

ARCO Oil and Gas Company
Permian District
Post Office Box 1610
Midland, Texas 79702
Telephone 915 684 0100

wf-1011



#4952

December 22, 1983

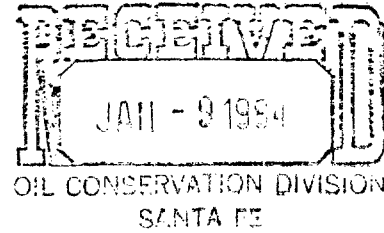
United States Department of the Interior
Geological Survey
P. O. Drawer 1857
Roswell, New Mexico 88201

Attn: Mr. James A. Gillham (6)
Supervisory Petroleum Engineer

State of New Mexico
Mr. Jim Baca
Commissioner of Public Lands
P. O. Box 1148
Santa Fe, New Mexico 87501

Attn: Mr. Ray D. Graham, Director (3)
Oil and Gas Department

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



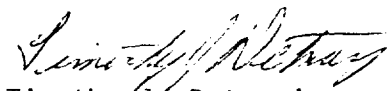
Attn: Mr. Joe D. Ramey (3)
Division Director

Working Interest Owners
Empire Abo Unit
Eddy County, New Mexico

Gentlemen:

In compliance with Section II of the Unit Agreement, Empire Abo Unit, Eddy County, New Mexico, ARCO Oil and Gas Company, as Unit Operator, on behalf of itself and other participating working interest owners, hereby submits for your approval a Plan of Operation to cover the period beginning January 1, 1984, and extending through the remainder of calendar year 1984.

Yours very truly,


Timothy J. Detmering
Engineer

TJD:dmm

Xc: Mr. G. V. Ricks
CF

EMPIRE ABO UNIT

1984 Plan of Operation

SUBMITTED December 22, 1983

1. Summary of Proposed Plan of Operation for 1984

ARCO Oil and Gas Company proposes to continue operation of the Empire Abo Unit, Eddy County, New Mexico, substantially the same as in recent years. We will continue to reinject all available residue gas from the Phillips extraction plant and the Amoco extraction plant. Oil will be produced from the most efficient wells in order to maximize recovery. Amendment to Order Number R-4549 will be sought to remove the current voidage limit and replace it with a daily gas production limit of 65 MMCFPD.

2. Project Area - Description and History

The Empire Abo Unit is located in portions of Sections 34, 35, 36, Township 17 South, Range 27 East; Sections 1, 2, 3, 4, 8, 9, 10, 11, 12, 15, 16, 17, Township 18 South, Range 27 East; Sections 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, Township 17 South, Range 28 East; Sections 4, 5, 6, Township 18 South, Range 28 East; Sections 29, 30, Township 17 South, Range 29 East, Eddy County, New Mexico.

The Unit, as originally proposed, would have covered 11,339.15 acres. Certain tracts within the Unit Area did not qualify for participation as of October 1, 1973, the effective date of the Unit. These tracts are: 2, 6, 28, 41, 42, 46, 55, 56, 69, 79,

84, and 91. Total area of these tracts is 644.74 acres. The remaining 10,694.41 acres comprised the Project Area for pressure maintenance until September 1, 1975. On this date Tracts 41, 79, and 84 joined the Unit. The addition of these three tracts, which cover 120.03 acres, increased the total area of the Unit to 10,814.44 acres. Tracts 2, 6, 42, and 46 comprise the CITGO Empire Abo Unit, which received NMOCD approval in June, 1974. The Unit Area is now disposed as follows:

	<u>Acres</u>
ARCO Empire Abo Unit	10,814.44
CITGO Empire Abo Unit	241.05
Non-Participating Tracts	<u>283.66</u>
Total Area	11,339.15

ARCO Oil and Gas operates a pressure maintenance project at the Empire Abo Unit. This project involves injection of plant residue gas from Abo production back into the Abo formation.

3. Current Performance

In September, 1983, the Unitized Project Area averaged 7,300 BOPD with a 50 percent water cut and a gas-oil ratio of 8,188 cubic feet of gas per barrel of oil. Gas injection averaged 33,441 MCFPD (see attached Production History Plot). The Project Area production for September, 1983, was equivalent to 58,562 RSVBPD net voidage.

Cumulative production from the Project Area through September, 1983 was 198.9 MMBO. This is about 53.6 percent of the 371 MMBO originally in place. Remaining reserves are estimated to be 12.4 MMBO for an ultimate recovery of nearly 57 percent OOIP. As of September, 1983, the Unit had 248 active producing wells.

4. Basic Concepts Governing Future Unit Operations

- a) Field production history and reservoir numeric model studies have demonstrated that oil recovery is governed by gravity drainage and secondary gas cap expansion. We will be able to maximize the beneficial effects of these recovery mechanisms by observation of well performance and producing from the most efficient wells, those with the lowest GOR's.
- b) Gas injection will help maintain reservoir pressure and control expansion of the secondary gas cap.
- c) Removing the voidage limit will allow maximum efficiency and effect an increase in the recovery of NGL's. Oil production will not be significantly affected.

5. Discussion of Past, Current, and Future Operations

a) Gas Injection

Fifteen gas injection wells along the north edge of the field handle all of the Empire Abo Unit injected gas. Table I lists these wells. Beginning in July, 1974, and continuing through the latest month for which data is available (September, 1983), all available plant residue gas has been injected into the Abo gas cap. The Unit receives plant residue gas at about 700 psi and compresses it to 2000 psi for injection. Superhydration

facilities at the extraction plants reduce hydrogen sulfide content to minimize possible corrosion. A rigorous corrosion treatment program is maintained. Permits for the Gas Injection Facilities have been granted by the State of New Mexico, Environmental Improvements Agency. We believe the injection facilities meet the requirements of the United States Geological Survey and the State of New Mexico.

b) Workovers

An intensive workover program in the last few years has been successful in maximizing low GOR production. The majority of the workovers consisted of recompleting wells lower in the reef. As a result of this program, almost all possible lower recompletions have been performed. We will continue to seek out wells with recompletion potential.

Two wells, the F-354 and G-301, were completed as drainholes. There are now six horizontal drainholes in the unit.

c) Horizontal Drainhole Drilling

Drainholes will be kicked out of the K-15, J-27, K-182 and G-312 in the first quarter of 1984. New reserves will be recovered from these four wells by delaying gas coning effects.

d) Continuing Field Study

In order to maximize future reserves, we will continue to maintain an intensive field surveillance program. We will also continue to evaluate alternate and/or enhanced recovery techniques.

e) Injection of Non-Abo Gas

Gas from non-Abo sources is delivered from the Gas Company of New Mexico (formerly Southern Union Gas Company) to the Empire Abo Unit. This began on June 18, 1976. Cumulative outside gas injected through September 31, 1983 was 4,064 MMCF. Cumulative gas delivered back to the supplier through September 31, 1983 was 411 MMCF and the net cumulative non-Abo gas bank was 3,653 MMCF.

6. Modifications

It is understood that to meet changing conditions, this plan of operation may be modified from time to time, with the approval of the Supervisor of the U.S.G.S., the Commissioner of Public Lands of the State of New Mexico, and the Department of Energy and Minerals, Oil Conservation Division, State of New Mexico.

ARCO Oil and Gas Company, as Unit Operator, will act prudently to preserve all rights of the mineral owners, and to effectively and efficiently recover the Unit Area reserves. This Company will meet all economical offset obligations, act to prevent waste, conserve natural resources, and protect correlative rights.

7. Effective Date and Duration of Plan

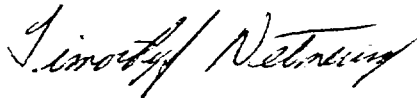
This Plan of Operation shall be effective January 1, 1984, and extend through the calendar year unless otherwise amended.

Page 6.

If this Plan of Operation meets with your approval, please sign on the next page and return one copy for our files.

Very truly yours,

ARCO OIL AND GAS COMPANY
OPERATOR

A handwritten signature in cursive script, appearing to read "Timothy J. Detmering".

Timothy J. Detmering
Engineer

TJD:dmm
Atts.

APPROVED BY: _____ DATE _____
Supervisory Petroleum Engineer
United States Geological Survey

APPROVED BY: _____ DATE _____
Commissioner of Public Lands
State of New Mexico

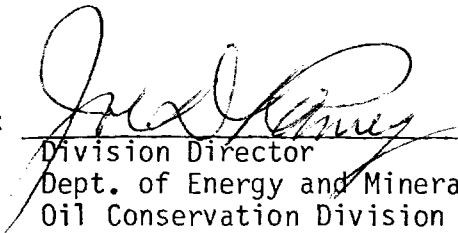
APPROVED BY:  _____ DATE _____
Division Director
Dept. of Energy and Minerals
Oil Conservation Division
State of New Mexico

FIG. 2

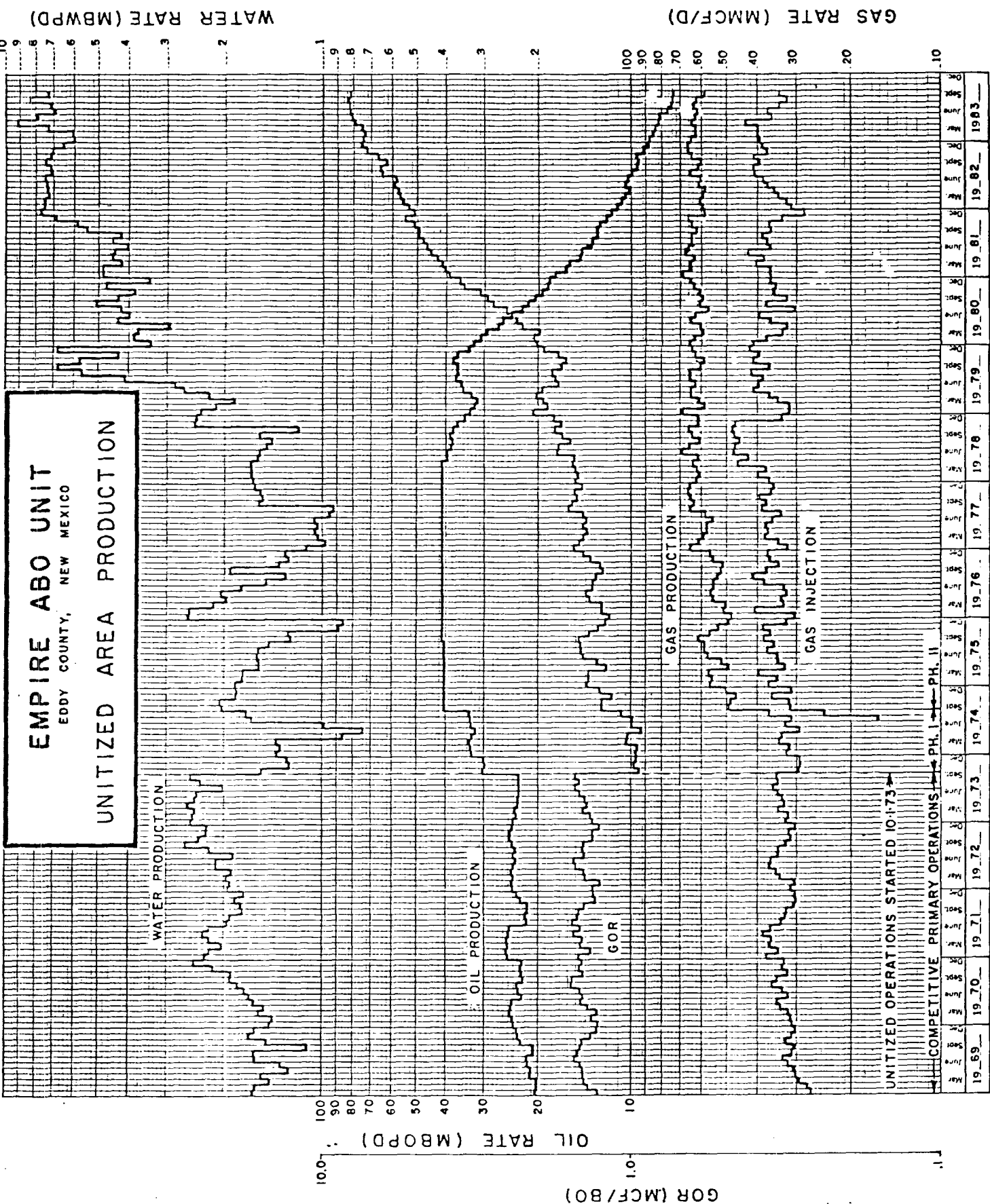


TABLE I
EMPIRE ABO UNIT
GAS INJECTION WELLS

<u>Previous Operator/ Lease and Well</u>	<u>Unit Well Designation</u>	<u>Location (Sec.-T.-R.)</u>
Hondo/State "A" No. 24	C-39	NW/4 SE/4 26 17 28
Samedan/State "Walker" No. 1	D-35	SW/4 SE/4 27 17 28
Hondo/State "A" No. 16	D-37	SW/4 SW/4 26 17 28
Amoco/State "BV" No. 1	F-25	SW/4 NW/4 32 17 28
Hondo/State "A" No. 35	F-27	SW/4 NE/4 32 17 28
ARCO/M. Yates B(ARC) No. 8	F-31	SW/4 NE/4 33 17 28
Amoco/State "BM" No. 1	G-22	NE/4 SW/4 31 17 28
Hondo/State "A" No. 9	G-24	NE/4 SE/4 31 17 28
Gulf-NCT "C" No. 1	H-19	SW/4 SE/4 36 17 27
Amoco/State "BE" No. 1	H-21	SW/4 SW/4 31 17 18
Amoco/Malco "H" Fed. No. 9	I-10	NE/4 NW/4 3 18 27
Amoco/State "F" No. 8	I-18	NE/4 NW/4 1 18 27
Amoco/Malco "H" Federal No. 2	J-12	SE/4 NE/4 3 18 27
Amoco/Windfohr Federal No. 4	K-7	NW/4 SE/4 4 18 27
Exxon/CBDU "A" No. 8	M-6	NE/4 NW/4 9 18 27

State of New Mexico



ALEX J. ARMIJO
COMMISSIONER



Commissioner of Public Lands

December 21, 1981

P. O. BOX 1148
SANTA FE, NEW MEXICO 87501

Atlantic Richfield Company
P. O. Box 1610
Midland, Texas 79702

Re: Empire Abo Unit
Eddy County, New Mexico
1981 Plan of Operation

4952

ATTENTION: Mr. Steven R. Sills

Gentlemen:

The Commissioner of Public Lands has this date approved your 1982 Plan of Operation for the Empire Abo Unit, Eddy County, New Mexico. Such plan proposes the following operation:

1. Continue operations of the Unit in 1982 substantially the same as in recent years. Continue to reinject all available residue gas along with gas available from other sources.
2. Oil will be produced from the lowest gas/oil ratio wells available to maximize oil recovery efficiency.
3. Infill drilling will consist of at least three and possibly five horizontal drainhole wells, pending continued evaluations of the drainhole programs.

Our approval is subject to like approval by the United States Geological Survey and the New Mexico Oil Conservation Division.

Enclosed is one approved copy for your files.

Please remit a Three (\$3.00) Dollar filing fee.

Very truly yours,

ALEX J. ARMIJO
COMMISSIONER OF PUBLIC LANDS

BY:
RAY D. GRAHAM, Director
Oil and Gas Division
AC 505/827-2748

AJA/RDG/pm
encls.

cc:

OCD, USGS-Albuquerque, New Mexico

State of New Mexico



JIM BACA
COMMISSIONER

Commissioner of Public Lands

January 5, 1983

P.O. BOX 1148
SANTA FE, NEW MEXICO 87504-1148

ARCO Oil and Gas Company
P. O. Box 1610
Midland, Texas 79702

#4952

Re: 1983 Plan of Operation
Empire Abo Unit
Eddy County, New Mexico

ATTENTION: Mr. Timothy J. Detmering

Gentlemen:

The Commissioner of Public Lands has this date approved your 1983 Plan of Operation for the Empire Abo Unit, Eddy County, New Mexico. Such plan proposes to kick out the Drainholes from the Well Nos. F-354 and the G-103 with the possibility of three to five additional drainholes being kicked out of existing wells next year pending evaluation of the F-354 and G-301. Your plan also proposes to continue to maintain an intensive field surveillance program and evaluate alternate and/or enhanced recovery techniques.

Our approval is subject to like approval by the United States Minerals Management Service and the New Mexico Oil Conservation Division.

Enclosed is an approved copy for your files.

Please remit a Three (\$3.00) Dollar filing fee.

Very truly yours,

JIM BACA
COMMISSIONER OF PUBLIC LANDS

BY:
RAY D. GRAHAM, Director
Oil and Gas Division
AC 505/827-5744

JB/RDG/pm
encls.

cc: OCD-Santa Fe, New Mexico
USMMS-Albuquerque, New Mexico
Administration



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

January 20, 1983

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

ARCO OIL & GAS CO.
P.O. Box 1610
Midland, Texas 79701

ATTENTION: Timothy J. Detmering

RE: Empire Abo Unit
1983 Plan of Development
Eddy County, NM

Dear Mr. Detmering:

Enclosed please find an approved copy of the material referenced above. Such approval is contingent upon like approval by the Commissioner of Public Lands and the U. S. Minerals Management Service.

Sincerely,

A handwritten signature in cursive script that reads "Roy E. Johnson".

Roy E. Johnson
Petroleum Geologist

REJ/dp

Enc.

cc: Commissioner of Public Lands - Santa Fe
Minerals Management Service - Albuquerque
OCD District Office - Artesia

RECEIVED
JAN - 4 1983
CONSERVATION DIVISION
SANTA FE

December 30, 1982

United States Department of the Interior
Geological Survey
P. O. Drawer 1857
Roswell, New Mexico 88201

Case # 4952

Attn: Mr. James A. Gillham (6)
Supervisory Petroleum Engineer

State of New Mexico
Mr. Jim Baca
Commissioner of Public Lands
P. O. Box 1148
Santa Fe, New Mexico 87501

Attn: Mr. Ray D. Graham, Director (3)
Oil and Gas Department

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

Attn: Mr. Joe D. Ramey (3)
Division Director

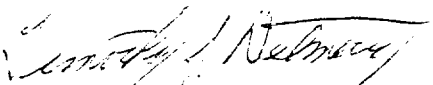
Working Interest Owners
Empire Abo Unit
Eddy County, New Mexico

Gentlemen:

In compliance with Section II of the Unit Agreement, Empire Abo Unit, Eddy County, New Mexico, ARCO Oil and Gas Company, as Unit Operator, on behalf of itself and other participating working interest owners, hereby submits for your approval a Plan of Operation to cover the period beginning January 1, 1983, and extending through the remainder of calendar year 1983.

Yours truly,

ARCO OIL AND GAS COMPANY
OPERATOR


Timothy J. Detmering
Engineer

TJD:dkb

cc: G. V. Ricks
Central File

*Joe, please
look these over & sign
if you approve. - looks
ok to me
R.T.*

EMPIRE ABO UNIT

1983 Plan of Operation

SUBMITTED December 1 ,1982

1. Summary of Proposed Plan of Operation for 1983

ARCO oil and Gas Company proposes to continue operation of the Empire Abo Unit, Eddy County, New Mexico, substantially the same as in recent years. We will continue to reinject all available residue gas from the Phillips extraction plant and the Amoco extraction plant. Oil will be produced from the most efficient wells in order to maximize recovery.

2. Project Area - Description and History

The Empire Abo Unit is located in portions of Sections 34, 35, 36, Township 17 South, Range 27 East; Sections 1, 2, 3, 4, 8, 9, 10, 11, 12, 15, 16, 17, Township 18 South, Range 27 East; Sections 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, Township 17 South, Range 28 East; Sections 4, 5, 6, Township 18 South, Range 28 East; Sections 29, 30, Township 17 South, Range 29 East, Eddy County, New Mexico.

The Unit, as originally proposed, would have covered 11,339.15 acres. Certain tracts within the Unit Area did not qualify for participation as of October 1, 1973, the effective date of the Unit. These tracts are: 2, 6, 28, 41, 42, 46, 55, 56, 69, 79, 84, and 91. Total area of these tracts is 644.74 acres. The remaining 10,694.41 acres comprised the Project Area for pressure maintenance until September 1,

1975. On this date tracts 41, 79, and 84 joined the Unit. The addition of these three tracts, which cover 120.03 acres, increased the total area of the Unit to 10,814.44 acres. Tracts 2, 6, 42 and 46 comprise the CITGO Empire Abo Unit, which received NMOCD approval in June, 1974. The Unit Area is now disposed as follows:

	<u>Acres</u>
ARCO Empire Abo Unit	10,814.44
CITGO Empire Abo Unit	241.05
Non-Participating Tracts	<u>283.66</u>
Total Area	11,339.15

ARCO Oil and Gas operates a pressure maintenance project at the Empire Abo Unit. This project involves injection of plant residue gas from Abo production back into the Abo formation.

3. Current Performance

In September, 1982, the Unitized Project Area averaged 9,510 BOPD with a 44 percent water cut and a gas-oil ratio of 6,464 cubic feet of gas per barrel of oil. Gas injection averaged 39,401 MCFPD (see attached Production History Plot). The Project Area production for September, 1982, was equivalent to 46,675 RSVBPD net voidage.

Cumulative production from the Project Area through September, 1982 was 194.9 MMBO. This is about 52.5 percent of the 371 MMBO originally in place. Remaining reserves are estimated to be 15.4 MMBO for an ultimate recovery of nearly 57 percent OOIP. As of September, 1982, the Unit had 227 active producing wells.

4. Basic Concepts Governing Future Unit Operations

- a) Field production history and reservoir numeric model studies have demonstrated that oil recovery is governed by gravity drainage and secondary gas cap expansion. We will be able to maximize the beneficial effects of these recovery mechanisms by observation of well performance and producing from the most efficient wells, those with the lowest GOR's.
- b) Gas injection will help maintain reservoir pressure and control expansion of the secondary gas cap.

5. Discussion of Past, Current, and Future Operations

a) Gas Injection

Fifteen gas injection wells along the north edge of the field handle all of the Empire Abo Unit injected gas. Table I lists these wells. Beginning in July, 1974, and continuing through the latest month for which data is available (September, 1982), all available plant residue gas has been injected into the Abo gas cap. The Unit receives plant residue gas at about 700 psi and compresses it to 2000 psi for injection. Superhydration facilities at the extraction plants reduce hydrogen sulfide content to minimize possible corrosion. A rigorous corrosion treatment program is maintained. Permits for the Gas Injection Facilities have been granted by the State of New Mexico, Environmental Improvements Agency. We believe the injection facilities meet the requirements of the United States Geological Survey and the State of New Mexico.

b) Workovers

An intensive workover program in the last few years has been successful in maximizing low GOR production. The majority of the workovers consisted of recompleting wells lower in the reef. As a result of this program, almost all possible lower recompletions have been performed. We will continue to seek out wells with recompletion potential.

Various types of remedial work were performed in 1982. The B-48 and B-49 were converted to water injection wells. This will increase oil production by allowing more production from wells with high water cuts. There are now four water injection wells in the Empire Abo Unit. The B-39 and T-6 were both plugged and abandoned this year as they are of no further use to the unit. The R-6 was temporarily abandoned and may be useful to the unit at a later date.

c) Horizontal Drainhole Drilling

Drainholes will be kicked out of the F-354 and G-301 in the last quarter of this year. New reserves will be recovered from these two wells by delaying gas coning effects. Three to five additional drainholes may be kicked out of existing wells next year pending evaluation of the F-354 and G-301. We are currently evaluating methods of plugging back part of the drainhole in the K-211 to stop premature gas coning. Because of directional problems during drilling, the drainhole was turned up towards the gas-oil contact.

d) Continuing Field Study

In order to maximize future reserves, we will continue to maintain an intensive field surveillance program. We will also continue to evaluate alternate and/or enhanced recovery techniques.

e) Injection of Non-Abo Gas

Gas from non-Abo sources is delivered from the Gas Company of New Mexico (formerly Southern Union Gas Company) to the Empire Abo Unit. This began on June 18, 1976. Cumulative outside gas injected through September 31, 1982 was 3,837 MMCF. Cumulative gas delivered back to the supplier through September 31, 1982 was 411 MMCF and the net cumulative non-Abo gas bank was 3,426 MMCF.

6. Modifications

It is understood that to meet changing conditions, this plan of operation may be modified from time to time, with the approval of the Supervisor of the U.S.G.S., the Commissioner of Public Lands of the State of New Mexico, and the Department of Energy and Minerals, Oil Conservation Division, State of New Mexico.

ARCO Oil and Gas Company, as Unit Operator, will act prudently to preserve all rights of the mineral owners, and to effectively and efficiently recover the Unit Area reserves. This Company will meet all economical offset obligations, act to prevent waste, conserve natural resources, and protect correlative rights.

7. Effective Date and Duration of Plan

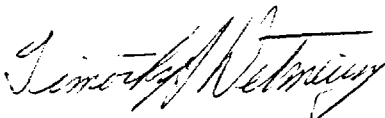
This Plan of Operation shall be effective January 1, 1983, and extend through the calendar year unless otherwise amended.

If this Plan of Operation meets with your approval, please sign on the next page and return one copy for our files.

Very truly yours,

ARCO OIL AND GAS COMPANY

OPERATOR



Timothy J. Detmering

TJD:dmm

APPROVED BY: _____ DATE _____
Supervisory Petroleum Engineer
United State Geological Survey

APPROVED BY: _____ DATE _____
Commissioner of Public Lands
State of New Mexico

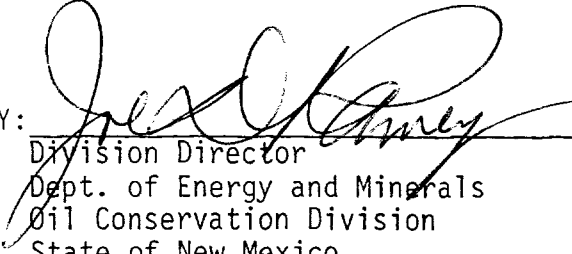
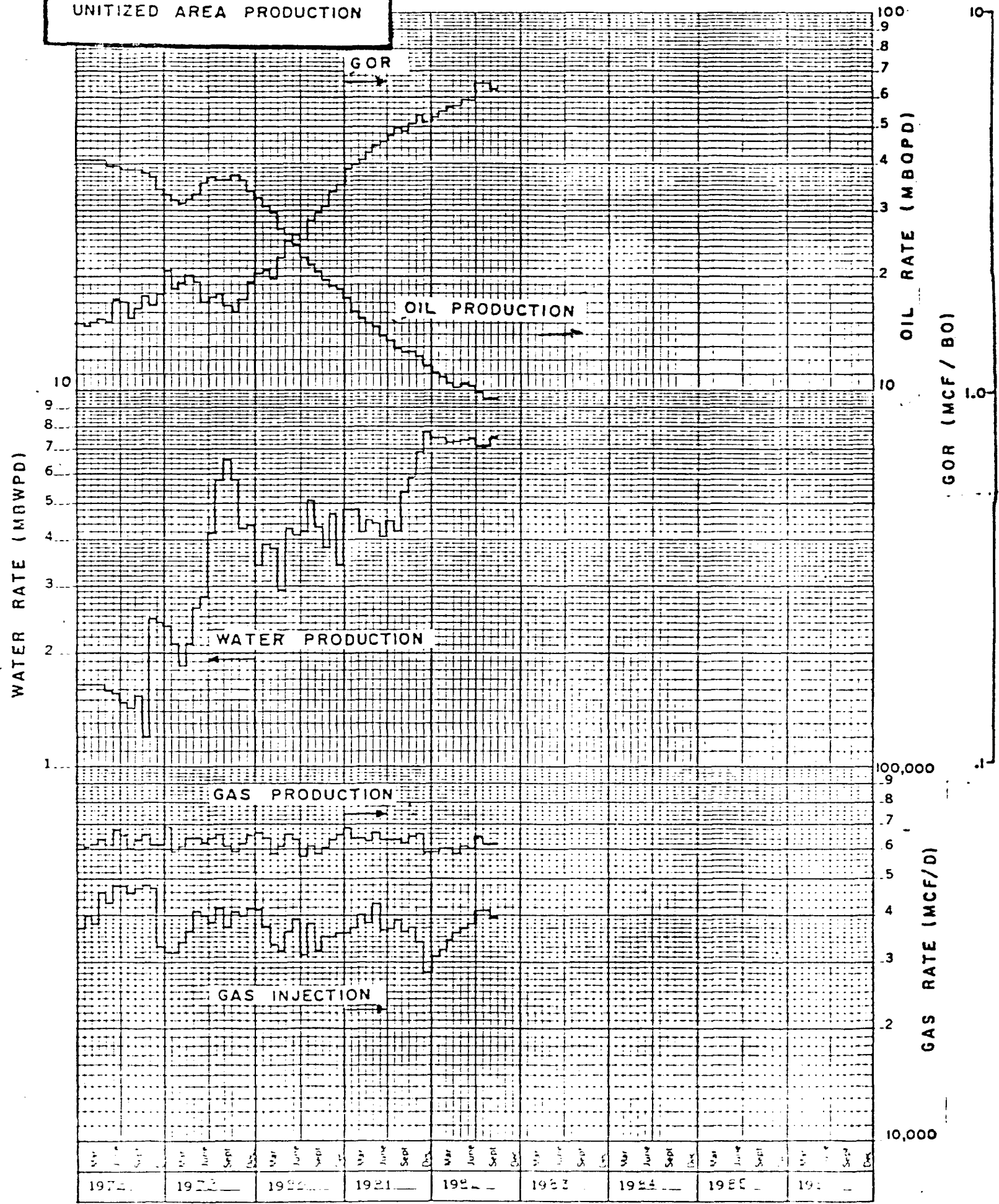
APPROVED BY:  _____ DATE 1/20/83
Division Director
Dept. of Energy and Minerals
Oil Conservation Division
State of New Mexico

TABLE I
EMPIRE ABO UNIT
GAS INJECTION WELLS

<u>Previous Operator/ Lease and Well</u>	<u>Unit Well Designation</u>	<u>Location (Sec.-T.-R.)</u>
Hondo/State "A" No. 24	C-39	NW/4 SE/4 26 17 28
Samedan/State "Walker" No. 1	D-35	SW/4 SE/4 27 17 28
Hondo/State "A" No. 16	D-37	SW/4 SW/4 26 17 28
Amoco/State "BV" No. 1	F-25	SW/4 NW/4 32 17 28
Hondo/State "A" No. 35	F-27	SW/4 NE/4 32 17 28
ARCO/M. Yates B(ARC) No. 8	F-31	SW/4 NE/4 33 17 28
Amoco/State "BM" No. 1	G-22	NE/4 SW/4 31 17 28
Hondo/State "A" No. 9	G-24	NE/4 SE/4 31 17 28
Gulf-NCT "C" No. 1	H-19	SW/4 SE/4 36 17 27
Amoco/State "BE" No. 1	H-21	SW/4 SW/4 31 17 18
Amoco/Malco "H" Fed. No. 9	I-10	NE/4 NW/4 3 18 27
Amoco/State "F" No. 8	I-18	NE/4 NW/4 1 18 27
Amoco/Malco "H" Federal No. 2	J-12	SE/4 NE/4 3 18 27
Amoco/Windfohr Federal No. 4	K-7	NW/4 SE/4 4 18 27
Exxon/CBDU "A" No. 8	M-6	NE/4 NW/4 9 18 27

EMPIRE ABO UNIT
 Eddy County, New Mexico
 UNITIZED AREA PRODUCTION



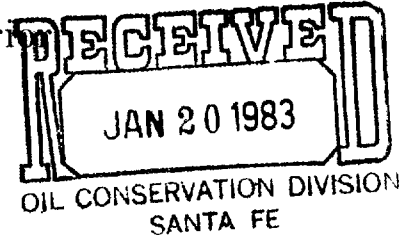
Year	Month	Year	Month	Year	Month	Year	Month	Year	Month
1970	Mar	1972	June	1974	Sept	1976	Dec	1978	Mar
	June		Sept		Dec		Mar		June
	Sept		Dec		Mar		June		Sept
	Dec		Mar		June		Sept		Dec
	Mar		June		Sept		Dec		Mar
	June		Sept		Dec		Mar		June
	Sept		Dec		Mar		June		Sept
	Dec		Mar		June		Sept		Dec
	Mar		June		Sept		Dec		Mar
	June		Sept		Dec		Mar		June
	Sept		Dec		Mar		June		Sept
	Dec		Mar		June		Sept		Dec



IN REPLY
REFER TO:

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
505 MARQUETTE AVENUE, N.W., SUITE 815
ALBUQUERQUE, NEW MEXICO 87102



JAN 19 1983

Case 34952

Arco Oil and Gas Company
Attention: Timothy J. Detmering
P. O. Box 1610
Midland, Texas 79702

Gentlemen:

Four approved copies of your 1983 plan of development for the Empire Abo unit area, Eddy County, New Mexico, is enclosed. Such plan, proposing to continue operation of the unit in the same manner as in recent years, was approved on this date subject to like approval by the appropriate officials of the State of New Mexico.

Sincerely yours,

(ORIG. SGD.) JAMES W. SHELTON

FOR Gene F. Daniel
Deputy Minerals Manager
Oil and Gas

Enclosures

cc:
Comm. of Public Lands
NMOCD



United States Department of the Interior

GEOLOGICAL SURVEY

Drawer 1857
Roswell, New Mexico 88201

October 16, 1973

475 ✓

Atlantic Richfield Company
Attention: William L. Embry
P.O. Box 1610
Midland, Texas 79701

Gentlemen:

Your letter of October 12 transmits a "Certificate of Effectiveness", a copy of Exhibit E revised October 1, 1973, to the unit operating agreement and a certified copy of an Affidavit of Unit Agreement Execution by the working interest owners for the Empire Abo unit agreement, Eddy County, New Mexico. The "Certificate of Effectiveness" verifies the effective date of the Empire Abo unit agreement as October 1, 1973, pursuant to Section 23 of the agreement.

All above described items are hereby accepted for record purposes and copies of the instruments are being distributed to the appropriate Federal offices.

Sincerely yours,

CARL C. TRAYWICK
Acting Area Oil and Gas Supervisor

cc:
Artesia (w/cy of Instrs.)
BLM, Santa Fe (w/cy of Instrs.)
NMOCC, Santa Fe (ltr. only)
Com. of Pub. Lands, Santa Fe (ltr. only)
Accounts

JAGillham:ds

Unit Name EMPIRE ABO UNIT (WATERFLOOD)
 Operator Atlantic Richfield Company
 County EDDY

DATE	OCC CASE NO.	4952	EFFECTIVE DATE	TOTAL ACREAGE	STATE	FEDERAL	INDIAN-FEE	SEGREGATION CLAUSE	TERM
APPROVED	OCC ORDER NO.	R-4548	10-1-73	11,339.15	7,154.29	4,184.86	-0-	Yes	5 yrs.
COMMISSIONER	OCC-6-15-73								

(10,734.41 Acres Committed)

UNIT AREA

TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM

Section 34: S/2SE/4
 Section 35: S/2S/2

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM

Section 25: S/2 and S/2N/2
 Section 26: S/2, S/2NE/4 and SE/4NW/4
 Section 27: S/2
 Section 28: SE/4SE/4
 Section 31: S/2 and S/2N/2
 Section 32: S/2, NE/4, E/2NW/4, and SW/4NW/4
 Section 33: All
 Section 34: All
 Section 35: N/2 and N/2S/2
 Section 36: N/2NW/4 and SW/4NW/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM - CONTINUED

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

TOWNSHIP 18 SOUTH, RANGE 28 EAST, NMPM

Section 4: N/2N/2 and SW/4NW/4
 Section 5: N/2
 Section 6: N/2, SW/4, N/2SE/4 and SW/4SE/4

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM

Section 29: N/2SW/4 and S/2NW/4
 Section 30: S/2N/2, SW/4, and N/2SE/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM

Section 1 through 3: All
 Section 4: SE/4, S/2NE/4, E/2SW/4, and SW/4SW/4
 Section 8: E/2SE/4 and SE/4NE/4
 Section 9: All
 Section 10: N/2 and SW/4
 Section 11: NW/4, W/2NE/4, and NE/4NE/4
 Section 12: N/2NW/4
 Section 15: N/2NW/4 and SW/4NW/4
 Section 16: N/2, SW/4, N/2SE/4 and SW/4SE/4

Unit Name EMPIRE ABO UNIT (WATERFLOOD)
 Operator ATLANTIC RICHFIELD COMPANY
 County EDDY

STATE TRACT NO.	LEASE NO.	INSTI-TUTION	SEC.	TWP.	RGE.	SUBSECTION	RATIFIED		ACREAGE NOT RATIFIED	LESSEE
							DATE	ACRES		
30	647-154	C.S.	5	18S	28E	S/2NE/4			80.00	Marathon Oil Co.
31	647-322	C.S.	31	17S	28E	W/2SW/4 (Lots 3 & 4)	11-6-72		87.43	Maggie Suetta Cockburn Johnny Cockburn
32	647-324	C.S.	27	17S	28E	NE/4SW/4	8-29-73		40.00	Martin Yates, Jr. & Martin Yates III
33	647-344	C.S.	6	18S	28E	SW/4SE/4	2-12-73		40.00	Amoco Production Co.
34	647-349 647-351	C.S.	33	17S	28E	E/2, E/2NW/4, SW/4NW/4, SW/4	11-10-72		600.00	Atlantic Richfield Co.
35	647-361	C.S.	5	18S	28E	NE/4NW/4 (Lot 3)	2-12-73		40.21	Amoco Production Co.
36	647-364	C.S.	34	17S	28E	SW/4NW/4	2-12-73		40.00	Amoco Production Co.
37A	647-368 647-363 647-320	C.S.	6 25 26 31 32 34 35 36	18S 17S 17S 17S 17S 17S 17S 17S	28E 28E 28E 28E 28E 28E 28E 28E	E/2NE/4, SW/4NE/4, NE/4SE/4 S/2, S/2NE/4, S/2NW/4 S/2, S/2NE/4, SE/4NW/4 E/2SE/4 SW/4 N/2SE/4 NE/4, E/2NW/4, N/2SE/4, N/2SW/4 N/2NW/4, SW/4NW/4	12-4-72 11-24-72 8-28-73 11-10-72	1,920.17	Depco, Inc. Husky Oil Co. Yates Petr. Corp. Hondo Oil & Gas	
37B	647-368 647-363 647-320		32	17S	28E	NW/4NE/4	12-4-72		40.00	Depco, Husky, Yates & Hondo
37C	647-368 647-363 647-320		32	17S	28E	E/2NE/4, SW/4NE/4	12-4-72		120.00	Depco, Husky, Yates & Hondo
37D	"		31	17S	28E	SE/4NE/4	"		40.00	" " "

Unit Name EMPIRE ABO UNIT (WATERFLOOD)
 Operator ATLANTIC RICHFIELD COMPANY
 County EDDY

STATE TRACT NO.	LEASE NO.	INSTI-TUTION	SEC.	TWP.	RGE.	SUBSECTION	DATE	RATIFIED		LESSEE
								ACRES	ACREAGE	
								NOT		
								RATIFIED		
38	647-371	C.S.	34	17S	28E	SE/4NW/4	10-30-72	40.00		J. Hiram Moore & Betty Jane Moore, Trustee Marathon Oil Co.
39	2029-2	C.S.	4	18S	28E	SW/4NW/4		40.00		Exxon Corporation
40	2029-28	C.S.	16	18S	27E	N/2SW/4, NW/4NW/4	2-20-73	120.00		
<u>41</u>	2029-40	C.S.	4	18S	28E	Lot 1 (NE/4NE/4)	<u>NOT COMMITTED</u>	<u>40.03</u>		Cities Service Oil Co.
<u>42</u>	2029-45	C.S.	2	18S	27E	Lot 3 (NE/4NW/4)	<u>NOT COMMITTED</u>	<u>40.60</u>		Cities Service Oil Co.
43	2029-46	C.S.	4	18S	28E	NW/4NW/4 (Lot 4)	1-9-73	40.21		American Petrofina Co. of Texas
44.	B-752-2	C.S.	36	17S	27E	E/2SW/4, NW/4SE/4	8-29-73	120.00		William P. Doolley
45	B-752-3	C.S.	36	17S	27E	E/2SE/4	4-17-73	80.00		Harold Kersey & Omar Kersey, D/B/a Kersey & Company
<u>46</u>	B-1483-21	C.S.	2	18S	27E	Lot 2, (NW/4NE/4)	<u>NOT COMMITTED</u>	<u>40.45</u>		Cities Service Oil Co.
47	B-2071-14	C.S.	32	17S	28E	E/2SE/4	2-12-73	80.00		Amoco Production Co.
48	B-2071-20	C.S.	31	17S	28E	W/2SE/4	1-9-73	80.00		Aston & Fair, Inc.
49	B-2071-22	C.S.	27	17S	28E	SW/4SE/4	9-5-73	40.00		Samedan Oil Corp.
50	B-2071-23	C.S.	27	17S	28E	SE/4SE/4, N/2SE/4	3-12-73	120.00		Lauretta Marion Phillips
51	B-2071-24	C.S.	34	17S	28E	SW/4	4-9-73	160.00		Robert E. Boling
52	B-2071-25	C.S.	34	17S	28E	SE/4NE/4	10-30-72	40.00		Betty Jane Moore & J. Hiram Moore, Trustees
53	B-3823-1	C.S.	5	18S	28E	N/2NE/4, (Lots 1 & 2)	2-12-73	80.47		Amoco Production Co.

Unit Name EMPIRE RBO UNIT (WATERFLOOD)
 Operator ATLANTIC RICHFIELD COMPANY
 County EDDY

STATE TRACT NO.	LEASE NO.	INSTI-TUTION	SEC.	TWP.	RGE.	SUBSECTION	RATIFIED		DATE	ACRES	ACREAGE		LESSEE
							NOT RATIFIED	RATIFIED					
54	B-3823-7	C.S.	4	18S	28E	NW/4NE/4 (Lot 2)			11-1-72	40.09			Tom L. Ingram
55	B-4575-6	C.S.	33	17S	28E	NW/4NW/4			<u>NOT COMMITTED</u>		<u>40.00</u>		Castle & Wigzell
56	B-4575-7	C.S.	28	17S	28E	SE/4SE/4			<u>NOT COMMITTED</u>		<u>40.00</u>		Tenneco Oil Co. & Continental Oil Co.
57	B-5862-17	C.S.	31	17S	28E	SW/4NW/4 (Lot 2)			3-5-73	43.59			William Hudson & Mildred Hudson
58	B-5862-19	C.S.	32	17S	28E	NE/4NW/4			2-12-73	40.00			Amoco Production Co.
59	B-6869-43	C.S.	2	18S	27E	SW/4NE/4			11-10-72 2-15-73	40.00			Atlantic Richfield & G. L. Wilbanks
60	B-7071-13	C.S.	31	17S	28E	SE/4NW/4			11-29-72	40.00			Bert Aston
61A	B-7244-30	C.S.	2	18S	27E	SW/4NW/4			2-12-73	40.00			Amoco Production Co.
61B	B-7244-30	C.S.	2	18S	27E	SE/4NW/4			2-12-73	40.00			Amoco Production Co.
61C	B-7244-30	C.S.	2	18S	27E	NW/4SW/4			2-12-73	40.00			Amoco Production Co.
61D	B-7244-30	C.S.	2	18S	27E	SE/4SW/4			2-12-73	40.00			Amoco Production Co.
62	B-7298-20	C.S.	16	18S	27E	NE/4NE/4			2-12-73	40.00			Amoco Production Co.
63	B-7596	C.S.	30	17S	29E	Lot 4, SE/4SW/4			1-3-73	68.40			Continental Oil Co.
64	B-7966-16	C.S.	31	17S	28E	NE/4SW/4			2-12-73 11-10-72	40.00			Amoco Production Co. Hondo Oil & Gas Co.
65	B-7966-19	C.S.	31	17S	28E	SE/4SW/4			1-9-73	40.00			Franklin, Aston & Fair, Ind.
66	B-8814	C.S.	27	17S	28E	SW/4SW/4			12-4-72	40.00			F. D. Shufflebarger

Unit Name EMPIRE ABO UNIT (WATERFLOOD)
 Operator Atlantic Richfield Company
 County Eddy

STATE TRACT NO.	LEASE NO.	INSTI-TUTION	SEC.	TWP.	RGE.	SUBSECTION	RATIFIED		ACREAGE	LESSEE
							DATE	ACRES		
67	B-8814-12	C.S.	2	18S	27E	NE/4SW/4	2-12-73	40.00	Amoco Production Co.	
							11-10-72		Hondo Oil & Gas Co.	
68	B-9299-3	C.S.	2	18S	27E	NE/4NE/4 (Lot 1)	11-1-72	40.33	Atlantic Richfield Co.	
69	B-9391-4	C.S.	2	18S	27E	SE/4NE/4	<u>NOT COMMITTED</u>	<u>40.00</u>	Fred Turner, Jr. Est.	
70	B-9603-9	C.S.	16	18S	27E	W/2NE/4	2-20-73	80.00	Exxon Corporation	
71	B-10021-5	C.S.	31	17S	28E	SW/4NE/4	2-12-73	40.00	Amoco Production Co.	
72	B-10456-4	C.S.	16	18S	27E	SE/4NW/4	2-12-73	40.00	Amoco Production Co.	
73A	B-11538-7	C.S.	36	17S	27E	NW/4SW/4	1-3-73	40.00	Continental Oil Co.	
							8-30-73		Tenneco Oil Co.	
73B	B-11538-7	C.S.	32	17S	28E	SW/4SE/4	9-12-73	40.00	Continental Oil Co.	
							8-30-73		Tenneco Oil Co.	
73C	B-11538-7	C.S.	34	17S	28E	S/2SE/4	1-3-73	80.00	Continental Oil Co.	
							8-30-73		Tenneco Oil Co.	
74	B-11539	C.S.	4	18S	28E	Lot 3 (NE/4NW/4)	2-20-73	40.15	Exxon Corporation	
75	B-11593-8	C.S.	35	17S	28E	W/2NW/4	2-28-73	80.00	Sun Oil Company	
76	B-11593-9	C.S.	27	17S	28E	NW/4SW/4	2-28-73	40.00	Sun Oil Company	
77	B-11594-1	C.S.	6	18S	28E	NW/4NE/4 (Lot 2)	6-21-73	40.13	Vilas P. Sheldon	
78A	B-11594-3	C.S.	6	18S	28E	Lots 3, 5, 6, SE/4NW/4, NE/4SW/4	1-9-73	207.52	Franklin, Aston & Fair Inc.	
78B	B-11594-3	C.S.	5	18S	28E	NW/4NW/4 (Lot 4)	1-9-73	40.20	Franklin, Aston & Fair Inc.	
79	E-135-2	C.S.	27	17S	28E	SE/4SW/4	<u>NOT COMMITTED</u>	40.00	Tenneco Oil Co. Continental Oil Co.	

Unit Name EMPIRE ABO UNIT (WATERFLOOD)
 Operator ATLANTIC RICHFIELD COMPANY
 County EDDY

STATE TRACT NO.	LEASE NO.	INSTI-TUTION	SEC.	TWP.	RGE.	SUBSECTION	DATE	RATIFIED ACRES	ACREAGE		LESSEE
									NOT RATIFIED	RATIFIED	
80	E-379-4	C.S.	36	17S	27E	SW/4SW/4	2-12-73	40.00			Amoco Production Co.
81	E-949	C.S.	32	17S	28E	SE/4NW/4	11-10-72	80.00			Atlantic Richfield Co.
			34	17S	28E	NW/4NW/4					
82	E-1049	C.S.	16	18S	27E	SW/4NW/4	1-3-73	40.00			Continental Oil Co.
83	E-1717-2	C.S.	32	17S	28E	NW/4SE/4	2-12-73	40.00			Amoco Production Co.
84	E-2715-1	C.S.	5	18S	28E	SE/4NW/4			40.00		Tenneco Oil Co.
											NOT COMMITTED
85A	E-3635	C.S.	16	18S	27E	NE/4NW/4	11-13-72	40.00			Gulf Oil Corporation
85B	E-3635	C.S.	16	18S	27E	NW/4SE/4, SW/4SE/4, SW/4SW/4	11-13-72	120.00			Gulf Oil Corporation
86	E-4201	C.S.	30	17S	29E	Lot 2, 3, SE/4NW/4	1-3-73	96.11			Continental Oil Co.
87	E-5313	C.S.	36	17S	27E	SW/4SE/4	11-13-72	120.00			Gulf Oil Corporation
			2	18S	27E	SW/4SW/4, SE/4SE/4					
88	E-5461-1	C.S.	2	18S	27E	NW/4NW/4 (Lot 4)	2-12-73	40.73			Amoco Production Co.
							11-10-72				Hondo Oil & GasCo.
89	E-6945-1	C.S.	32	17S	28E	SW/4NW/4	2-12-73	40.00			Amoco Production Co.
90	E-7116	C.S.	34	17S	28E	NE/4NW/4, W/2NE/4	2-12-73	120.00			Amoco Production Co.
91	E-7179-1	C.S.	5	18S	28E	SW/4NW/4			83.66		Signal Oil & Gas Co.
			6	18S	28E	SW/4SW/4 (Lot 7)					NOT COMMITTED
92	E-7832	C.S.	34	17S	28E	NE/4NE/4	2-12-73	40.00			Amoco Production Co.
93	E-7833	C.S.	2	18S	27E	SW/4SE/4	2-12-73	40.00			Amoco Production Co.
94A	E-7989	C.S.	16	18S	27E	SE/4SW/4	2-12-73	40.00			Amoco Production Co.
94B	E-7989	C.S.	16	18S	27E	SE/4NE/4, NE/4SE/4	2-12-73	80.00			Amoco Production Co.

Unit Name EMPIRE ABO UNIT
 Operator ATLANTIC RICHFIELD COMPANY
 County EDDY

STATE TRACT NO.	LEASE NO.	INSTI-TUTION	SEC.	TWP.	RGE.	SUBSECTION	RATIFIED		ACRES	ACREAGE NOT RATIFIED	LESSEE
							DATE				
95A	OG-103	C.S.	6	18S	28E	SE/4SW/4	2-28-73		40.00		Sun Oil Company
95B	OG-103	C.S.	6	18S	28E	NW/4SE/4	2-28-73		40.00		Sun Oil Company
96	OG-181-1	C.S.	30	17S	29E	NE/4SW/4	8-29-73		40.00		Harvey E. Yates Co.
97	OG-693	C.S.	2	18S	27E	N/2SE/4	11-10-72		80.00		Atlantic Richfield Co.
98	OG-4307-1	C.S.	6	18S	28E	NW/4NW/4 (Lot 4)	2-12-73		43.80		Amoco Production Co.

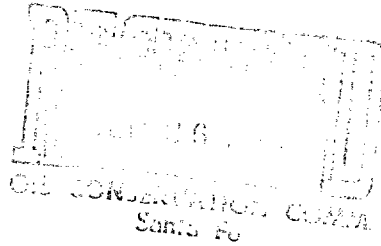
North American Petroleum Products
Department
1000 North Loop West
Houston, Texas 77001
Telephone
Teletype

443



September 24, 1973

State of New Mexico
Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501
Attention: Mr. A. L. Porter, Jr.
Secretary-Director



Commissioner of Public Lands
State of New Mexico
P. O. Box 1148
Santa Fe, New Mexico 87501
Attention: Mr. Ray D. Graham, Director
Oil and Gas Department

Re: Empire Abo Unit
Eddy County, New Mexico
Effective October 1, 1973

Gentlemen:

We are pleased to advise of the Final Approval by the United States Geological Survey on September 20, 1973, of the Empire Abo Unit Agreement and the Initial Plan of Operation. The Unit will become effective on October 1, 1973. We furnish you herewith copies of the following:

1. Letter of September 20, 1973, from the U.S.G.S. - Final Approval of the Unit Agreement.
2. U.S.G.S. - Certificate - Determination.
3. Letter of September 20, 1973, from the U.S.G.S. - Final Approval of Initial Plan of Operation.

Very truly yours,

William L. Embry
William L. Embry
Land Department

WLE:jrb

cc: Mr. J. R. Rhotenberry, Midland
Mr. C. H. McClure, Midland
Mr. H. N. Burton, Dallas



United States Department of the Interior

GEOLOGICAL SURVEY

Drawer 1857
Roswell, New Mexico 88201

September 20, 1973

Atlantic Richfield Company
Attention: Mr. William L. Embry
P. O. Box 1610
Midland, Texas 79701

Gentlemen:

The Empire Abo unit agreement, Eddy County, New Mexico, was approved September 20, 1973. This agreement has been assigned No. 14-08-0001-13801 and is effective as of October 1, 1973.

Enclosed is one copy of the approved unit agreement. We request that you furnish the Oil Conservation Commission and the Land Commissioner of the State of New Mexico and all other interested principals with appropriate evidence of this approval.

Sincerely yours,

CARL C. TRAYWICK
Acting Area Oil and Gas Supervisor

CERTIFICATION--DETERMINATION


Pursuant to the authority vested in the Secretary of Interior, under the act approved February 25, 1920, 41 Stat. 437, as amended, 30 U. S. C. secs. 181, et seq., and delegated to the Area Oil and Gas Supervisors of the Geological Survey, I do hereby:

A. Approve the attached agreement for the development and operation of the Empire Abo Unit Area, State of New Mexico.

B. Certify and determine that the unit plan of development and operation contemplated in the attached agreement is necessary and advisable in the public interest for the purpose of more properly conserving the natural resources.

C. Certify and determine that the drilling, producing, rental, minimum royalty, and royalty requirements of all Federal leases committed to said agreement are hereby established, altered, changed, or revoked to conform with the terms and conditions of this agreement.

Dated September 20, 1973.


Acting Area Oil and Gas Supervisor
United States Geological Survey

Contract Number 14-08-0001-13801



United States Department of the Interior

GEOLOGICAL SURVEY

Drawer 1857
Roswell, New Mexico 88201

September 20, 1973

Atlantic Richfield Company
Attention: Mr. P. E. Fletcher
P. O. Box 1610
Midland, Texas 79701

Gentlemen:

Two approved copies of your Initial Plan of Operation, dated September 4, 1973, for the Empire Abo unit area, Eddy County, New Mexico, are enclosed. Such plan proposes increased operating efficiency through better utilization of reservoir energy and the injection of residue gas for pressure maintenance and orderly control of expansion of the secondary gas cap. This plan was approved on this date subject to like approval by the appropriate officials of the State of New Mexico.

Sincerely yours,

CARL C. TRAYWICK
Acting Area Oil and Gas Supervisor



United States Department of the Interior

GEOLOGICAL SURVEY
WASHINGTON, D.C. 20242

4752
AUG 10 1972

Atlantic Richfield Company
P.O. Box 1610
Midland, Texas 79701

Attention: Mr. R. E. Howard

Gentlemen:

Your application of November 18, 1971, revised by letters of January 14, 1972, and July 7, 1972, filed with the Area Oil and Gas Supervisor, Roswell, New Mexico, requests the designation of the Empire Abo unit area embracing 11,339.15 acres, more or less, Eddy County, New Mexico, as logically subject to operation under the unitization provisions of the Mineral Leasing Act, as amended.

Unitization is for the purpose of conducting more efficient operation with partial pressure maintenance by the injection of residue gas and will be limited to the Abo formation as defined by Section 2(h) of the unit agreement. You estimate that such operations will result in the recovery of approximately 30,000,000 barrels of additional oil.

The land requested, as outlined on your plat marked "Exhibit A, Empire Abo unit, Eddy County, New Mexico," is hereby designated as a logical unit area. In order that the land now included in the Chalf Bluff unit area may be incorporated into the Empire Abo unit agreement, the Chalf Bluff unit agreement should be terminated.

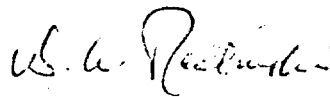
Your proposed form of unit agreement will be acceptable if modified as indicated. One marked copy of the form is returned herewith, one copy is being retained, and one copy is being sent to the Oil and Gas Supervisor, Roswell, New Mexico. We hereby concur in the Supervisor's recommendation that the proposed basis for allocating unitized production be accepted.

The format of the sample exhibits attached to the 1968 reprint of the Form of Unit Agreement for Unproved Areas should be followed closely, including the latest status of all acreage, in the preparation of Exhibits A and B.

In the absence of any objection not now apparent, a duly executed agreement conformed to the returned copy and approved by the appropriate officials of the State of New Mexico will be approved if submitted in approvable status within a reasonable period of time. However, the right is reserved to deny approval of any executed agreement that, in our opinion, does not have full commitment of sufficient lands to afford effective control of operations in the unit area.

As the unit area contains State of New Mexico lands, we are sending a copy of this letter to the Commissioner of Public Lands of the State of New Mexico in Santa Fe. Please contact the State of New Mexico before soliciting jointers, regardless of prior contacts with or clearance from the State.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "W. A. Reardon".

Acting Director



United States Department of the Interior

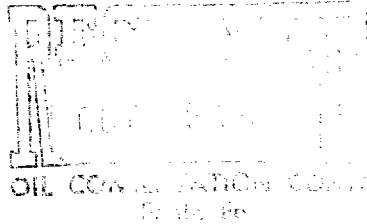
GEOLOGICAL SURVEY

Drawer 1857
Roswell, New Mexico 88201

4952

October 3, 1973

Atlantic Richfield Company
Attention: Mr. William L. Embry
P.O. Box 1610
Midland, Texas 79701



Gentlemen:

Your letter of September 28, 1973, transmits one original and one copy of sixteen executed instruments and an Exhibit C to the Empire Abo unit agreement No. 14-08-0001-13801, Eddy County, New Mexico. Pursuant to Sections 14(c) and 32, such instruments qualify Tracts 30, 39, and 73c to participate in the unit as of October 1, 1973, the effective date of the unit agreement. The revised Exhibit C, dated September 28, 1973, accompanying these instruments, reflects tract participation of all qualified tracts as of the effective date of the unit agreement. Such revision is hereby accepted for record purposes and copies thereof along with copies of the above instruments are being furnished to the appropriate Federal offices.

Sincerely yours,

CARL C. TRAYWICK
Acting Area Oil & Gas Supervisor

cc:
BLM, Santa Fe (w/atchs)
Artesia (w/atchs)
Com. Pub. Lands, Santa Fe (ltr only)
NMOCC, Santa Fe (ltr only)
Accounts

JAGillham:ds

State of New Mexico

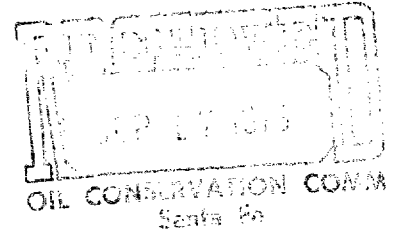
4952

TELEPHONE
505-827-2748



Commissioner of Public Lands

September 14, 1973



ALEX J. ARMIJO
COMMISSIONER

P. O. BOX 1148
SANTA FE, NEW MEXICO

Atlantic Richfield Company
P. O. Box 1610
Midland, Texas 79701

Re: Empire Abo Unit
INITIAL PLAN OF OPERATION
Eddy County, New Mexico

ATTENTION: Mr. William L. Embry

Gentlemen:

This is to advise that the Commissioner of Public Lands has this date approved your Initial Plan of Operation for the Empire Abo Unit, Eddy County, New Mexico. This approval is subject to like approval by the United States Geological Survey and the Oil Conservation Commission.

One approved copy is enclosed herewith.

Very truly yours,

ROMULO U. MARTINEZ
Assistant Director
Oil and Gas Department

AJA/RDG/s
encls.

cc: USGS-Roswell, New Mexico
OCC- Santa Fe, New Mexico

State of New Mexico

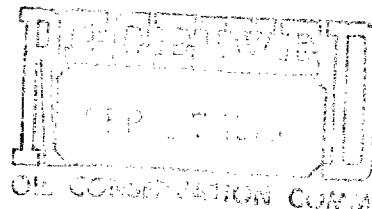
4952

TELEPHONE
505-827-2748



Commissioner of Public Lands

September 14, 1973



P.O. BOX 1148

SANTA FE, NEW MEXICO

ALEX J. ARMIJO
COMMISSIONER

Atlantic Richfield Company
P. O. Box 1610
Midland, Texas 79701

Re: Empire Abo Unit
Eddy County, New Mexico

ATTENTION: Mr. William L. Embry

Gentlemen:

The Commissioner of Public Lands has this date approved your Empire Abo Unit, Eddy County, New Mexico, subject to like approval by the United States Geological Survey.

Enclosed are five (5) Certificates of Approval.

When the United States Geological Survey approves this unit please advise us so that we may finish processing the unit, and ascertain the effective date.

Very truly yours,

HAY D. GRAMM, Director
Oil and Gas Department

AJA/EDG/e

encls.

cc:

USGS-Roswell, New Mexico (copy of ltr. and Certificate)
OCC- Santa Fe, New Mexico (copy of ltr only)

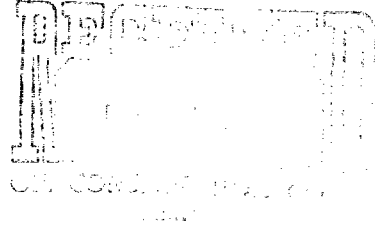


United States Department of the Interior

GEOLOGICAL SURVEY
Drawer 1857
Roswell, New Mexico 88201

4952

September 20, 1973



Atlantic Richfield Company
Attention: Mr. P. E. Fletcher
P. O. Box 1610
Midland, Texas 79701

Gentlemen:

Two approved copies of your Initial Plan of Operation, dated September 4, 1973, for the Empire Abo unit area, Eddy County, New Mexico, are enclosed. Such plan proposes increased operating efficiency through better utilization of reservoir energy and the injection of residue gas for pressure maintenance and orderly control of expansion of the secondary gas cap. This plan was approved on this date subject to like approval by the appropriate officials of the State of New Mexico.

Sincerely yours,

(ORIG. SGD.) CARL C. TRAYWICK

CARL C. TRAYWICK
Acting Area Oil and Gas Supervisor

cc:
Artesia (w/cy plan)
N.M.O.C.C., Santa Fe (ltr. only) ✓
Com. of Pub. Lands, Santa Fe (ltr. only)

JAGillham:lh

State of New Mexico

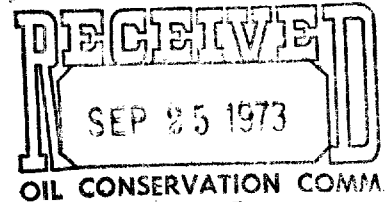
TELEPHONE
505-827-2748

4952



Commissioner of Public Lands

September 21, 1973



OIL CONSERVATION COMM.
Santa Fe
P. O. Box 1148
SANTA FE, NEW MEXICO

ALEX J. ARMIJO
COMMISSIONER

Atlantic Richfield Company
P. O. Box 1610
Midland, Texas 79701

Re: Empire Abo Unit
SUBSEQUENT JOINDERS
Eddy County, New Mexico

ATTENTION: Mr. William L. Embry

Gentlemen:

We are in receipt of your letter dated September 17, 1973, whereby you submitted one copy of joinders to the Empire Abo Unit Agreement and Operating agreement. These joinders have been accepted by this office and Tracts 95A, 49, 44, 73B, 73A are now fully committed to the Empire Abo Unit. These ratifications are to become effective as of the effective date of the unit agreement.

The joinders submitted were executed by the following persons or Companies.

- | | |
|---|---------------------|
| 1. Judith A. Gilchrist | Qualifies Tract 95A |
| 2. Samedan Oil Corporation &
B. F. Walker Estate | Qualifies Tract 49 |
| 3. William D. Flynn Estate | Qualifies Tract 44 |
| 4. Indemnity Agreements executed
by Amoco and Conoco | Qualifies Tract 73B |
| 5. Tenneco as Lessee of Record | Qualifies Tract 73A |

Very truly yours,

RAY D. GRAHAM, Director
Oil and Gas Department

AJA/RDG/s

cc: USGS-Roswell, New Mexico
OCC- Santa Fe, New Mexico



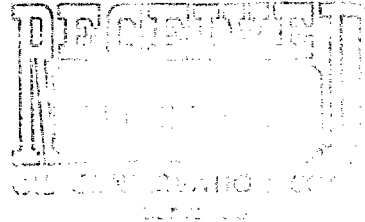
United States Department of the Interior

GEOLOGICAL SURVEY
Drawer 1857
Roswell, New Mexico 88201

4952

September 20, 1973

Atlantic Richfield Company
Attention: Mr. William L. Embry
P. O. Box 1610
Midland, Texas 79701



Gentlemen:

The Empire Abo unit agreement, Eddy County, New Mexico, was approved September 20, 1973. This agreement has been assigned No. 14-08-0001-13801 and is effective as of October 1, 1973.

Enclosed is one copy of the approved unit agreement. We request that you furnish the Oil Conservation Commission and the Land Commissioner of the State of New Mexico and all other interested principals with appropriate evidence of this approval.

Sincerely yours,

(ORIG. SGD.) CARL C. TRAYWICK

CARL C. TRAYWICK
Acting Area Oil and Gas Supervisor

cc:

- BIM, Santa Fe (w/cy appvd. appln.)
- Artesia (w/cy appvd. appln.)
- ✓ N.M.O.C.C., Santa Fe (ltr. only)
- Com. of Pub. Lands, Santa Fe (ltr. only)
- Area Geologist, Roswell (ltr. only)

JGillham:lh