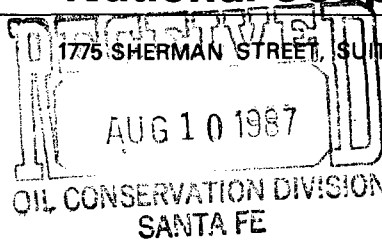




National Cooperative Refinery Association



1775 SHERMAN STREET, SUITE 3000 • DENVER, COLORADO 80203 • 303/861-4883

*Crude Oil
Division
Office*

July 29, 1987

New Mexico Oil Conservation Division
Post Office Box 2088
Sante Fe, New Mexico 87504

RE: Commingling Application
Candado No. 17A
Unit I, Sec 10, T26N-R7W
Rio Arriba County, New Mexico

Gentlemen:

National Cooperative Refinery Association requests administrative approval to downhole commingle production from the Blanco Mesaverde and the Otero Chacra in the subject well. The downhole commingling will be achieved by pulling both tubing strings and the packer. A single tubing string will be run to the Mesaverde and both the Chacra and the Mesaverde will produce through tubing.

The downhole commingling of the Candado No. 17A is necessary to improve the producing efficiency, and thereby prevent waste of the Mesaverde gas resources. Currently, the Mesaverde logs off every other day due to liquid loading and must be blown to the atmosphere to re-establish production. By commingling production downhole, the Chacra will provide additional gas production and aid the Mesaverde in unloading liquids from the wellbore. Subsurface and surface equipment installations can also be used to prevent waste if the well continues to log off. Such equipment cannot be used effectively with the current wellbore configuration.

The proposed commingling will not adversely effect either zone for the following reasons:

1. The bottom hole pressure of the Chacra is 87 percent of the Mesaverde bottom hole pressure based on a 7 day shut-in period.
2. Neither zone has a history of sensitivity to condensate or water and should not be damaged by the small amount produced.
3. Both zones produce gas with a similiar BTU content and commingling will not diminish the value of the commingled gas.

Commingling Application
July 29, 1987
Page 2

4. Both zones have common ownership.

In compliance with New Mexico Oil Conservation Division rule 303C, please find two copies of each of the following attachments:

1. Well location map showing acreage dedicated to well and ownership of offsetting leases.
2. Division Form C-116, 24-hour productivity test.
3. Production curve for the Mesaverde.
4. Production curve for the Chacra.
5. Bottom hole pressure for the Mesaverde.
6. Calculated bottom hole pressure for the Chacra.
7. Water analysis for the Mesaverde.*
8. Gas analysis for the Mesaverde.
9. Gas analysis for the Chacra.
10. Formula for the allocation of production for each commingled zone.
11. A copy of the letter sent to all offset operators notifying them of our intent to commingle.

* The Chacra formation does not produce any liquids in this well.

To allocate production to the individual Mesaverde and Chacra formations we recommend the following:

1. Allocate ⁵⁵~~65~~ percent gas production to the Mesaverde.
2. Allocate 45 percent gas production to the Chacra.

Commingling Application
July 29, 1987
Page 3

3. Allocate 100 percent condensate production to the Mesaverde.

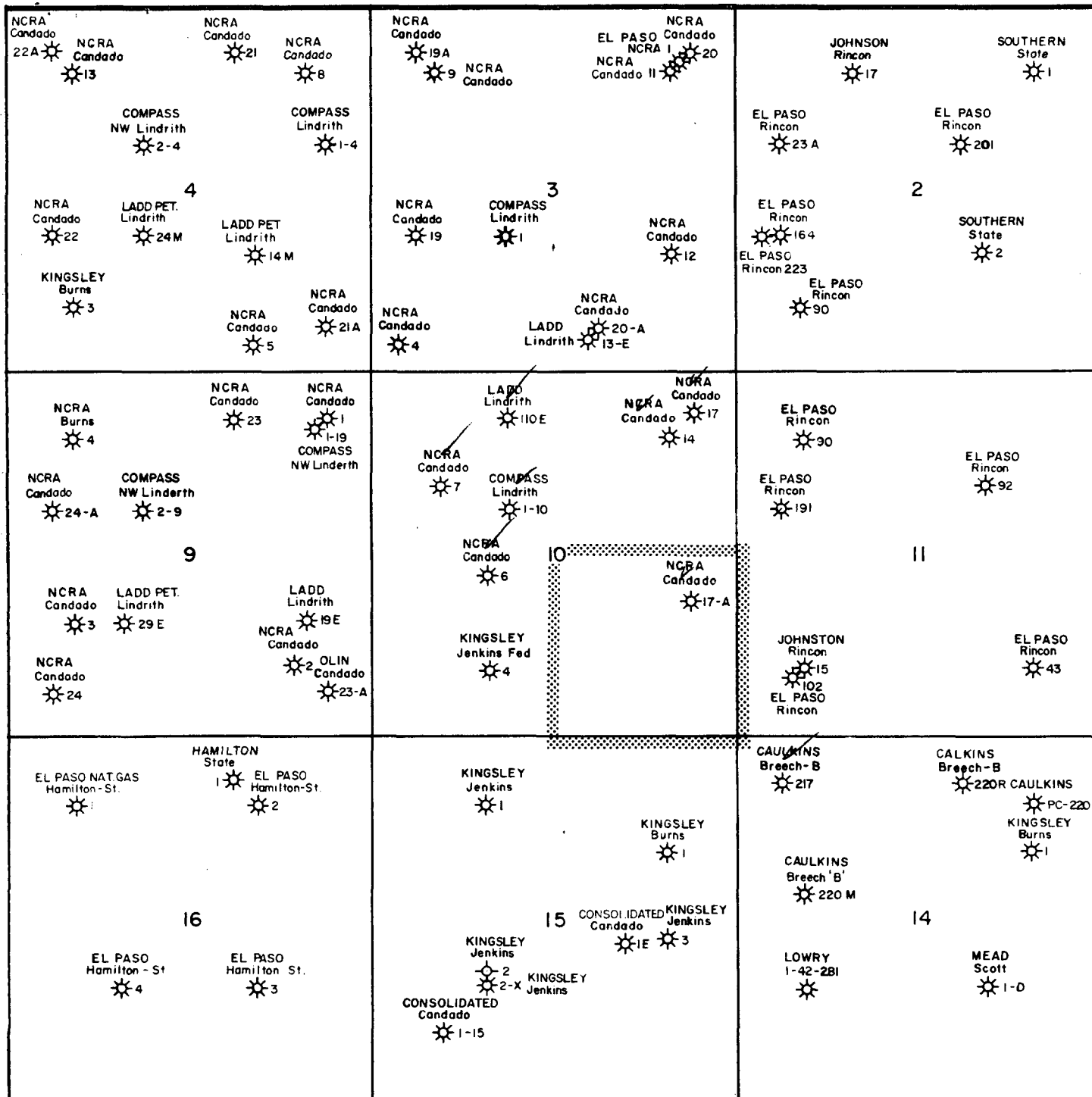
Questions concerning this commingling application should be directed to the undersigned at (303) 861-4883.

Sincerely,

A handwritten signature in cursive script, appearing to read "A.M. O'Hare".

A.M. O'Hare
Joint Operations Supervisor

MJB/bv1
enc



R 7 W

N.C.R.A.

Acreage Dedication Plat Showing Offset Ownership

Candado No. 17A

Rio Arriba County, New Mexico

GAS-OIL RATIO TESTS

Operator		Pool		County								
National Cooperative Refinery Assd.		Blanco Mesaverde/Otero Chacra		Rio Arriba								
Address		1775 Sherman, Suite 3000 Denver, CO 80203		TEST - (X)								
LEASE NAME		WELL NO.		DATE OF TEST								
		LOCATION		CHOKE SIZE								
		U S T R		TBG. PRESS.								
				DAILY ALLOW-ABLE								
				LENGTH OF TEST HOURS								
				WATER BALS.								
				GRAV. OIL BALS.								
				GAS M.C.F.								
				GAS - OIL RATIO CU.FT/BBL								
Candado No. 17 A Mesaverde	17A	I	10	26N	7W	7/15/87	144	24	0.5	0.3	181	603,333
Candado No. 17A Chacra	17A	I	10	26N	7W	7/22/87	119	24	0	0	150	

No well will be assigned an allowable greater than the amount of oil produced on the official test.

During gas-oil ratio test, each well shall be produced at a rate not exceeding the top unit allowable for the pool in which well is located by more than 25 percent. Operator is encouraged to take advantage of this 25 percent tolerance in order that well can be assigned increased allowable when authorized by the Division.

Gas volumes must be reported in MCF measured at a pressure base of 15.025 psia and a temperature of 60° F. Specific gravity base will be 0.60.

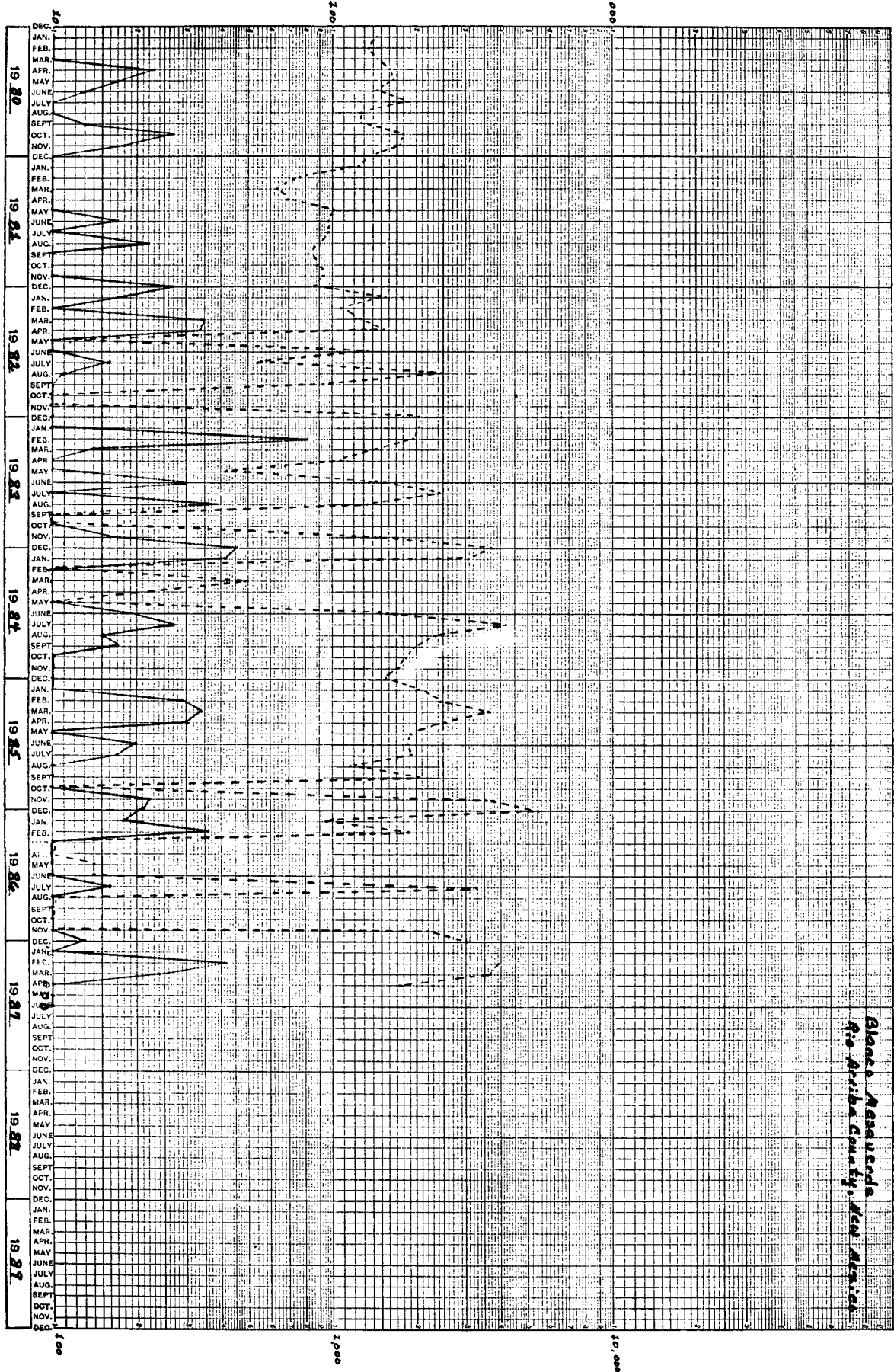
Report casing pressure in lieu of tubing pressure for any well producing through casing.

Mail original and one copy of this report to the district office of the New Mexico Oil Conservation Division in accordance with Rule 301 and appropriate pool rules.

I hereby certify that the above information is true and complete to the best of my knowledge and belief.

A.M. O'Hare
A.M. O'Hare (Signature)
Joint Operations Supervisor
(Title)

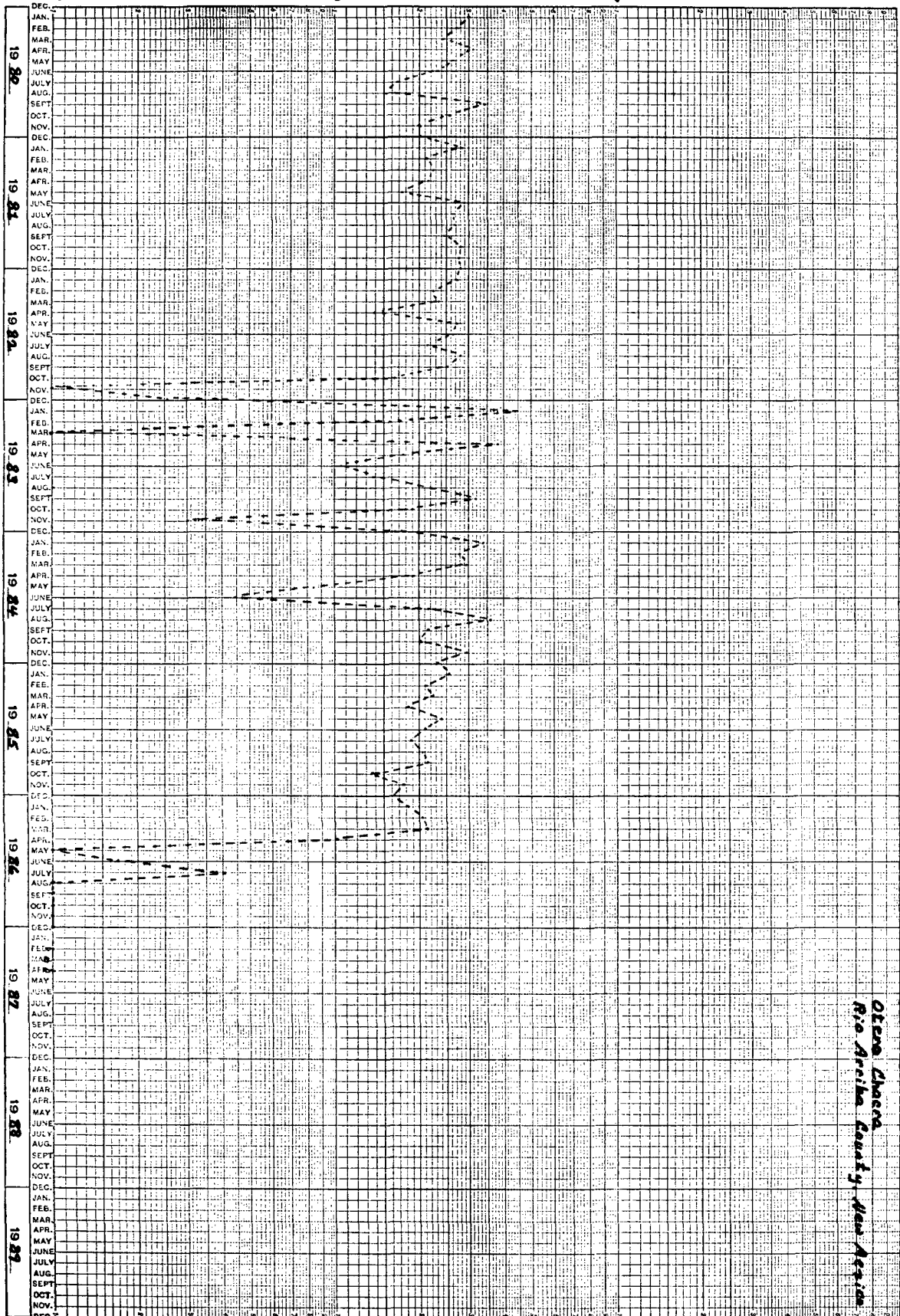
Condensate per Month —



Canada No. 11A
Blanch Assensade
Rio Arriba County, New Mexico

MCF per Month ----

MCF per Month



Canada 19-0
Otero Chacra
Rio Arriba County New Mexico

B & R SERVICE, INC.

P. O. Box 1048
Farmington, New Mexico 87499
(505) 325-2393

Company N.C.R.A. Lease CANADO Well #17-A
County RIO ARRIBA State NEW MEXICO Date 6-25-87
Shut-In _____ Zero Point G.L. Tbg. Pressure 641
Casing Pressure _____ Tbg. Depth _____ Casing Perf. _____
Max. Temp. _____ Fluid Level _____

<u>DEPTH</u>	<u>PSIG</u>	<u>GRADIENT</u>
0	641	----
3650	704	.017
4900	729	.020
5000	731	.020

CANDADO NO. 17A

CHACRA BOTTOM HOLE PRESSURE CALCULATION

Measured Surface Pressure, $P_s = 580 \text{ psig} = 594 \text{ psia}$

From Gas Analysis, Apparent Molecular Weight, $M_A = 20 \frac{\text{lbm}}{\text{lb} \cdot \text{mol}}$

Estimated Bottom Hole Temperature, $BHT = 110^\circ\text{F} = 570^\circ\text{R}$

Surface Temperature = $60^\circ\text{F} = 520^\circ\text{R}$

$$\bar{T} = \frac{BHT + T_s}{2} = \frac{570^\circ\text{R} + 520^\circ\text{R}}{2} = 545^\circ\text{R}$$

Assume BHP = 648 psia, $P = \frac{P_s + BHP}{2} = 621 \text{ psia}$

$$\rho = \frac{P}{\bar{T}} \frac{M_A}{R} = \frac{621 \text{ psia} \cdot 20 \frac{\text{lbm}}{\text{lb} \cdot \text{mol}}}{545^\circ\text{R} \cdot 10.73 \frac{\text{psia} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot ^\circ\text{R}}} = 2.124 \frac{\text{lb}}{\text{ft}^3}$$

$$BHP = P_s + \text{Depth} (\rho) = 594 \text{ psia} + 3650 \text{ ft} \left(\frac{2.124 \text{ lb}}{\text{ft}^3} \right) \frac{1 \text{ ft}^3}{144 \text{ in}^2}$$

$$BHP = 647.8 \text{ psia} \approx 648 \text{ psia}$$

$$BHP = 648 \text{ psia} = 634 \text{ psig}$$

Company: N.C.R.A.
 Address:
 Attention: MIKE BARNES
 Date Sampled: 3-22-87

Report No: 1
 Date: 3-22-87
 County: SAN JUAN
 Field: BLANCO
 Formation: MESA VERDE
 Lease: CANDADO
 Well: 17A

WATER ANALYSIS

Specific Grav: 1.000
 Chloride: 1,600 mg/l
 Bicarbonate: 31 mo/l
 Sulfate: 0.
 Sulfide: 0.
 Total Hardness
 (as CaCO3): 350 mo/l
 Resistivity: 8.00
 Potassium: 0.

pH: 6.50
 Calcium: 60 mg/l
 Magnesium: 49 mg/l
 Total Iron: 0.
 Sodium: 888 mo/l
 Total Disslvd
 Solids: 2,626 mo/l
 Ohm Meters @: 60 F
 Carbonate: N D

Sample Source:

Remarks:

Analyst: M. CONREY
 Smith Representative: M. CONREY

06-05-87

EL PASO NATURAL GAS COMPANY
MEASUREMENT DEPARTMENT
POST OFFICE BOX 1492
EL PASO, TEXAS 79978

MAILEE
04920

CHROMATOGRAPHIC GAS ANALYSIS REPORT

NATIONAL CO-OP REFINERY ASSN
1775 SHERMAN ST. SUITE 3000
DENVER, CO 80203

ANAL DATE 00-00-00

METER STATION NAME
CANDADO #17 A MV

METER STA 89646
OPER 6311

TYPE CODE	SAMPLE DATE	EFF. DATE	USE MOS	H2S GRAINS	LOCATION
00 ***	04-13-87	04-28-87	06	0	4 F 13

	NORMAL MOL%	GPM
CO2	.59	.000
H2S	.00	.000
N2	.99	.000
METHANE	75.08	.000
ETHANE	11.97	3.202
PROPANE	6.61	1.822
ISO-BUTANE	1.20	.393
NORM-BUTANE	1.94	.612
ISO-PENTANE	.66	.241
NORM-PENTANE	.46	.167
HEXANE PLUS	.50	.217
	100.00	6.654

SPECIFIC GRAVITY .769

MIXTURE HEATING VALUE
(BTU/CF @14.73 PSIA, 60 DEGREES, DRY) 1317

RATIO OF SPECIFIC HEATS 1.272

NO TEST SECURED FOR H2S CONTENT

*** TYPE CODE EXPLANATION SINGLE METER ANALYSIS

GXC

06-05-87

EL PASO NATURAL GAS COMPANY
MEASUREMENT DEPARTMENT
POST OFFICE BOX 1492
EL PASO, TEXAS 79978

MAILEE
04920

CHROMATOGRAPHIC GAS ANALYSIS REPORT

NATIONAL CO-OP REFINERY ASSN
1775 SHERMAN ST. SUITE 3000
DENVER, CO 80203

ANAL DATE 00-00-00

METER STATION NAME
CANDADO #17 A CH

METER STA 89645
OPER 6311

TYPE CODE	SAMPLE DATE	EFF. DATE	USE MOS	H2S GRAINS	LOCATION
40 ***	04-17-86	04-28-87	06	0	4 F 13

	NORMAL MOL%	GPM
CO2	.37	.000
H2S	.00	.000
N2	.81	.000
METHANE	85.59	.000
ETHANE	6.86	1.835
PROPANE	3.40	.937
ISO-BUTANE	.59	.193
NORM-BUTANE	.88	.277
ISO-PENTANE	.33	.121
NORM-PENTANE	.25	.091
HEXANE PLUS	.92	.400
	100.00	3.854

SPECIFIC GRAVITY .686

MIXTURE HEATING VALUE
(BTU/CF @14.73 PSIA, 60 DEGREES, DRY) 1196

RATIO OF SPECIFIC HEATS 1.287

NO TEST SECURED FOR H2S CONTENT

*** TYPE CODE EXPLANATION SINGLE METER ANALYSIS

GXC

ALLOCATION FORMULA

The recommended allocation of production back to the Chacra and Mesaverde formations is based on the percentage of gas historically produced from each formation to the total amount of gas produced from the wellbore.

The established production declines were extrapolated to mid-year 1987. The monthly values from that point were individually divided by the sum of the values and multiplied by 100 to get the percentage production for each formation. This procedure is outlined arithmetically below.

$$\text{Chacra Allocation} = \frac{\text{Chacra Production}}{\text{Chacra + Mesaverde Prod. combined}} \times 100$$

$$\text{Mesaverde Allocation} = \frac{\text{Mesaverde Production}}{\text{Chacara + Mesaverde Prod. combined}} \times 100$$



National Cooperative Refinery Association

1775 SHERMAN STREET, SUITE 3000 • DENVER, COLORADO 80203 • 303/861-4883

*Crude Oil
Division
Office*

July 29, 1987

Offset Operators

RE: Candado #17A
Section 10, T26N-R7W
Rio Arriba County, NM

Gentlemen:

National Cooperative Refinery Association is applying to the New Mexico Oil Conservation Division pursuant to NMOCD Rule 303C for administrative approval to commingle production from the Mesaverde and Chacra zones in the subject well. If you have no objections to this application we ask that you sign and return one copy of the enclosed Waiver of Objection to the NMOCD in the envelope provided.

Please contact the undersigned at (303)861-4883 if you have any questions pertaining to this application.

Sincerely,

A.M. O'Hare
Joint Operations Supervisor

/bvl
enc



National Cooperative Refinery Association

1775 SHERMAN STREET, SUITE 3000 • DENVER, COLORADO 80203 • 303/861-4883

*Crude Oil
Division
Office*

WAIVER OF OBJECTION

The undersigned, as an offset operator to National Cooperative Refinery Association's dual Mesaverde/Chacra producer known as Candado No. 17A and located in Unit I, Section 10, T26N, R7W, Rio Arriba County, New Mexico, does hereby waive any and all objections to NCRA's application for downhole commingling of the above specified well.

By: _____

Name(print): _____

Title: _____

Firm: _____

Date: _____

8/3/87

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE*
(Other instructions on re-
verse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

5. LEASE DESIGNATION AND SERIAL NO.

SF-079161

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME

Candado

9. WELL NO.

17A

10. FIELD AND POOL, OR WILDCAT
Blanco Mesa Verde-
Otero Chacra

11. SEC., T., R., M., OR BLK. AND
SURVEY OR AREA

Sec 10, T26N-R7W

12. COUNTY OR PARISH

Rio Arriba

13. STATE

NM

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL ☐ GAS WELL ☒ OTHER

2. NAME OF OPERATOR
National Cooperative Refinery Association

3. ADDRESS OF OPERATOR
1775 Sherman Street, Suite 3000, Denver, CO 80203

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*
See also space 17 below.)
At surface

1450' FSL x 790' FEL

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.)

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF

☐
☐
☐
☐
☐

PULL OR ALTER CASING

☐
☐
☐
☐
☐

FRACTURE TREAT

MULTIPLE COMPLETE

SHOOT OR ACIDIZE

ABANDON*

REPAIR WELL

CHANGE PLANS

(Other)

Comingling Well

☒

SUBSEQUENT REPORT OF:

WATER SHUT-OFF

☐
☐
☐
☐
☐

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other)

REPAIRING WELL

ALTERING CASING

ABANDONMENT*

☐
☐
☐
☐
☐

(NOTE: Report results of multiple completion on Well
Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

It is our intention to seek administration approval for downhole comingling of the Mesa Verde and Chacra Zones in this well from New Mexico Oil Conservation Division.

18. I hereby certify that the foregoing is true and correct

SIGNED

A. M. O'Hare

TITLE Jt. Operations Supervisor

DATE

8-8-87

(This space for Federal or State office use)

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side



National Cooperative Refinery Association

1775 SHERMAN STREET, SUITE 3000 • DENVER, COLORADO 80203 • 303/861-4883

Crude Oil
Division
Office

WAIVER OF OBJECTION

The undersigned, as an offset operator to National Cooperative Refinery Association's dual Mesaverde/Chacra producer known as Candado No. 17A and located in Unit I, Section 10, T26N, R7W, Rio Arriba County, New Mexico, does hereby waive any and all objections to NCRA's application for downhole commingling of the above specified well.

By: R. Craig Nielsen
Name(print): R. Craig Nielsen, Attorney-in-Fact ✓
Title: _____
Firm: SOUTHERN UNION EXPLORATION COMPANY
Date: 8-21-87

8/3/87



National Cooperative Refinery Association

1775 SHERMAN STREET, SUITE 3000 • DENVER, COLORADO 80203 • 303/861-4883

Crude Oil
Division
Office

WAIVER OF OBJECTION

The undersigned, as an offset operator to National Cooperative Refinery Association's dual Mesaverde/Chacra producer known as Candado No. 17A and located in Unit I, Section 10, T26N, R7W, Rio Arriba County, New Mexico, does hereby waive any and all objections to NCRA's application for downhole commingling of the above specified well.

By: S. F. Reiger
Name(print): G. F. REIGER
Title: DEPCO, INC.
Firm: Mg. Outside Opns.
Date: 8-20-87

8/3/87



National Cooperative Refinery Association

1775 SHERMAN STREET, SUITE 3000 • DENVER, COLORADO 80203 • 303/861-4883

Crude Oil
Division
Office

WAIVER OF OBJECTION

The undersigned, as an offset operator to National Cooperative Refinery Association's dual Mesaverde/Chacra producer known as Candado No. 17A and located in Unit I, Section 10, T26N, R7W, Rio Arriba County, New Mexico, does hereby waive any and all objections to NCRA's application for downhole commingling of the above specified well.

By: Clyde Phillips
Name(print): Clyde E. Phillips
Title: District Superintendent
Firm: Ladd Petroleum Corporation
Date: 8-17-87

8/3/87



National Cooperative Refinery Association

1775 SHERMAN STREET, SUITE 3000 • DENVER, COLORADO 80203 • 303/861-4883

Crude Oil
Division
Office

WAIVER OF OBJECTION

The undersigned, as an offset operator to National Cooperative Refinery Association's dual Mesaverde/Chacra producer known as Candado No. 17 and located in Unit A, Section 10, T26N, R7W, Rio Arriba County, New Mexico, does hereby waive any and all objections to NCRA's application for downhole commingling of the above specified well.

By: Caulkins Oil Company
Name(print): Carol Hector
Title: Office Mgr.
Firm: _____
Date: 8-17-87

8/3/87



National Cooperative Refinery Association

1775 SHERMAN STREET, SUITE 3000 • DENVER, COLORADO 80203 • 303/861-4883

Crude Oil
Division
Office

WAIVER OF OBJECTION

The undersigned, as an offset operator to National Cooperative Refinery Association's dual Mesaverde/Chacra producer known as Candado No. 17A and located in Unit I, Section 10, T26N, R7W, Rio Arriba County, New Mexico, does hereby waive any and all objections to NCRA's application for downhole commingling of the above specified well.

By: Lon H. Pardee

Name(print): Lon H. PARDEE

Title: Casper District Oper. Manager

Firm: UNION OIL CO. OF CALIFORNIA

Date: 9-1-87

8/3/87



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

OIL CONSERVATION DIVISION
BOX 2088
SANTA FE, NEW MEXICO 87501

SEP 25 1987

DATE 9-18-87

RE: Proposed MC _____
Proposed DHC X _____
Proposed NSL _____
Proposed SWD _____
Proposed WFX _____
Proposed PMX _____

Gentlemen:

I have examined the application dated 9-15-87
for the Natl Cooperative Refinery Assoc. Candado #17A I-10-26N-7W
Operator Lease and Well No. Unit, S-T-R

and my recommendations are as follows:

Approve after recommended Allocation has been
amended to read equal 100% instead of 110%

Yours truly,

E. B. Bards