and proposed trajectory of the drainhole section.

(3) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

RULE 7. C. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director may approve the proposed well if, within 20 days after receiving the application, no objection to the proposal is received. The Director may grant immediate approval, provided waivers of objection are received from all offset operators.

RULE 7. D. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) Within 20 days following completion of any horizontal drainhole the operator shall submit a report to the Division Director with sufficient detail to locate the kick-off point and the trajectory of the deviated portion of the well bore with respect to any quarter-quarter section(s) penetrated by such well and any 40-acre tract directly or diagonally offsetting such quarter-quarter section(s).

The Director may approve the final location of the horizontal drainhole by acceptance of such report.

The Director may rescind the authority for any horizontal drainhole if the perforated or openhole portion of such hole is located closer to the unit boundary or any uncommitted tract than permitted by these rules or if it should appear that such rescission is necessary to prevent waste or protect correlative rights.

RULE 8. (As Amended and Renumbered by Order No. R-4549-F, April 20, 1984.) Expansion or contraction of the project area may be approved by the Director of the Division administratively when good cause is shown therefor.

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

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

ARCO Oil and Gas Company ◆

Central District
Post Office Box 1610
Midland, Texas 79702
Telephone 915 688 5200

March 4, 1991

**OXY USA INC.
Box 50250
Midland, Texas 79710**

**Attn: Scott E. Gengler
Senior Petroleum Engineer
Western Region**

**RE: Citgo Empire Abo Unit
Allowable**

Dear Sir:

As Mr. T. C. Webb discussed with you on the phone in early January, Arco Oil and Gas is concerned with the allowable requests that you have filed with the NMOCD. Based on the bottom hole pressure data supplied with your monthly letters to the NMOCD it appears that OXY USA INC. has been using the wrong Bg in allowable calculations for the Citgo Empire Abo Unit. This appears to have occurred for at least two years.

OXY USA INC. has also been reporting a gas bank status of 850+ MMCF. It is our understanding that Order No. R-4808 provides for a gas bank only if you are injecting gas. As we understand it you have not injected gas for several years. It appears to us that OXY USA INC. has been incorrectly reporting a positive gas bank balance since the time gas injection ceased.

Because there should not have been any gas bank balance since injection ceased and because the Bg's appear to be incorrect we believe that the Citgo Empire Abo Unit is overproduced by 385,000+ reservoir barrels.

Please review this matter and respond to us within 15 days of receipt of this letter. Please include any appropriate data needed to support your position if it is different than what we have described in this letter.

Sincerely,



Gary B. Smallwood
Sr. Engineer



OXY USA INC.
Box 50250, Midland, TX 79710

April 5, 1991

State of New Mexico
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87504

Attention: Mr. David R. Catanach

**Re: OXY-Operated Citgo Empire
Abo Unit, Eddy County, New
Mexico.**

Dear Mr. Catanach:

We have discovered an error in our voidage calculations that are shown on the Pressure Maintenance Project Operator's Report for the above referenced Unit. Consequently, OXY presents the corrected voidage calculations as shown on the attached summary sheet. The numbers have been recalculated back to March 1988, when we ceased injection. The mistake was made in the Bg (gas formation volume factor) that was used to convert produced volumes of gas and liquids to reservoir volumes. As you can see from the attached table, the inaccuracy was very small in 1988, but grew larger as the difference between the Bg our program was using and the correct Bg ballooned. Another correction we would like to make to the Project Operator's Report concerns the existence of the gas bank, which is described in Rule 9 of our pool rules. At the behest of ARCO, our offset operator, we reviewed the status of the gas bank in light of the cessation of injection operations on our Unit. We now conclude that the existence of a gas bank against which credit may be drawn to allow overproduction of the daily allowable may not be appropriate at this time.

This puts us in a gray area concerning future operations. If one assumes that allowable that was not used during one month may be carried forward to succeeding months, then we are currently underproduced by almost 250,000 reservoir barrels since March 1988. Our pool rules are completely silent on this aspect of proration; obviously "blowdown" was not contemplated in the drafting of these rules. On the other hand, if no allowable can be carried forward from month to month, we have accumulated enough overproduction that it would take almost a full year's shutdown to make it up. We do not believe that this is a fair interpretation, since unused allowable was carried forward as long as there was injection (i.e. the gas bank). Also, Rule 5 of ARCO's pool rules for their Empire-Abo Unit allow for the carryforward of overproduction, albeit in limited amounts. From a correlative rights standpoint, we do not believe that we have damaged ARCO because we have underproduced our allowable on a cumulative basis since we ceased injection.

In order to resolve this matter and provide some guidance for the

future operation of our Unit, OXY respectfully requests that the OCD accept our interpretation that carryforward of unused allowable is permissible under our pool rules. If the OCD declines to accept this interpretation, then we request that a hearing be docketed on OXY's application to:

- * carryforward and/or re-instate allowable that was canceled after March 1, 1988;
- * amend the pool rules to allow underage and overage to be carried forward in the same manner allowed in Order No. R-8170 for prorated gas pools in Southeast New Mexico;
- * make any other amendments to our pool rules as may be necessary for future operations to protect correlative rights and prevent waste.

OXY will produce no more than our maximum daily project allowable of 2213 reservoir barrels until this matter is resolved. By copy of this letter we are notifying our offset operator, ARCO, of our intentions.

We are also sending a copy of this letter and attachments to the OCD office in Artesia to correct the past reports. If the OCD would like to have additional information to correct the record, please advise.

OXY sincerely regrets the inconvenience caused by our mistake. I assure you it was unintentional, and we stand ready to take whatever action the OCD deems appropriate to resolve this problem.

Sincerely,



Richard E. Foppiano
Western Region Regulatory Affairs Advisor

XC: ARCO Oil and Gas Company
P. O. Box 1610
Midland, Texas 79702
Attention: Mr. Gary Smallwood

NMOCD District II Office
P. O. Drawer DD
Artesia, New Mexico 88210

↳ hand delivered 4/5/91 + sent regular mail.

REF
4-5-91

**CITGO EMPIRE ABO UNIT
RESERVOIR VOIDAGE CORRECTIONS
(RESERVOIR BARRELS)**

MONTH/YR	ORIGINAL VOIDAGE	CORRECTED VOIDAGE	ALLOW-ABLE	OVER/UNDER	CUM OVER/UNDER
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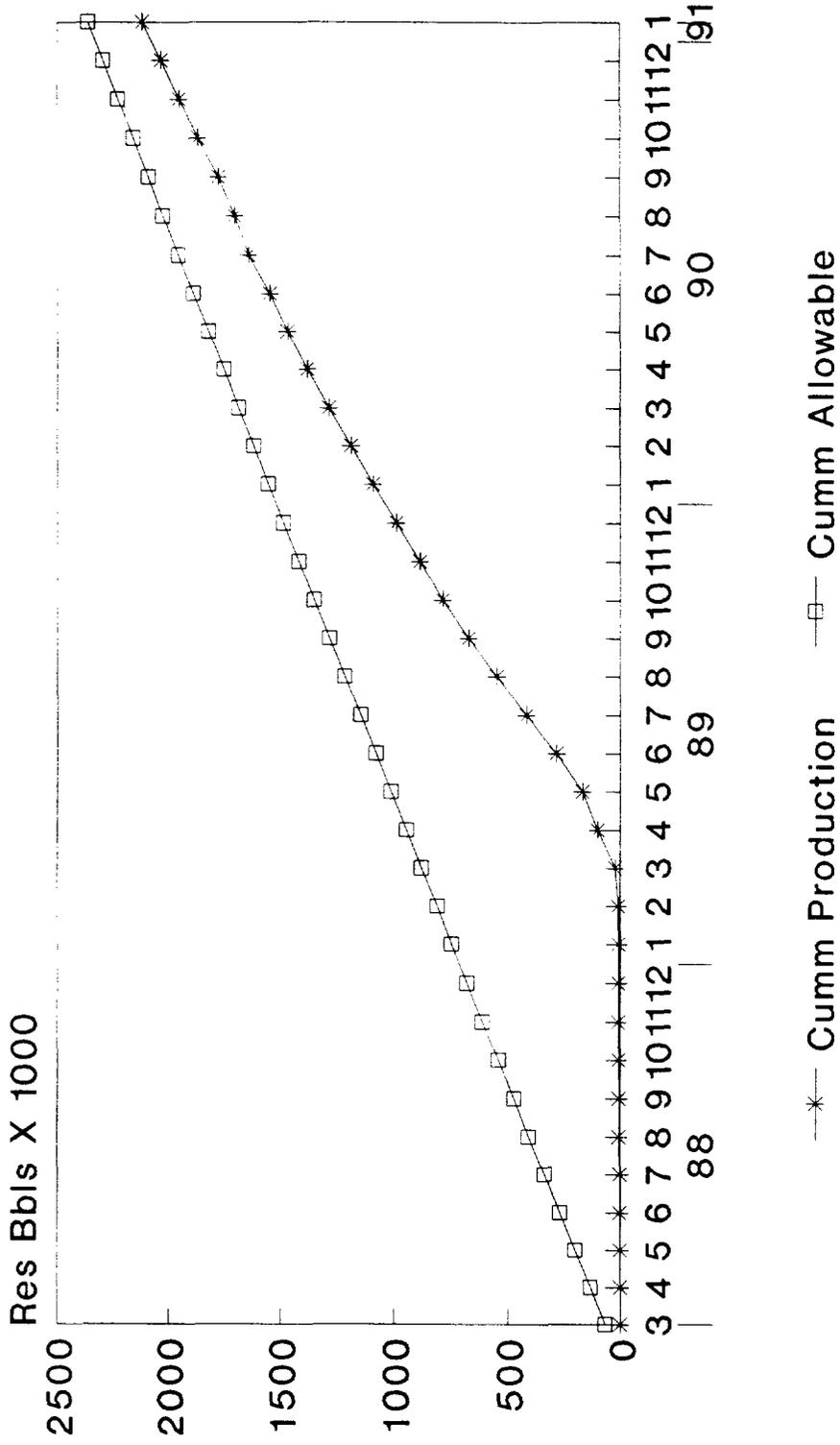
MAR 88	217	217	68603	-68386	-68386
APR 88	450	450	66390	-65940	-134326
MAY 88	372	403	68603	-68200	-202526
JUN 88	450	480	66390	-65910	-268436
JUL 88	310	310	68603	-68293	-336729
AUG 88	4278	4433	68603	-64170	-400899
SEP 88	270	270	66390	-66120	-467019
OCT 88	465	465	68603	-68138	-535157
NOV 88	480	480	66390	-65910	-601067
DEC 88	434	496	68603	-68107	-669174
TOTAL 88	7726	8004	677178	-669174	

JAN 89	403	465	68603	-68138	-737312
FEB 89	476	532	61964	-61432	-798744
MAR 89	10881	12338	68603	-56265	-855009
APR 89	70350	79740	66390	13350	-841659
MAY 89	61101	69347	68603	744	-840915
JUN 89	102990	116940	66390	50550	-790365
JUL 89	115289	131006	68603	62403	-727962
AUG 89	113739	129239	68603	60636	-667326
SEP 89	106770	121320	66390	54930	-612396
OCT 89	102641	116622	68603	48019	-564377
NOV 89	85980	97650	66390	31260	-533117
DEC 89	91977	104470	68603	35867	-497250
TOTAL 89	862597	979669	807745	171924	

JAN 90	91605	103788	68603	35185	-462065
FEB 90	82600	93884	61964	31920	-430145
MAR 90	87017	98890	68603	30287	-399858
APR 90	84990	96600	66390	30210	-369648
MAY 90	74214	84320	68603	15717	-353931
JUN 90	69120	78510	66390	12120	-341811
JUL 90	84165	95604	68603	27001	-314810
AUG 90	52545	59768	68603	-8835	-323645
SEP 90	66210	75240	66390	8850	-314795
OCT 90	80631	91667	68603	23064	-291731
NOV 90	66960	83460	66390	17070	-274661
DEC 90	82181	82181	68603	13578	-261083
TOTAL 90	922238	1043912	807745	236167	

JAN 91	83545	83545	68603	14942	-246141
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Citgo Empire Abo Unit Production/Allowable



ARCO Oil and Gas Company
Central District
Post Office Box 1610
Midland, Texas 79702
Telephone 915 688 5200



January 25, 1989

Mr. Mike Williams
Oil Conservation Division of the New Mexico
Department of Energy and Minerals
P.O. Drawer DD
Artesia, New Mexico 88210

Dear Mr. Williams:

ARCO - Empire Abo Unit
Pressure Maintenance Report - December 1988

ARCO Oil and Gas Company, A Division of Atlantic Richfield Company, as operator of the Empire Abo Unit Pressure Maintenance Project, Eddy County, New Mexico, submits with this letter the gas bank statements for December, 1988. The oil allowable for January through April 1989 has been set at 4193 BOPD.

Sincerely,

Evelyn E. Gilson
Evelyn E. Gilson
Engineering Technician

EEG:ls

Attachments

xc: Mr. William J. LeMay
Oil Conservation Division of the New Mexico
Department of Energy and Minerals
P.O. Box 2088
Santa Fe, New Mexico 87504

RECEIVED

JAN 27 1989

FIN & ADM

EMPIRE ABO UNIT PRESSURE MAINTENANCE PROJECT
NON-ABO GAS BANK STATEMENT
MONTHLY REPORT FOR DECEMBER 1988

MONTH	GAS INJECTED (MCF)	CUMULATIVE GAS INJECTED (MCF)	GAS DELIVERED TO TO SUPPLIER (MCF)	CUMULATIVE GAS DELIVERED TO SUPPLIER (MCF)	NET CUMULATI NON-ABO GAS BANK (MCF)
JANUARY	-0-	4,061,826	-0-	411,342	3,650,484
FEBRUARY	-0-	4,061,826	-0-	411,342	3,650,484
MARCH	-0-	4,061,826	-0-	411,342	3,650,484
APRIL	-0-	4,061,826	-0-	411,342	3,650,484
MAY	-0-	4,061,826	-0-	411,342	3,650,484
JUNE	-0-	4,061,826	-0-	411,342	3,650,484
JULY	-0-	4,061,826	-0-	411,342	3,650,484
AUGUST	-0-	4,061,826	-0-	411,342	3,650,484
SEPTEMBER	-0-	4,061,826	-0-	411,342	3,650,484
OCTOBER	-0-	4,061,826	-0-	411,342	3,650,484
NOVEMBER	-0-	4,061,826	-0-	411,342	3,650,484
DECEMBER	-0-	4,061,826	-0-	411,342	3,650,484

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EMPIRE ABO UNIT PRESSURE MAINTENANCE PROJECT
 (NMOED Orders R-4548, R-4549, R-4549A, R-4549B, R-4549C, R-4549D, R-4549E, R-4549F)
 ABO GAS BANK STATEMENT
 MONTHLY REPORT DECEMBER 1988

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
MONTH	GAS PRODUCED (MCF)	ALLOWABLE GAS PROD. @ 65MMCFPD (MCF)	AMOUNT UNDER (OVER) ALLOWABLE (MCF)	CUMULATIVE AMOUNT UNDER (OVER) ALLOWABLE (MCF)	GAS BANK BALANCE (325 MCF + COL. 5) (MCF)	MAX. GAS RATE ALLOWABLE TO BALANCE GAS BANK (MCF)	TOTAL PLANT RESIDUE AVAILABLE (MCF)	ABO GAS INJECTED (MCF)	FRACTION OF AVAILABLE RESIDUE GAS INJECTED (FRACTION)
JANUARY	1,741,561	2,015,000	273,419	3,600,471	3,925,471	65,000	1,182,366	1,182,366	1.00
FEBRUARY	1,630,788	1,885,000	54,214	3,654,685	3,979,685	65,000	1,187,228	1,187,228	1.00
MARCH	1,962,605	2,015,000	52,397	3,707,082	4,032,082	65,000	1,398,517	1,398,517	1.00
APRIL	1,681,405	1,950,000	68,595	3,775,677	4,100,677	65,000	1,228,990	1,228,990	1.00
MAY	2,064,028	2,015,000	(49,023)	3,726,654	4,051,654	65,000	1,353,393	1,353,393	1.00
JUNE	1,623,060	1,950,000	326,939	4,053,593	4,378,593	65,000	1,073,659	1,073,659	1.00
JULY	1,674,450	2,015,000	140,544	4,194,137	4,513,137	65,000	1,350,213	1,350,213	1.00
AUGUST	1,920,841	2,015,000	94,159	4,288,296	4,613,296	65,000	1,357,566	1,357,566	1.00
SEPTEMBER	1,921,360	1,950,000	28,620	4,316,916	4,641,916	65,000	1,257,732	1,257,732	1.00
OCTOBER	1,934,261	2,015,000	80,733	4,397,649	4,722,649	65,000	1,135,832	1,135,832	1.00
NOVEMBER	1,850,061	1,950,000	99,939	4,497,588	4,822,588	65,000	1,060,974	1,060,974	1.00
DECEMBER	2,048,971	2,015,000	(33,971)	4,463,617	4,788,617	65,000	1,319,197	1,319,197	1.00

EMPIRE ABO UNIT
GAS BANK BALANCE

MONTH	GAS PRODUCED (MCF)	ALLOWABLE @ 65 MMCFD (MCF)	MONTHLY UNDER/ (OVER) ALLOWABLE (MCF)	CUMULATIVE UNDER/ (OVER) ALLOWABLE (MCF)	GAS BANK BALANCE (MCF)
4/84	1798318	1950000	151682	-	325000
5	1893118	2015000	121882	121882	446882
6	1744697	1950000	205303	327185	652185
7	1752642	2015000	262358	589543	914543
8	1712006	2015000	302994	892537	1217537
9	1686617	1950000	263383	1155920	1480920
10	1909558	2015000	105442	1261362	1586362
11	1850728	1950000	99272	1360634	1685634
12	1973394	2015000	41606	1402240	1727240
1/85	1915830	2015000	99170	1501410	1826410
2	1737635	1820000	82365	1583775	1908775
3	1907564	2015000	107436	1691211	2016211
4	1878389	1950000	71611	1762822	2087822
5	1989462	2015000	25538	1788360	2113360
6	1981217	1950000	-31217	1757143	2082143
7	2050138	2015000	-35138	1722005	2047005
8	1949042	2015000	65958	1787963	2112963
9	1876481	1950000	73519	1861482	2186482
10	2012658	2015000	2342	1863824	2188824
11	1826204	1950000	123796	1987620	2312620
12	2068120	2015000	-53120	1934500	2259500
1/86	2018243	2015000	-3243	1931257	2256257
2	1870624	1820000	-50624	1880633	2205633
3	2035629	2015000	-20629	1860004	2185004
4	1988752	1950000	-38752	1821252	2146252
5	1957124	2015000	57876	1879128	2204128
6	1893751	1950000	56249	1935377	2260377
7	2008252	2015000	6748	1942125	2267125
8	1902732	2015000	112268	2054393	2379393
9	1805272	1950000	144728	2199121	2524121
10	1963610	2015000	51390	2250511	2575511
11	1986705	1950000	-36705	2213806	2538806
12	2129837	2015000	-114837	2098969	2423969
1/87	2126796	2015000	-111796	1987173	2312173
2	1822464	1820000	-2464	1984709	2309709
3	1951847	2015000	63153	2047862	2372862
4	1953825	1950000	-3825	2044037	2369037
5	2029383	2015000	-14383	2029654	2354654
6	1779323	1950000	170677	2200331	2525331
7	1651924	2015000	363076	2563407	2888407
8	1703028	2015000	311972	2875379	3200379
9	1813608	1950000	136392	3011771	3336771
10	1939216	2015000	75784	3087555	3412555
11	1890606	1950000	59394	3146949	3471949
12	1834897	2015000	180103	3327052	3652052

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EMPIRE ABO UNIT
GAS BANK BALANCE

MONTH	GAS PRODUCED (MCF)	ALLOWABLE @ 65 MMCFD (MCF)	MONTHLY UNDER/(OVER) ALLOWABLE (MCF)	CUMULATIVE UNDER/(OVER) ALLOWABLE (MCF)	GAS BANK BALANCE (MCF)
1/88	1741581	2015000	273419	3600471	3925471
2	1830786	1885000	54214	3654685	3979685
3	1962603	2015000	52397	3707082	4032082
4	1881405	1950000	68595	3775677	4100677
5	2064023	2015000	-49023	3726654	4051654
6	1623061	1950000	326939	4053593	4378593
7	1874456	2015000	140544	4194137	4519137
8	1920841	2015000	94159	4288296	4613296
9	1921380	1950000	28620	4316916	4641916
10	1934267	2015000	80733	4397649	4722649
11	1850061	1950000	99939	4497588	4822588
12	2048971	2015000	-33971	4463617	4788617

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EMPIRE ABO UNIT
GAS BANK BALANCE

MONTH	GAS PRODUCED (MCF)	ALLOWABLE @ 65 MMCFD (MCF)	MONTHLY UNDER/ (OVER) ALLOWABLE (MCF)	CUMULATIVE UNDER/ (OVER) ALLOWABLE (MCF)	GAS BANK BALANCE (MCF)
4/84	1798318	1950000	151682	-	325000
5	1893118	2015000	121882	121882	446882
6	1744697	1950000	205303	327185	652185
7	1752642	2015000	262358	589543	914543
8	1712006	2015000	302994	892537	1217537
9	1686617	1950000	263383	1155920	1480920
10	1909558	2015000	105442	1261362	1586362
11	1850728	1950000	99272	1360634	1685634
12	1973394	2015000	41606	1402240	1727240
1/85	1915830	2015000	99170	1501410	1826410
2	1737635	1820000	82365	1583775	1908775
3	1907564	2015000	107436	1691211	2016211
4	1878389	1950000	71611	1762822	2087822
5	1989462	2015000	25538	1788360	2113360
6	1981217	1950000	-31217	1757143	2082143
7	2050138	2015000	-35138	1722005	2047005
8	1949042	2015000	65958	1787963	2112963
9	1876481	1950000	73519	1861482	2186482
10	2012658	2015000	2342	1863824	2188824
11	1826204	1950000	123796	1987620	2312620
12	2068120	2015000	-53120	1934500	2259500
1/86	2018243	2015000	-3243	1931257	2256257
2	1870624	1820000	-50624	1880633	2205633
3	2035629	2015000	-20629	1860004	2185004
4	1988752	1950000	-38752	1821252	2146252
5	1957124	2015000	57876	1879128	2204128
6	1893751	1950000	56249	1935377	2260377
7	2008252	2015000	6748	1942125	2267125
8	1902732	2015000	112268	2054393	2379393
9	1805272	1950000	144728	2199121	2524121
10	1963610	2015000	51390	2250511	2575511
11	1986705	1950000	-36705	2213806	2538806
12	2129837	2015000	-114837	2098969	2423969
1/87	2126796	2015000	-111796	1987173	2312173
2	1822464	1820000	-2464	1984709	2309709
3	1951847	2015000	63153	2047862	2372862
4	1953825	1950000	-3825	2044037	2369037
5	2029383	2015000	-14383	2029654	2354654
6	1779323	1950000	170677	2200331	2525331
7	1651924	2015000	363076	2563407	2888407
8	1703028	2015000	311972	2875379	3200379
9	1813608	1950000	136392	3011771	3336771
10	1939216	2015000	75784	3087555	3412555
11	1890606	1950000	59394	3146949	3471949
12	1834897	2015000	180103	3327052	3652052

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EMPIRE ABO UNIT
GAS BANK BALANCE

MONTH	GAS PRODUCED (MCF)	ALLOWABLE @ 65 MMCFD (MCF)	MONTHLY UNDER/(OVER) ALLOWABLE (MCF)	CUMULATIVE UNDER/(OVER) ALLOWABLE (MCF)	GAS BANK BALANCE (MCF)
1/88	1741581	2015000	273419	3600471	3925471
2	1830786	1885000	54214	3654685	3979685
3	1962603	2015000	52397	3707082	4032082
4	1881405	1950000	68595	3775677	4100677
5	2064023	2015000	-49023	3726654	4051654
6	1623061	1950000	326939	4053593	4378593
7	1874456	2015000	140544	4194137	4519137
8	1920841	2015000	94159	4288296	4613296
9	1921380	1950000	28620	4316916	4641916
10	1934267	2015000	80733	4397649	4722649
11	1850061	1950000	99939	4497588	4822588
12	2048971	2015000	-33971	4463617	4788617

EMPIRE ABO UNIT GAS BANK BALANCE

*Core Bank of
United
allowable*

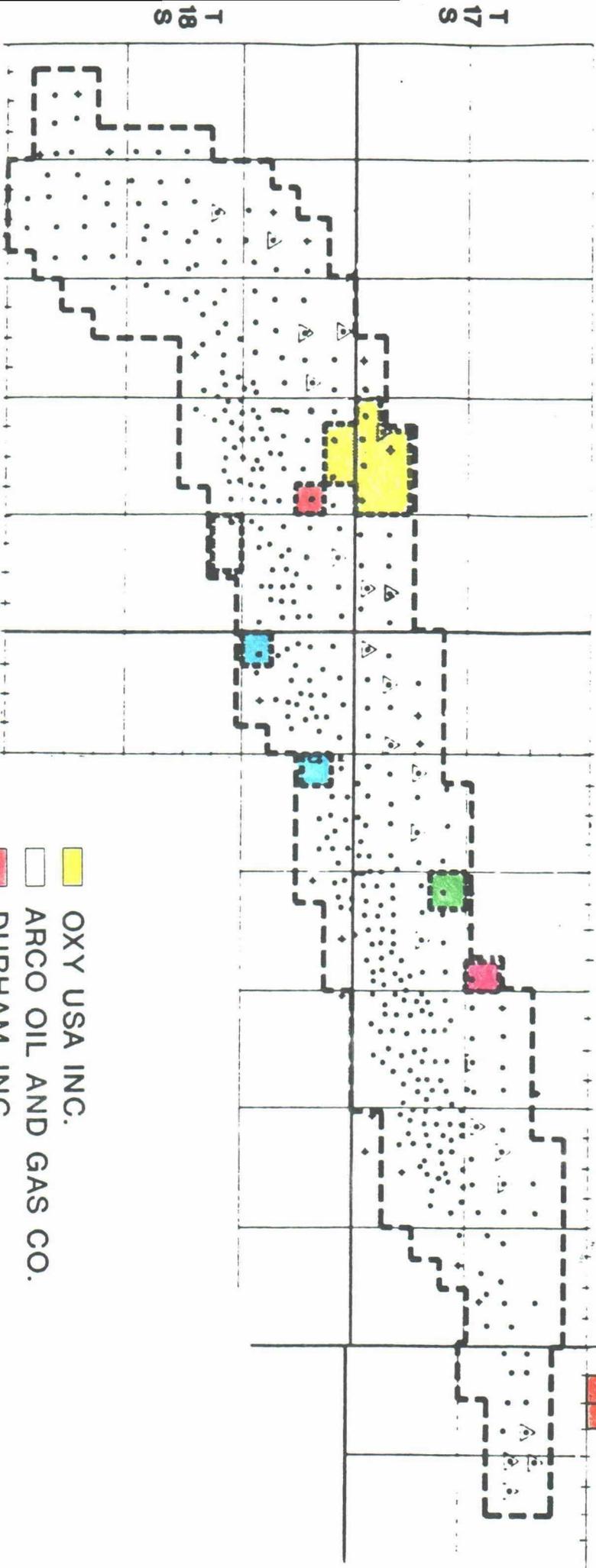
MONTH	GAS PRODUCED (MCF)	ALLOWABLE @ 65 MMCFD (MCF)	MONTHLY UNDER/(OVER) ALLOWABLE (MCF)	CUMULATIVE UNDER/(OVER) ALLOWABLE (MCF)	GAS BANK BALANCE (MCF)
10	1939216	2015000	75784	3087855	3412555
11	1890606	1950000	59394	3146949	3471949
12	1834897	2015000	180103	3327052	3652052
1/88	1741581	2015000	273419	3600471	3925471
2	1830786	1885000	54214	3654685	3979685
3	1962603	2015000	52397	3707082	4032082
4	1881405	1950000	68595	3775677	4100677
5	2064023	2015000	-49023	3726654	4051654
6	1623061	1950000	326939	4053593	4378593
7	1874456	2015000	140544	4194137	4519137
8	1920841	2015000	94159	4288296	4613296
9	1921380	1950000	28620	4316916	4641916
10	1934267	2015000	80733	4397649	4722649
11	1850061	1950000	99939	4497588	4822588
12	2048971	2015000	-33971	4463617	4788617
1/89	1998160	2015000	16840	4480457	4805457
2	1782261	1885000	102739	4583196	4908196
3	2019490	2015000	-4490	4578706	4903706
4	1932008	1950000	17992	4596698	4921698
5	1801256	2015000	213744	4810442	5135442
6	1875606	1950000	74394	4884836	5209836
7	1961348	2015000	53652	4938488	5263488
8	1929303	2015000	85697	5024185	5349185
9	1871241	1950000	78759	5102944	5427944
10	2017084	2015000	-2084	5100860	5425860
11	1976391	1950000	-26391	5074469	5399469
12	1980927	2015000	34073	5108542	5433542
1/90	2050366	2015000	-35366	5073176	5398176
2	1777839	1885000	107161	5180337	5505337
3	1409616	2015000	605384	5785721	6110721
4	762048	1950000	1187952	6973673	7298673
5	1529593	2015000	485407	7459080	7784080
6	1635865	1950000	314135	7773215	8098215
7	1780853	2015000	234147	8007362	8332362
8	1790259	2015000	224741	8232103	8557103
9	1889751	1950000	60249	8292352	8617352
10	2077223	2015000	-62223	8230129	8555129
11	1995251	1950000	-45251	8184878	8509878
12	1947152	2015000	67848	8252726	8577726
1/91	2087037	2015000	-72037	8180689	8505689
2	1870328	1885000	14672	8195361	8520361
3	2041814	2015000	-26814	8168547	8493547

EMPIRE ABO POOL

Eddy County, New Mexico

R 27 E

R 28 E



- OXY USA INC.
- ARCO OIL AND GAS CO.
- DURHAM, INC.
- SIDNEY LANIER
- MARBOB ENERGY CORP.
- BRIDGE OIL CO., L.P.
- PHILLIPS PETROLEUM CORP.

(LEO (KERSEY & COMPANY CREEK-LEO WATERFLOOD) POOL - Cont'd.)

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

IT IS THEREFORE ORDERED:

(1) That the applicant, Kersey & Company, is hereby authorized to institute a waterflood project in the Leo Pool, by the injection of water into the Grayburg formation through the following-described well in Section 23, Township 18 South, Range 30 East, NMPM, Eddy County, New Mexico:

WELL NAME	WELL NO.	LOCATION
Kersey & Company Creek	1	330' FNL & 1650' FWL

(2) That injection into said well shall be through plastic or cement-lined tubing, set in a packer which shall be located as near as possible to the casing-shoe and that the casing-tubing annulus shall be filled with an inert fluid and equipped with a pressure gauge or left open at the surface in order to determine leakage in the casing, tubing or packer.

(3) That the operator shall immediately notify the supervisor of the Commission's Artesia district office of the failure of the tubing or packer in said injection well, the leakage of any water or oil from around any producing well or the leakage of water or oil from any plugged and abandoned well within the project area and shall take such timely steps as may be necessary or required to correct such failure or leakage.

(4) That the subject waterflood project is hereby designated the Kersey & Company Creek-Leo Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

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

(6) 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.

EMPIRE-ABO POOL
(Citgo Empire-Abo Pressure Maintenance Project)
Eddy County, New Mexico

Order No. R-4808, Authorizing Cities Service Oil Company to Institute a Pressure Maintenance Project in the Empire-Abo Pool, Eddy County, New Mexico, June 11, 1974.

Application of Cities Service Oil Company for a Pressure Maintenance Project, Eddy County, New Mexico.

CASE NO. 5213
Order No. R-4808

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on April 10, 1974, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 11th day of June, 1974, 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, Cities Service Oil Company, seeks authority to institute a pressure maintenance project in the Empire-Abo Pool in its Citgo Empire-Abo Unit Area, Eddy County, New Mexico, by the injection of gas into the Abo formation through a well to be drilled at an unorthodox location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East.

(3) That the applicant further seeks the designation of the project area and the promulgation of special rules and regulations governing said project, including provision for the operation of the project under a net GOR rule and the establishment of a gas injection credit "bank" against which injection credit could be drawn in order to maintain full allowables during such times as injection plant shut-downs and similar problems.

(4) That initially the project area should comprise the following described area:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 35: SE/4, S/2 SW/4, and NE/4 SW/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 2: NE/4 NW/4 and NW/4 NE/4

(5) That the applicant is the operator of the Citgo Empire-Abo Unit, which embraces the above-described lands.

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT) POOL - Cont'd.)

(6) That the Citgo Empire-Abo Unit embraces lands immediately adjacent to the Atlantic Richfield Empire-Abo Unit Area, which area is also under pressure maintenance by the injection of gas, and injection of gas in the Citgo Empire-Abo Unit Area is in the interest of more efficient operation of the pool as a whole.

(7) That the production permitted the Atlantic Richfield Empire-Abo Pressure Maintenance Project is limited to reservoir voidage equal to or less than the average reservoir voidage for the project area for the calendar year 1972.

(8) That the evidence indicates that the portion of the Empire-Abo Pool underlying the Citgo Empire-Abo Unit Area will be more efficiently produced by operating under a reservoir voidage formula similar to that used for said Atlantic Richfield project.

(9) That reinjection of produced gas at a location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East, will efficiently aid in maintaining pressures in the Abo formation in the unit area, and an injection well at that location should be approved.

(10) That the production from the project area should be limited to the average reservoir voidage for the project area for the calendar year 1972 (2213 reservoir barrels) or 852 barrels of oil per day, whichever is less.

(11) That special rules and regulations for the operation of the Citgo Empire-Abo Unit Pressure Maintenance Project should be promulgated and, for operational convenience, such rules should provide certain flexibility in authorizing the production of the project allowable from any well or wells in the project area in any proportion, provided that no well in the project area which directly or diagonally offsets a well not committed to said unit producing from the same common source of supply should be allowed to produce more than two top unit allowables for the Empire-Abo Pool.

(12) That an administrative procedure should be established whereby said project area may be contracted or expanded for good cause shown, and whereby additional injection wells and producing wells at orthodox and unorthodox locations in the project area may be approved without the necessity of notice and hearing.

(13) That approval of the application for a pressure maintenance project and the proposed special rules therefor is in the interest of sound conservation practices and will not cause waste nor harm correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Cities Service Oil Company, is hereby authorized to institute a pressure maintenance project in the Empire-Abo Pool in the Citgo Empire-Abo Unit Area, Eddy County, New Mexico, to be designated the Citgo Empire-Abo Unit Pressure Maintenance Project, by the shutting in or curtailment of production from less efficient wells and/or the reinjection of produced gas as raw gas or plant residue gas into the Abo formation.

(2) Initial injection of gas shall be through a well to be drilled at an unorthodox location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East, NMPM, which location is hereby approved.

(3) That the injection should be through 2-3/8-inch internally coated tubing installed in a packer set within 100 feet of the uppermost perforations, and that the casing-tubing annulus should be fitted with a pressure gauge in order to determine leakage in the casing, tubing, or packer.

(4) That Special Rules and Regulations governing the operation of the Citgo Empire-Abo Unit Pressure Maintenance Project, Eddy County, New Mexico, are hereby promulgated as follows:

**SPECIAL RULES AND REGULATIONS
FOR THE
CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT**

RULE 1. The project area of the Citgo Empire-Abo Unit Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise the area described as follows:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 35: SE/4, S/2 SW/4, and NE/4 SW/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 2: NE/4 NW/4 and NW/4 NE/4

RULE 2. The allowable for the project shall be computed monthly based on the estimated net reservoir voidage for the succeeding month.

RULE 3. The maximum daily project allowable shall be an amount of oil which will result in reservoir voidage no greater than the average daily reservoir voidage for the project area for the calendar year 1972 (2213 reservoir barrels) or 852 barrels of oil per day, whichever is less.

RULE 4. The allowable assigned to the project area may be produced from any well or wells within the project area in any proportion, provided that no producing well in the project area which directly or diagonally offsets a well not committed to the Unit and producing from the same common source of supply, shall produce in excess of two times top unit allowable for the pool and provided that individual well allowables have been requested in accordance with Rule 5 below.

RULE 5. Each month the project operator shall submit to the Commission a Pressure Maintenance Project Operator's Report, on a form prescribed by the Commission, outlined 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 6. 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.

RULE 7. That the volume of gas required to be injected in any month to maintain average daily reservoir voidage in the project area at 2213 reservoir barrels shall be known as "Reservoir Voidage Balance Gas."

RULE 8. That all calculations of reservoir voidage shall be in accordance with the formula set out in Attachment "A" to this order utilizing the Table of Fluid Properties set out in Attachment "B" to this order.

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT) POOL - Cont'd.)

RULE 9. A gas "bank" shall be established for the project against which injection credit may be drawn in order to maintain allowable production during such times as injection compressor shutdowns and similar problems. The gas bank shall operate under and be subject to the following provisions:

(a) That volume of gas injected in the project in any month in excess of Reservoir Voidage Balance Gas shall be credited to the gas bank and be carried cumulatively forward.

(b) The gas bank balance shall not exceed a maximum of the average monthly total Reservoir Voidage Balance Gas volumes for the previous three (3) months, not including the month being reported.

(c) The operator shall report monthly to the Commission the status of the gas bank in a form acceptable to the Commission. The report shall be designed to show the status of the gas bank over a twelve (12) month period and shall be revised monthly to a current basis.

(d) The accumulated gas bank may be applied to the injection volume during any future month in which the gas injection volume is less than the Reservoir Voidage Balance Gas volume.

(e) In the event there are insufficient credits accrued to the gas bank to bring actual injection plus applied credits up to the Reservoir Voidage Balance Gas requirement during any given production month, production for that month shall be reduced to an amount commensurate with the average daily reservoir voidage set forth in Rule 3 above. Production beyond this amount shall be considered overproduction and shall be compensated for by underproduction during the following month.

RULE 10. The Secretary-Director of the Commission is hereby authorized to approve such additional producing wells and injection wells at orthodox and unorthodox locations within the boundaries of the Citgo Empire-Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided said producing wells are drilled no closer than 660 feet to the outer boundary of said unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary and provided that no well shall be approved for gas injection when such well is located closer than 1650 feet to a tract which is not committed to the unit and on which is located a well producing from the same common source of supply. 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 production or injection wells shall include the following:

(a) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(b) A schematic drawing of the proposed well which fully describes the casing, tubing, perforated interval, and depth.

(c) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

The Secretary-Director may approve the proposed 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.

RULE 11. Expansion or contractions of the project area may be approved by the Secretary-Director of the Commission administratively when good cause is shown therefor.

(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.

CITGO EMPIRE ABO UNIT AREA**Reservoir Voidage Formula - Gas Injection Credit**

Equation 1:

$$Vrvb: Qo (Bo / (Rpn - Rs) Bg)$$

Where:

Vrvb : Reservoir voidage, bbls. per day
 Qo : Oil Production rate, Stock tank bbls. per day
 Bo : Oil formation volume factor (1), reservoir volumetric bbls/stock tank bbl.
 Rpn : Net producing gas-oil ratio, NCF/S.T.B.O.

$$Rpn: Rp (1.0 - \frac{Gi}{Gp})$$

Where:

Rp : producing gas-oil ratio, MCF/BO
 Gi : daily volume of gas injected MCF/Day
 Gp : daily volume of gas produced, MCF/Day

Rs : Solution gas-oil ratio (2), MCF/STBO
 Bg : Gas formation volume factor (3), RVB/MCF

(1), (2), (3): These values calculated from Table of Fluid Properties, Attachment "B".

Attachment "A" Order No. R-4808

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT) POOL - Cont'd.)

CITGO EMPIRE ABO UNIT AREA

LANGLIE-MATTIX POOL
(Skelly Johnson Langlie-Mattix Waterflood Project)
Lea County, New Mexico

Order No. R-4785, Authorizing Skelly Oil Company to Institute a Waterflood Project in the Seven Rivers-Queen Formation in the Langlie-Mattix Pool, Lea County, New Mexico, May 21, 1974.

Table of Fluid Properties

P-base equals 15.025 psia, P-bp equals 2231 psia, Tres equals 109° F (569° R)

15.025	1.000	194.696	0	1.0
100	1.125	28.229	.180	.965
200	1.163	13.749	.235	.940
300	1.193	8.970	.290	.920
400	1.218	6.692	.349	.915
500	1.244	5.236	.395	.895
600	1.263	4.276	.445	.877
700	1.285	3.644	.495	.872
800	1.304	3.108	.540	.850
900	1.325	2.746	.585	.845
1000	1.344	2.437	.625	.833
1100	1.364	2.178	.675	.819
1200	1.384	1.962	.725	.805
1300	1.404	1.790	.775	.795
1400	1.425	1.649	.825	.789
1500	1.445	1.516	.875	.777
1600	1.465	1.404	.925	.768
1700	1.485	1.304	.975	.758
1800	1.505	1.220	1.025	.751
1900	1.525	1.147	1.075	.745
2000	1.548	1.053	1.125	.720
2100	1.573	1.000	1.175	.718
2200	1.597	.953	1.225	.717
2231	1.606	.939	1.250	.716

CASE NO. 5197
Order No. R-4785

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on March 27, 1974, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 21st day of May, 1974, 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, Skelly Oil Company, seeks authority to institute a waterflood project by injection of water into the Seven Rivers-Queen formation in its J. C. Johnson Well No. 4, located in Unit D of Section 20, Township 23 South, Range 37 East, NMPM, Langlie-Mattix Pool, Lea County, New Mexico.

(3) That the applicant further seeks authority to recomplete said J. C. Johnson Well No. 4, located in Unit D of Section 20, Township 23 South, Range 37 East, NMPM, Lea County, New Mexico, as a dual completion (conventional) to also produce gas from the Jalmat gas pool through the casing-tubing annulus with separation of the zones by means of a packer set at approximately 3375 feet.

(4) That the applicant further seeks the establishment of an administrative procedure whereby additional wells may be converted to injection and the project area expanded without notice and hearing.

(5) That the well in the proposed waterflood project area is in an advanced state of depletion and may properly be classified as a "stripper" well.

- P-r equals Reservoir average pressure at datum -2264' sub-sea. lbs/in absolute.
- B-o equals Oil formation volume factor, reservoir volumetric bbls/stock tank bbl.
- B-g equals Gas formation volume factor, reservoir volumetric bbls/thousand std. cu. ft.
- R-s equals Solution Gas/Oil Ratio. Thousand std. cu. ft/stock tank bbls. oil.
- Z equals Gas Compressibility Factor

Attachment "B"
Order No. R-4808

(RHODES-YATES (TEXACO RHODES-YATES WATERFLOOD) POOL - Cont'd.)

(2) That the applicant, Texaco Inc., seeks authority to institute a waterflood project in the Rhodes Yates Unit Area, Rhodes-Yates Pool, by the injection of water into the Yates-Seven Rivers formations through seven injection wells in Sections 21, 27, and 28, Township 26 South, Range 37 East, NMPM, Lea County, New Mexico.

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

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

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

IT IS THEREFORE ORDERED:

(1) That the applicant, Texaco Inc., is hereby authorized to institute a waterflood project in the Rhodes Yates Unit Area, Rhodes-Yates Pool, by the injection of water into the Yates-Seven Rivers formations through the following-described seven wells in Township 26 South, Range 37 East, NMPM, Lea County, New Mexico:

Lease	Well No.	Location
State "JD" Unit	2	660' FNL and 660' FWL, Sec. 27
State "JD" Unit	4	650' FNL and 2310' FWL, Sec. 27
N. M. "AD" State	1	660' FNL and 1980' FWL, Sec. 28
Morris	2	1980' FNL and 660' FWL, Sec. 27
Morris	3	990' FSL and 2970' FEL, Sec. 27
State "A" 28	1	1980' FNL and 660' FEL, Sec. 28
H. G. Moberly "C" (NCT-2)	3	660' FSL and 660' FEL, Sec. 21

(2) That injection into each of said wells shall be through internally plastic-coated tubing set in a packer which shall be located as near as is practicable to the uppermost perforation, or in the case of open-hole completions, as near as is practicable to the casing-shoe; that the casing-tubing annulus of each injection well shall be loaded with an inert fluid and equipped with a pressure gauge at the surface.

(3) That the subject waterflood project is hereby designated the Texaco Rhodes-Yates Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

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

(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.

"EMPIRE-ABO POOL" (Pressure Maintenance) Eddy County, New Mexico

Order No. R-4549, Authorizing Atlantic Richfield Company to Institute a Pressure Maintenance Project in the Empire-Abo Pool, Eddy County, New Mexico, June 15, 1973, as Amended by Order No. R-4549-A, January 1, 1974, Order No. R-4549-B, April 30, 1974, Order No. R-4549-C, July 1, 1975, Order No. R-4549-D, November 17, 1975, Order No. R-4549-E, January 28, 1980, and Order No. R-4549-F, April 20, 1984.

Order No. R-4549-A, January 1, 1974, extends the project area to include 200.13 acres and increases project allowable to 33,000 barrels per day.

Order No. R-4549-F, April 20, 1984, rescinds Rules 3, 4, 4(A), 5, 6, 7, 8, 9, 10, 11, 12, and 13, adopted by Order No. R-4549, and amended by Orders Nos. R-4549-B through R-4549-E, providing for well allowables based upon reservoir voidage; adopts new Rules 3, 4, 5, and 6; and, redesignates Rules 14A through 14D as Rules 7A through 7D and Rule 15 as Rule 8.

Application of Atlantic Richfield Company for a Pressure Maintenance Project, Eddy County, New Mexico.

CASE NO. 4953
Order No. R-4549

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on April 25, 1973, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 15th day of June, 1973, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Atlantic Richfield Company, seeks authority to institute a pressure maintenance project in the Empire-Abo Pool in its Empire-Abo Unit Area, Eddy County, New Mexico, by initially limiting reservoir voidage, and within one year by reinjection of approximately 70 per cent of the produced gas, as plant residue gas, into the Abo formation through eight wells in Section 36, Township 17 South, Range 27 East, Sections 3, 4, and 9, Township 18 South, Range 27 East, and Sections 26, 31, 32, and 33, Township 17 South, Range 28 East.

(3) That the applicant further seeks the designation of the project area and the promulgation of special rules and regulations governing said project, including provision for the assignment of special allowables to wells in the project area based on reservoir voidage factors, net gas-oil ratios, the shutting in or curtailment of less efficient wells, and allowable credit for gas injection wells.

(4) (As Amended by Order No. R-4549-A, January 1, 1974 That initially the project area should comprise only the following described area:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 34: S/2 SE/4
Section 36: S/2

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
 Section 25: S 2 and S/2 N/2
 Section 26: S/2, S/2 NE/4, and SE/4 NW/4
 Section 27: S/2
 Section 31: S/2 and S/2 N/2
 Section 32: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
 Section 33: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
 Section 34: All
 Section 35: N 2 and N/2 S/2
 Section 36: N 2 NW/4 and SW/4 NW/4

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
 Section 29: S/2 NW/4 and N/2 SW/4
 Section 30: SW/4, S/2 N/2, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
 Section 1: All
 Section 2: S 2, NE/4 NE/4, SW/4 NE/4, S/2 NW/4, and NW/4 NW/4
 Section 3: All
 Section 4: SE/4, S/2 NE/4, S/2 SW/4, and NE/4 SW/4
 Section 8: E 2 SE/4 and SE/4 NE/4
 Section 9: All
 Section 10: W/2 and NE/4
 Section 11: NW/4, W/2 NE/4, and NE/4 NE/4
 Section 15: N 2 NW/4 and SW/4 NW/4
 Section 16: N 2, SW/4, N/2 SE/4, and SW 4 SE/4
 Section 17: S/2 NE/4, NE/4 NE/4, SE/4 NW/4, NE/4 SW/4, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 28 EAST, NMPM
 Section 4: N 2 N/2, SW/4 NW/4
 Section 5: NE/4, N 2 NW/4, NE/4 NW/4
 Section 6: NW 4, N/2 SW/4, SE/4 SW/4, N/2 SE/4, SW 4 SE/4, S/2 NE/4, NE/4 NE/4, NW 4 NE 4 (Lot 2)

(5) That the applicant has been a major operator in the Empire-Abo Pool and that with a majority of the other operators in said pool has conducted extensive reservoir evaluations and studies in and of said pool.

(6) That said evaluations and studies show that the Empire-Abo Pool will be more efficiently produced through the curtailment of production from high gas-oil ratio wells or by reinjection of plant residue gas or both, and operation of the pool on a net reservoir voidage basis.

(7) That said evaluations and studies show that production from the project area as described in Finding (4) of this order should be limited to the average reservoir voidage for the project area for the calendar year 1972 or 30,000 barrels of oil per day, whichever is less, except that after reinjection of approximately 70 percent of the produced gas has been achieved, the production from said project area should be limited to the average reservoir voidage for the calendar year 1972 or 40,192 barrels of oil per day, whichever is less.

(8) That to provide incentive for the reinjection of produced gas prior to achievement of the full 70 percent reinjection planned, production in excess of the aforementioned 30,000 barrels per day should be permitted within the project area. Said excess production should be computed in accordance with the following formula and should be limited to 10,192 barrels per day:

additional allowable in (2(MCF gas inj. previous month x 10) 2 excess of 30,000 ((MCF gas prod. previous month) BOPD equals 97.07 ((MCF gas prod. previous month)

$$\frac{2 \text{ (MCF gas inj. previous month x 10) }}{\text{(MCF gas prod. previous month)}}$$

(9) That the aforesaid pressure maintenance project, designated the ARCO Empire-Abo Unit Pressure Maintenance Project, and comprising the above-described area, is in the interest of conservation and should result in the recovery of approximately thirty million barrels of additional oil from said reservoir.

(10) That an administrative procedure should be established whereby said project area may be contracted or expanded for good cause shown and whereby additional injection wells, and producing wells at orthodox and unorthodox locations in the project area may be approved without the necessity of notice and hearing.

(11) That special rules and regulations for the operation of the ARCO Empire-Abo Unit Pressure Maintenance Project should be promulgated and, for operational convenience, such rules should provide certain flexibility in authorizing the production of the project allowable from any well or wells in the project area in any proportion, provided that no well in the project area which directly or diagonally offsets a well not committed to said unit producing from the same common source of supply should be allowed to produce more than two top unit allowables for the Empire-Abo Pool.

(12) That approval of the application for a pressure maintenance project and the proposed special rules therefore is in the interest of sound conservation practices and will not cause waste or harm correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Atlantic Richfield Company, is hereby authorized to institute a pressure maintenance project in the Empire-Abo Pool in its Empire-Abo Unit Area, Eddy County, New Mexico, to be designated the ARCO Empire-Abo Unit Pressure Maintenance Project, initially by the shutting in or curtailment of production from less efficient wells within the project and within 12 months after the effective date of this order by the reinjection of approximately 70 percent of the produced gas, as plant residue gas, into the Abo formation, through the following described wells:

Operator	Lease Name	Well No.	Section	Location
Amoco	Malco "H" Federal	2	3	H
Amoco	Windfuhr Federal	4	4	J
Exxon	Chalk Bluff Draw Unit "A"	4	9	C
All in Township 18 South, Range 27 East, NMPM.				
M. Yates III	Dooley Abo State	2	36	J
In Township 17 South, Range 27 East, NMPM.				
Hondo	State "A"	21	26	K
Amoco	State "BM"	1	31	K
Amoco	State "BV"	1	32	F
Arco	M. Yates B (ARC)	8	33	G
All in Township 17 South, Range 28 East, NMPM.				

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

(2) That the injection should be through 2-3/8-inch internally coated tubing installed in a packer set within 100 feet of the uppermost perforations, and that the casing-tubing annulus should be fitted with a pressure gauge in order to determine leakage in the casing, tubing, or packer.

(3) That Special Rules and Regulations governing the operation of the ARCO Empire-Abo Unit Pressure Maintenance Project, Eddy County, New Mexico, are hereby promulgated as follows:

**SPECIAL RULES AND REGULATIONS
FOR THE
EMPIRE-ABO PRESSURE MAINTENANCE PROJECT**

RULE 1. (As Amended by Order No. R-4549-A, January 1, 1974, and Order No. R-4549-C, July 1, 1975.) The project area of the ARCO Empire-Abo Unit Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise the area described as follows:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 34: S/2 SE/4
Section 36: S/2

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
Section 25: S/2 and S/2 N/2
Section 26: S/2, S/2 NE/4, and SE/4 NW/4
Section 27: S/2
Section 31: S/2 and S/2 N/2
Section 32: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
Section 33: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
Section 34: All
Section 35: N/2 and N/2 S/2
Section 36: N/2 NW/4 and SW/4 NW/4

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
Section 29: S/2 NW/4 and N/2 SW/4
Section 30: SW/4, S/2 N/2, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 1: All
Section 2: S/2, NE/4 NE/4, SW/4 NE/4,
NW/4
Section 3: All
Section 4: SE/4, S/2 NE/4, S/2 SW/4, and NE/4 SW/4
Section 8: E/2 SE/4 and SE/4 NE/4
Section 9: All
Section 10: W/2 and NE/4
Section 11: NW/4, W/2 NE/4, and NE/4 NE/4
Section 15: N/2, NW/4 and SW/4 NW/4
Section 16: N/2, SW/4, N/2 SE/4, and SW/4 SE/4
Section 17: S/2 NE/4, NE/4 NE/4, SE/4 NW/4,
NE/4 SW/4, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 28 EAST, NMPM
Section 4: N/2 N/2, SW/4 NW/4
Section 5: NE/4, N/2 NW/4, NE/4 NW/4
Section 6: NW/4, N/2 SW/4, SE/4 SW/4, N/2
SE/4, SW/4 SE/4, S/2 NE/4, NE/4 NE/4,
NW/4 NE/4 (Lot 2)

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. (As Added by Order No. R-4549-F, April 20, 1984.) That the maximum daily project allowable shall be an amount of oil which will result in monthly average associated gas production of no more than 65 MMCF per day.

For the purpose of these rules, "Available Residue Gas" shall be defined as being all gas produced from the unitized formation less plant shrinkage, plant fuel, and lease fuel required for operation of the lease.

RULE 4. (As Added by Order No. R-4549-F, April 20, 1984.) That all available unit residue gas shall be reinjected. No raw gas nor plant residue gas attributable to the project shall be sold or otherwise disposed of by any other means. That in addition to the injection of available residue gas, the project operator may inject up to and including 35 million cubic feet of extraneous gas per day into the Abo formation underlying the project area; further, that withdrawals of said extraneous gas may be made, but pending reservoir blow-down, during not more than 30 days in any one 180-day period; provided however, that pending blow-down, the daily rate of withdrawal shall not exceed the average daily rate of injection of such extraneous gas during the preceding 180-day period; provided further, that the project operator shall establish and maintain an "Extraneous Gas Bank Statement" which shall be filed with the Division each month concurrently with the project operator's "Empire-Abo Pressure Maintenance Project Monthly Report", and which shall show thereon each month the volume of extraneous gas injected, the cumulative volume of such gas injected, the volume of gas delivered back to the supplier of extraneous gas, the cumulative volume of gas delivered back to the supplier, and the net cumulative extraneous gas bank.

RULE 5. (As Added by Order No. R-4549-F, April 20, 1984.) Allowables shall be assigned to unit wells in accordance with nominations submitted by the unit operator during the months of March, July, and November of each year. That such nominations shall accompany the Pressure Maintenance Project Operator's Report filed for that month.

The allowables assigned shall result in production of casinghead gas averaging not more than 65 MMCF per day for the month, provided however, that on a cumulative basis, the unit operator may carry gas overproduction of 325 MMCF.

That no producing well in the project area which directly or diagonally offsets a well not committed to the unit, and producing from the same common source of supply, shall receive an allowable or produce in excess of two times the top unit allowable for the pool.

RULE 6. (As Added by Order No. R-4549-F, April 20, 1984.) Each month the project operator shall submit to the Division a Pressure Maintenance Project Operator's Report on a form prescribed by the Division. The report shall show all project wells, production of oil, gas, and water; volumes of water, residue gas, and extraneous gas injected; total production of oil, gas and water, and such other data as the Division may require.

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

RULE 7. A. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director of the Division is hereby authorized to approve such additional producing wells and gas injection and water injection wells at orthodox and unorthodox locations within the boundaries of the ARCO Empire Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided said wells are drilled no closer than 660 feet to any outer boundary of said unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary and provided that no well shall be approved for gas or water injection when such well is located closer than 1650 feet to a tract which is not committed to the unit and on which is located a well producing from the same common source of supply. To obtain such approval, the project operator shall file proper application with the Division Director, which application, if it seeks authorization to convert additional wells to injection or to drill additional production or injection wells shall include the following:

(1) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(2) A schematic drawing of the proposed well which fully describes the casing, tubing, perforated interval, and depth.

(3) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

RULE 7. B. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director of the Division is hereby authorized to approve the drilling of "horizontal drainholes" for the purposes of production or injection within the boundaries of the ARCO Empire Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided no perforated or openhole portion of said wells shall be closer than 330 feet to the outer boundary of said unit or to any tract not committed to such unit nor, in the case of a well to be used for injection closer than 1650 feet to such boundary or tract. To obtain such approval, the project operator shall file proper application with the Division Director, which application, if it seeks authorization to convert additional wells to injection or to drill additional production or injection wells shall include the following:

(1) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(2) Schematic drawings of the proposed well which fully describes the casing, tubing, perforated or open-hole interval, kick-off point, and proposed trajectory of the drainhole section.

(3) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

RULE 7. C. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director may approve the proposed well if, within 20 days after receiving the application, no objection to the proposal is received. The Director may grant immediate approval, provided waivers of objection are received from all offset operators.

RULE 7. D. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) Within 20 days following completion of any horizontal drainhole the operator shall submit a report to the Division Director with sufficient detail to locate the kick-off point and the trajectory of the deviated portion of the well bore with respect to any quarter-quarter section(s) penetrated by such well and any 40-acre tract directly or diagonally offsetting such quarter-quarter section(s).

The Director may approve the final location of the horizontal drainhole by acceptance of such report.

The Director may rescind the authority for any horizontal drainhole if the perforated or openhole portion of such hole is located closer to the unit boundary or any uncommitted tract than permitted by these rules or if it should appear that such rescission is necessary to prevent waste or protect correlative rights.

RULE 8. (As Amended and Renumbered by Order No. R-4549-F, April 20, 1984.) Expansion or contraction of the project area may be approved by the Director of the Division administratively when good cause is shown therefor.

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

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

ARCO Oil and Gas Company ◆

Central District
Post Office Box 1610
Midland, Texas 79702
Telephone 915 688 5200

March 4, 1991

OXY USA INC.
Box 50250
Midland, Texas 79710

Attn: Scott E. Gengler
Senior Petroleum Engineer
Western Region

RE: Citgo Empire Abo Unit
Allowable

Dear Sir:

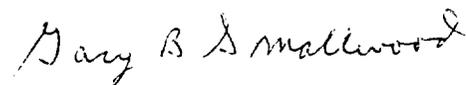
As Mr. T. C. Webb discussed with you on the phone in early January, Arco Oil and Gas is concerned with the allowable requests that you have filed with the NMOCD. Based on the bottom hole pressure data supplied with your monthly letters to the NMOCD it appears that OXY USA INC. has been using the wrong Bg in allowable calculations for the Citgo Empire Abo Unit. This appears to have occurred for at least two years.

OXY USA INC. has also been reporting a gas bank status of 850+ MMCF. It is our understanding that Order No. R-4808 provides for a gas bank only if you are injecting gas. As we understand it you have not injected gas for several years. It appears to us that OXY USA INC. has been incorrectly reporting a positive gas bank balance since the time gas injection ceased.

Because there should not have been any gas bank balance since injection ceased and because the Bg's appear to be incorrect we believe that the Citgo Empire Abo Unit is overproduced by 385,000+ reservoir barrels.

Please review this matter and respond to us within 15 days of receipt of this letter. Please include any appropriate data needed to support your position if it is different than what we have described in this letter.

Sincerely,



Gary B. Smallwood
Sr. Engineer



OXY USA INC.

Box 50250, Midland, TX 79710

April 5, 1991

State of New Mexico
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87504

Attention: Mr. David R. Catanach

**Re: OXY-Operated Citgo Empire
Abo Unit, Eddy County, New
Mexico.**

Dear Mr. Catanach:

We have discovered an error in our voidage calculations that are shown on the Pressure Maintenance Project Operator's Report for the above referenced Unit. Consequently, OXY presents the corrected voidage calculations as shown on the attached summary sheet. The numbers have been recalculated back to March 1988, when we ceased injection. The mistake was made in the Bg (gas formation volume factor) that was used to convert produced volumes of gas and liquids to reservoir volumes. As you can see from the attached table, the inaccuracy was very small in 1988, but grew larger as the difference between the Bg our program was using and the correct Bg ballooned. Another correction we would like to make to the Project Operator's Report concerns the existence of the gas bank, which is described in Rule 9 of our pool rules. At the behest of ARCO, our offset operator, we reviewed the status of the gas bank in light of the cessation of injection operations on our Unit. We now conclude that the existence of a gas bank against which credit may be drawn to allow overproduction of the daily allowable may not be appropriate at this time.

This puts us in a gray area concerning future operations. If one assumes that allowable that was not used during one month may be carried forward to succeeding months, then we are currently underproduced by almost 250,000 reservoir barrels since March 1988. Our pool rules are completely silent on this aspect of proration; obviously "blowdown" was not contemplated in the drafting of these rules. On the other hand, if no allowable can be carried forward from month to month, we have accumulated enough overproduction that it would take almost a full year's shutdown to make it up. We do not believe that this is a fair interpretation, since unused allowable was carried forward as long as there was injection (i.e. the gas bank). Also, Rule 5 of ARCO's pool rules for their Empire-Abo Unit allow for the carryforward of overproduction, albeit in limited amounts. From a correlative rights standpoint, we do not believe that we have damaged ARCO because we have underproduced our allowable on a cumulative basis since we ceased injection.

In order to resolve this matter and provide some guidance for the

future operation of our Unit, OXY respectfully requests that the OCD accept our interpretation that carryforward of unused allowable is permissible under our pool rules. If the OCD declines to accept this interpretation, then we request that a hearing be docketed on OXY's application to:

- * carryforward and/or re-instate allowable that was canceled after March 1, 1988;
- * amend the pool rules to allow underage and overage to be carried forward in the same manner allowed in Order No. R-8170 for prorated gas pools in Southeast New Mexico;
- * make any other amendments to our pool rules as may be necessary for future operations to protect correlative rights and prevent waste.

OXY will produce no more than our maximum daily project allowable of 2213 reservoir barrels until this matter is resolved. By copy of this letter we are notifying our offset operator, ARCO, of our intentions.

We are also sending a copy of this letter and attachments to the OCD office in Artesia to correct the past reports. If the OCD would like to have additional information to correct the record, please advise.

OXY sincerely regrets the inconvenience caused by our mistake. I assure you it was unintentional, and we stand ready to take whatever action the OCD deems appropriate to resolve this problem.

Sincerely,



Richard E. Foppiano
Western Region Regulatory Affairs Advisor

XC: ARCO Oil and Gas Company
P. O. Box 1610
Midland, Texas 79702
Attention: Mr. Gary Smallwood

NMOCD District II Office
P. O. Drawer DD
Artesia, New Mexico 88210

↳ hand delivered 4/5/91 + sent regular mail.

REF
4-5-91

**CITGO EMPIRE ABO UNIT
RESERVOIR VOIDAGE CORRECTIONS
(RESERVOIR BARRELS)**

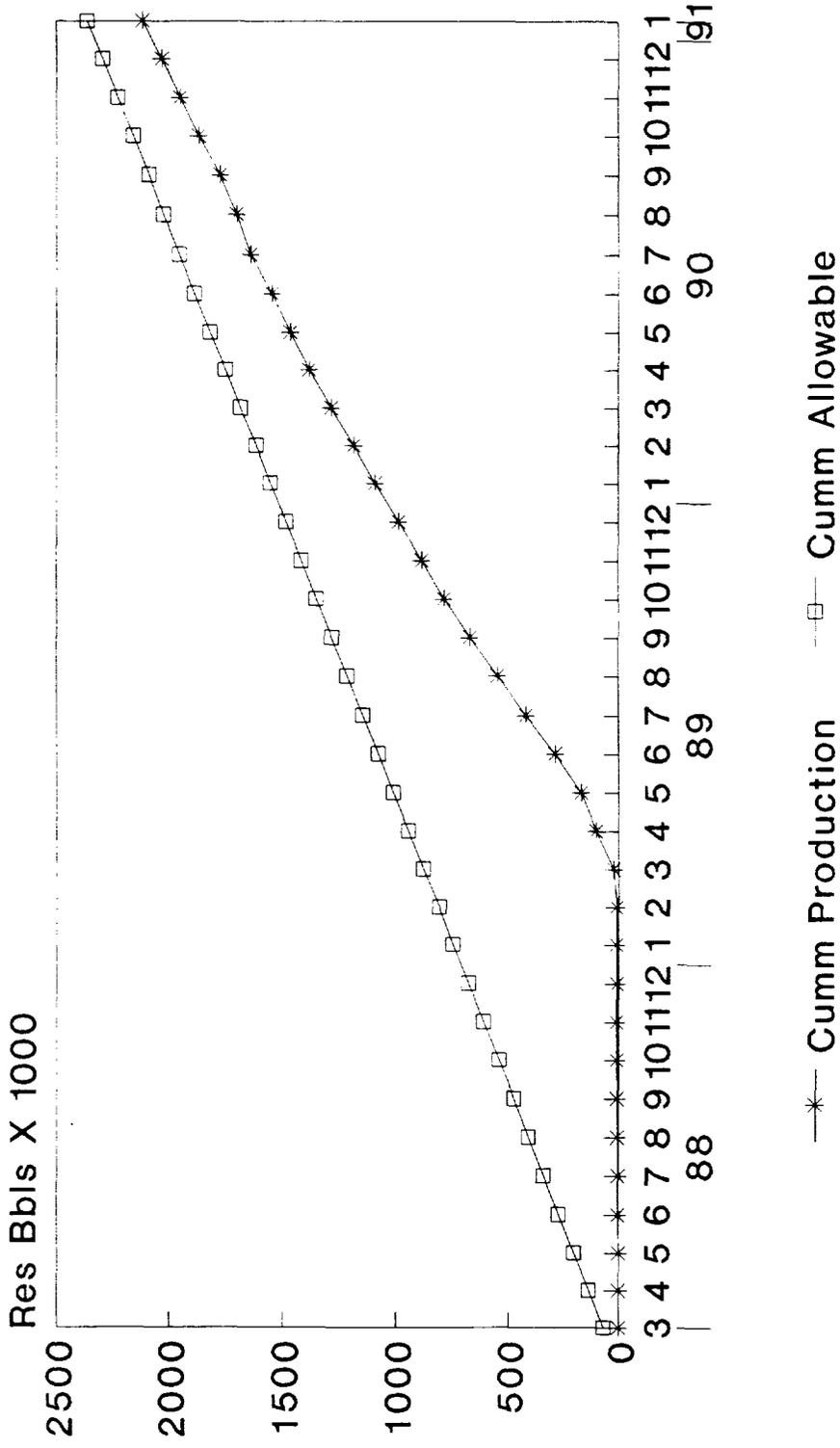
MONTH/YR	ORIGINAL VOIDAGE	CORRECTED VOIDAGE	ALLOW-ABLE	OVER/UNDER	CUM OVER/UNDER
MAR 88	217	217	68603	-68386	-68386
APR 88	450	450	66390	-65940	-134326
MAY 88	372	403	68603	-68200	-202526
JUN 88	450	480	66390	-65910	-268436
JUL 88	310	310	68603	-68293	-336729
AUG 88	4278	4433	68603	-64170	-400899
SEP 88	270	270	66390	-66120	-467019
OCT 88	465	465	68603	-68138	-535157
NOV 88	480	480	66390	-65910	-601067
DEC 88	434	496	68603	-68107	-669174
TOTAL 88	7726	8004	677178	-669174	

JAN 89	403	465	68603	-68138	-737312
FEB 89	476	532	61964	-61432	-798744
MAR 89	10881	12338	68603	-56265	-855009
APR 89	70350	79740	66390	13350	-841659
MAY 89	61101	69347	68603	744	-840915
JUN 89	102990	116940	66390	50550	-790365
JUL 89	115289	131006	68603	62403	-727962
AUG 89	113739	129239	68603	60636	-667326
SEP 89	106770	121320	66390	54930	-612396
OCT 89	102641	116622	68603	48019	-564377
NOV 89	85980	97650	66390	31260	-533117
DEC 89	91977	104470	68603	35867	-497250
TOTAL 89	862597	979669	807745	171924	

JAN 90	91605	103788	68603	35185	-462065
FEB 90	82600	93884	61964	31920	-430145
MAR 90	87017	98890	68603	30287	-399858
APR 90	84990	96600	66390	30210	-369648
MAY 90	74214	84320	68603	15717	-353931
JUN 90	69120	78510	66390	12120	-341811
JUL 90	84165	95604	68603	27001	-314810
AUG 90	52545	59768	68603	-8835	-323645
SEP 90	66210	75240	66390	8850	-314795
OCT 90	80631	91667	68603	23064	-291731
NOV 90	66960	83460	66390	17070	-274661
DEC 90	82181	82181	68603	13578	-261083
TOTAL 90	922238	1043912	807745	236167	

JAN 91	83545	83545	68603	14942	-246141
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Citgo Empire Abo Unit Production/Allowable



ARCO Oil and Gas Company
Central District
Post Office Box 1819
Midland, Texas 79702
Telephone 915 688 5200



January 25, 1989

Mr. Mike Williams
Oil Conservation Division of the New Mexico
Department of Energy and Minerals
P.O. Drawer DD
Artesia, New Mexico 88210

Dear Mr. Williams:

ARCO - Empire Abo Unit
Pressure Maintenance Report - December 1988

ARCO Oil and Gas Company, A Division of Atlantic Richfield Company, as operator of the Empire Abo Unit Pressure Maintenance Project, Eddy County, New Mexico, submits with this letter the gas bank statements for December, 1988. The oil allowable for January through April 1989 has been set at 4193 BOPD.

Sincerely,

Evelyn E. Gilson
Engineering Technician

EEG:ls

Attachments

xc: Mr. William J. LeMay
Oil Conservation Division of the New Mexico
Department of Energy and Minerals
P.O. Box 2088
Santa Fe, New Mexico 87504

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EMPIRE ABO UNIT PRESSURE MAINTENANCE PROJECT
NON-ABO GAS BANK STATEMENT
MONTHLY REPORT FOR DECEMBER 1988

MONTH	GAS INJECTED (MCF)	CUMULATIVE GAS INJECTED (MCF)	GAS DELIVERED TO TO SUPPLIER (MCF)	CUMULATIVE GAS DELIVERED TO SUPPLIER (MCF)	NET CUMULATI NON-ABO GAS BANK (MCF)
JANUARY	-0-	4,061,826	-0-	411,342	3,650,484
FEBRUARY	-0-	4,061,826	-0-	411,342	3,650,484
MARCH	-0-	4,061,826	-0-	411,342	3,650,484
APRIL	-0-	4,061,826	-0-	411,342	3,650,484
MAY	-0-	4,061,826	-0-	411,342	3,650,484
JUNE	-0-	4,061,826	-0-	411,342	3,650,484
JULY	-0-	4,061,826	-0-	411,342	3,650,484
AUGUST	-0-	4,061,826	-0-	411,342	3,650,484
SEPTEMBER	-0-	4,061,826	-0-	411,342	3,650,484
OCTOBER	-0-	4,061,826	-0-	411,342	3,650,484
NOVEMBER	-0-	4,061,826	-0-	411,342	3,650,484
DECEMBER	-0-	4,061,826	-0-	411,342	3,650,484

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EMPIRE ABO UNIT PRESSURE MAINTENANCE PROJECT
 (NIMCO Orders R-4548, R-4549, R-4549A, R-4549B, R-4549C, R-4549D, R-4549E, R-4549F)
 ABO GAS BANK STATEMENT
 MONTHLY REPORT DECEMBER 1988

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
MONTH	GAS PRODUCED (MCF)	ALLOWABLE GAS PROO. & 65MCFPD (MCF)	AMOUNT UNDER (OVER) ALLOWABLE (MCF)	CUMULATIVE AMOUNT UNDER (OVER) ALLOWABLE (MCF)	GAS BANK BALANCE (325 MCF + COL. 5) (MCF)	MAX. GAS RATE ALLOWABLE TO BALANCE GAS BANK (MCF)	TOTAL PLANT RESIDUE AVAILABLE (MCF)	ABO GAS INJECTED (MCF)	FRACTION OF AVAILABLE RESIDUE GAS INJECTED (FRACTION)
JANUARY	1,741,581	2,015,000	273,419	3,600,471	3,925,471	65,000	1,182,366	1,182,366	1.00
FEBRUARY	1,650,766	1,885,000	54,214	3,654,685	3,979,685	65,000	1,167,228	1,167,228	1.00
MARCH	1,962,605	2,015,000	52,397	3,707,082	4,032,082	65,000	1,398,517	1,398,517	1.00
APRIL	1,681,405	1,950,000	68,595	3,775,677	4,100,677	65,000	1,226,990	1,226,990	1.00
MAY	2,064,023	2,015,000	(49,023)	3,726,654	4,051,654	65,000	1,353,393	1,353,393	1.00
JUNE	1,623,061	1,950,000	326,939	4,053,593	4,378,593	65,000	1,073,679	1,073,679	1.00
JULY	1,674,450	2,015,000	140,544	4,194,137	4,513,137	65,000	1,320,213	1,320,213	1.00
AUGUST	1,920,811	2,015,000	94,159	4,288,296	4,613,296	65,000	1,357,566	1,357,566	1.00
SEPTEMBER	1,921,300	1,950,000	28,620	4,316,916	4,641,916	65,000	1,257,732	1,257,732	1.00
OCTOBER	1,934,261	2,015,000	80,733	4,397,649	4,722,649	65,000	1,135,832	1,135,832	1.00
NOVEMBER	1,850,061	1,950,000	99,939	4,497,588	4,822,588	65,000	1,060,974	1,060,974	1.00
DECEMBER	2,048,971	2,015,000	(33,971)	4,463,617	4,788,617	65,000	1,319,197	1,319,197	1.00

EMPIRE ABO UNIT
GAS BANK BALANCE

MONTH	GAS PRODUCED (MCF)	ALLOWABLE @ 65 MMCFD (MCF)	MONTHLY UNDER/ (OVER) ALLOWABLE (MCF)	CUMULATIVE UNDER/ (OVER) ALLOWABLE (MCF)	GAS BANK BALANCE (MCF)
4/84	1798318	1950000	151682	-	325000
5	1893118	2015000	121882	121882	446882
6	1744697	1950000	205303	327185	652185
7	1752642	2015000	262358	589543	914543
8	1712006	2015000	302994	892537	1217537
9	1686617	1950000	263383	1155920	1480920
10	1909558	2015000	105442	1261362	1586362
11	1850728	1950000	99272	1360634	1685634
12	1973394	2015000	41606	1402240	1727240
1/85	1915830	2015000	99170	1501410	1826410
2	1737635	1820000	82365	1583775	1908775
3	1907564	2015000	107436	1691211	2016211
4	1878389	1950000	71611	1762822	2087822
5	1989462	2015000	25538	1788360	2113360
6	1981217	1950000	-31217	1757143	2082143
7	2050138	2015000	-35138	1722005	2047005
8	1949042	2015000	65958	1787963	2112963
9	1876481	1950000	73519	1861482	2186482
10	2012658	2015000	2342	1863824	2188824
11	1826204	1950000	123796	1987620	2312620
12	2068120	2015000	-53120	1934500	2259500
1/86	2018243	2015000	-3243	1931257	2256257
2	1870624	1820000	-50624	1880633	2205633
3	2035629	2015000	-20629	1860004	2185004
4	1988752	1950000	-38752	1821252	2146252
5	1957124	2015000	57876	1879128	2204128
6	1893751	1950000	56249	1935377	2260377
7	2008252	2015000	6748	1942125	2267125
8	1902732	2015000	112268	2054393	2379393
9	1805272	1950000	144728	2199121	2524121
10	1963610	2015000	51390	2250511	2575511
11	1986705	1950000	-36705	2213806	2538806
12	2129837	2015000	-114837	2098969	2423969
1/87	2126796	2015000	-111796	1987173	2312173
2	1822464	1820000	-2464	1984709	2309709
3	1951847	2015000	63153	2047862	2372862
4	1953825	1950000	-3825	2044037	2369037
5	2029383	2015000	-14383	2029654	2354654
6	1779323	1950000	170677	2200331	2525331
7	1651924	2015000	363076	2563407	2888407
8	1703028	2015000	311972	2875379	3200379
9	1813608	1950000	136392	3011771	3336771
10	1939216	2015000	75784	3087555	3412555
11	1890606	1950000	59394	3146949	3471949
12	1834897	2015000	180103	3327052	3652052

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EMPIRE ABO UNIT
GAS BANK BALANCE

MONTH	GAS PRODUCED (MCF)	ALLOWABLE @ 65 MMCFD (MCF)	MONTHLY UNDER/(OVER) ALLOWABLE (MCF)	CUMULATIVE UNDER/(OVER) ALLOWABLE (MCF)	GAS BANK BALANCE (MCF)
1/88	1741581	2015000	273419	3600471	3925471
2	1830786	1885000	54214	3654685	3979685
3	1962603	2015000	52397	3707082	4032082
4	1881405	1950000	68595	3775677	4100677
5	2064023	2015000	-49023	3726654	4051654
6	1623061	1950000	326939	4053593	4378593
7	1874456	2015000	140544	4194137	4519137
8	1920841	2015000	94159	4288296	4613296
9	1921380	1950000	28620	4316916	4641916
10	1934267	2015000	80733	4397649	4722649
11	1850061	1950000	99939	4497588	4822588
12	2048971	2015000	-33971	4463617	4788617

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GAS BANK BALANCE

MONTH	GAS PRODUCED (MCF)	ALLOWABLE @ 65 MMCFD (MCF)	MONTHLY UNDER/(OVER) ALLOWABLE (MCF)	CUMULATIVE UNDER/(OVER) ALLOWABLE (MCF)	GAS BANK BALANCE (MCF)
4/84	1798318	1950000	151682	-	325000
5	1893118	2015000	121882	121882	446882
6	1744697	1950000	205303	327185	652185
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8	1712006	2015000	302994	892537	1217537
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11	1850728	1950000	99272	1360634	1685634
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1/85	1915830	2015000	99170	1501410	1826410
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3	1907564	2015000	107436	1691211	2016211
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7	2050138	2015000	-35138	1722005	2047005
8	1949042	2015000	65958	1787963	2112963
9	1876481	1950000	73519	1861482	2186482
10	2012658	2015000	2342	1863824	2188824
11	1826204	1950000	123796	1987620	2312620
12	2068120	2015000	-53120	1934500	2259500
1/86	2018243	2015000	-3243	1931257	2256257
2	1870624	1820000	-50624	1880633	2205633
3	2035629	2015000	-20629	1860004	2185004
4	1988752	1950000	-38752	1821252	2146252
5	1957124	2015000	57876	1879128	2204128
6	1893751	1950000	56249	1935377	2260377
7	2008252	2015000	6748	1942125	2267125
8	1902732	2015000	112268	2054393	2379393
9	1805272	1950000	144728	2199121	2524121
10	1963610	2015000	51390	2250511	2575511
11	1986705	1950000	-36705	2213806	2538806
12	2129837	2015000	-114837	2098969	2423969
1/87	2126796	2015000	-111796	1987173	2312173
2	1822464	1820000	-2464	1984709	2309709
3	1951847	2015000	63153	2047862	2372862
4	1953825	1950000	-3825	2044037	2369037
5	2029383	2015000	-14383	2029654	2354654
6	1779323	1950000	170677	2200331	2525331
7	1651924	2015000	363076	2563407	2888407
8	1703028	2015000	311972	2875379	3200379
9	1813608	1950000	136392	3011771	3336771
10	1939216	2015000	75784	3087555	3412555
11	1890606	1950000	59394	3146949	3471949
12	1834897	2015000	180103	3327052	3652052

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EMPIRE ABO UNIT
GAS BANK BALANCE

MONTH	GAS PRODUCED (MCF)	ALLOWABLE @ 65 MMCFD (MCF)	MONTHLY UNDER/(OVER) ALLOWABLE (MCF)	CUMULATIVE UNDER/(OVER) ALLOWABLE (MCF)	GAS BANK BALANCE (MCF)
1/88	1741581	2015000	273419	3600471	3925471
2	1830786	1885000	54214	3654685	3979685
3	1962603	2015000	52397	3707082	4032082
4	1881405	1950000	68595	3775677	4100677
5	2064023	2015000	-49023	3726654	4051654
6	1623061	1950000	326939	4053593	4378593
7	1874456	2015000	140544	4194137	4519137
8	1920841	2015000	94159	4288296	4613296
9	1921380	1950000	28620	4316916	4641916
10	1934267	2015000	80733	4397649	4722649
11	1850061	1950000	99939	4497588	4822588
12	2048971	2015000	-33971	4463617	4788617

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GAS BANK BALANCE

MONTH	GAS PRODUCED (MCF)	ALLOWABLE @ 65 MMCFD (MCF)	MONTHLY UNDER/(OVER) ALLOWABLE (MCF)	CUMULATIVE UNDER/(OVER) ALLOWABLE (MCF)	GAS BANK BALANCE (MCF)
10	1939216	2015000	75784	3087555	3412555
11	1890606	1950000	59394	3146949	3471949
12	1834897	2015000	180103	3327052	3652052
1/88	1741581	2015000	273419	3600471	3925471
2	1830786	1885000	54214	3654685	3979685
3	1962603	2015000	52397	3707082	4032082
4	1881405	1950000	68595	3775677	4100677
5	2064023	2015000	-49023	3726654	4051654
6	1623061	1950000	326939	4053593	4378593
7	1874456	2015000	140544	4194137	4519137
8	1920841	2015000	94159	4288296	4613296
9	1921380	1950000	28620	4316916	4641916
10	1934267	2015000	80733	4397649	4722649
11	1850061	1950000	99939	4497588	4822588
12	2048971	2015000	-33971	4463617	4788617
1/89	1998160	2015000	16840	4480457	4805457
2	1782261	1885000	102739	4583196	4908196
3	2019490	2015000	-4490	4578706	4903706
4	1932008	1950000	17992	4596698	4921698
5	1801256	2015000	213744	4810442	5135442
6	1875606	1950000	74394	4884836	5209836
7	1961348	2015000	53652	4938488	5263488
8	1929303	2015000	85697	5024185	5349185
9	1871241	1950000	78759	5102944	5427944
10	2017084	2015000	-2084	5100860	5425860
11	1976391	1950000	-26391	5074469	5399469
12	1980927	2015000	34073	5108542	5433542
1/90	2050366	2015000	-35366	5073176	5398176
2	1777839	1885000	107161	5180337	5505337
3	1409616	2015000	605384	5785721	6110721
4	762048	1950000	1187952	6973673	7298673
5	1529593	2015000	485407	7459080	7784080
6	1635865	1950000	314135	7773215	8098215
7	1780853	2015000	234147	8007362	8332362
8	1790259	2015000	224741	8232103	8557103
9	1889751	1950000	60249	8292352	8617352
10	2077223	2015000	-62223	8230129	8555129
11	1995251	1950000	-45251	8184878	8509878
12	1947152	2015000	67848	8252726	8577726
1/91	2087037	2015000	-72037	8180689	8505689
2	1870328	1885000	14672	8195361	8520361
3	2041814	2015000	-26814	8168547	8493547

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION



BRUCE KING
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

MEMORANDUM

TO: William J. LeMay, Director

FROM: Michael E. Stogner, Engineer

SUBJECT: OXY USA, Inc./ ARCO Oil & Gas Company

DATE: May 7, 1991

It would appear that these two corporate entities are having problems. Before this situation gets too far "out of hand", I believe we should call an informal conference with all parties concerned to seek an alternate solution. Please keep me informed as to any decisions. Thank you.