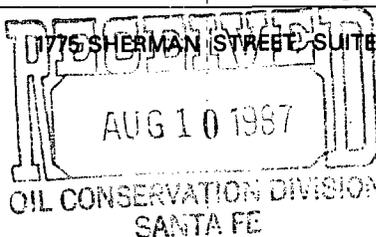




# National Cooperative Refinery Association



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  
Santa Fe, New Mexico 87504

RE: Commingling Application  
Candado No. 20  
Unit A, Sec 3, 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. 20 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 83 percent of the Mesaverde bottom hole pressure based on a 5 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 61.2 percent gas production to the Mesaverde.
2. Allocate 38.8 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.

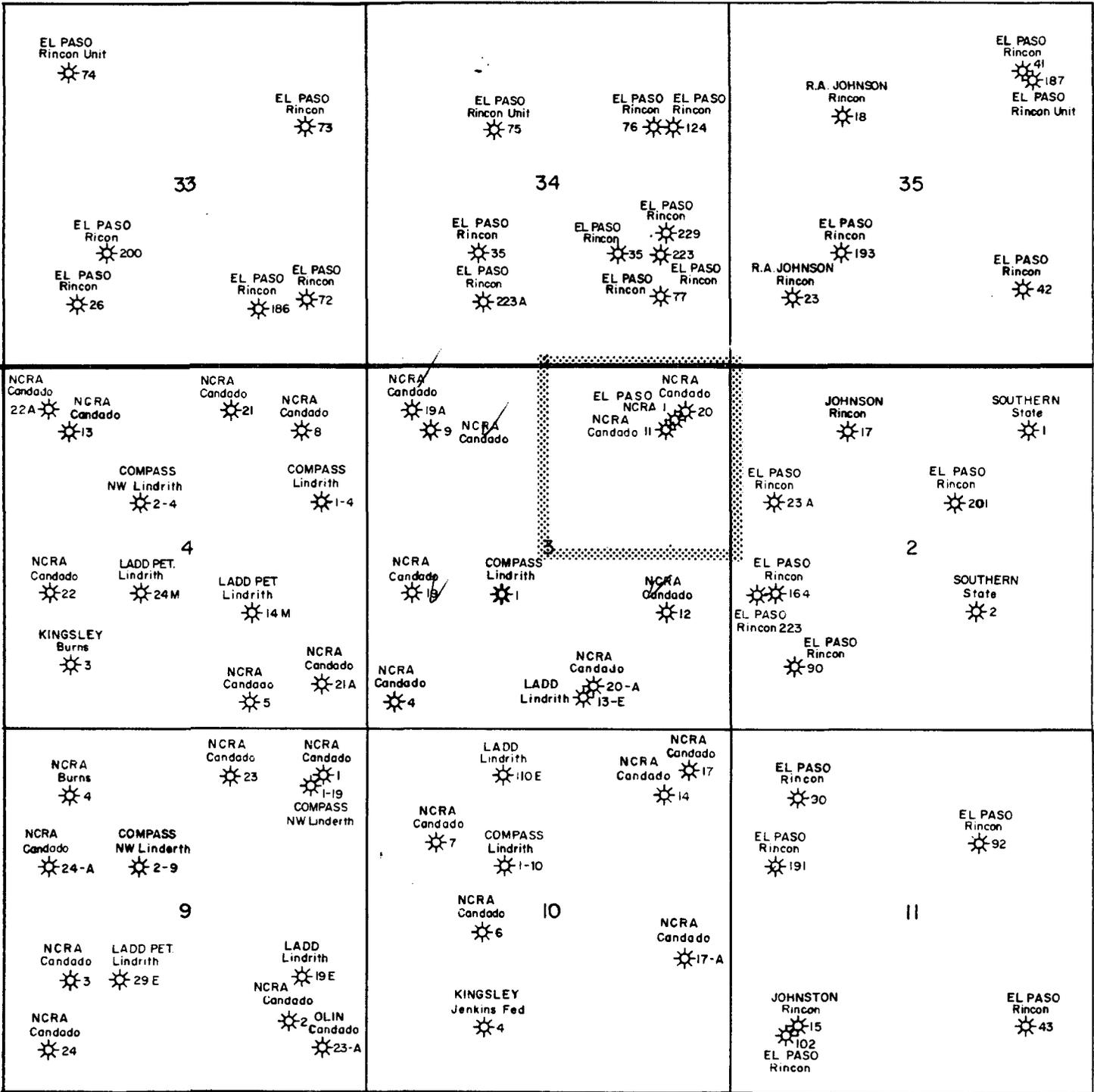
Sincerely,



A.M. O'Hare  
Joint Operations Supervisor

MJB/bv1  
enc

# R 7 W



T  
27  
N

T  
26  
N

## N.C.R.A.

Aceage Dedication Plat Showing Offset Ownership

Candado No. 20

Rio Arriba County, New Mexico

GAS-OIL RATIO TESTS

Operator: National Cooperative Refinery Assd. Pool: Blanco Mesaverde/Otero Chacra County: Rio Arriba  
 Address: 1775 Sherman, Suite 3000 Denver, CO 80203  
 TYPE OF TEST - (X)  Scheduled  Special

LEASE NAME	WELL NO.	LOCATION				DATE OF TEST	CHOKE SIZE	TBG. PRESS.	DAILY ALLOW-ABLE	LENGTH OF TEST hours	PROD. DURING TEST			GAS - OIL RATIO CU. FT./BBL
		U	S	T	R						WATER BALS.	GRAV. OIL BALS.	GAS M.C.F.	
Candado No. 20 Mesaverde	20	A	3	26N	7W	7/14/87	344		24	0	0.8	147	183,750	
Candado No. 20 Chacra	20	A	3	26N	7W	7/22/87	353		24	0	0	76		

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 allowables 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.

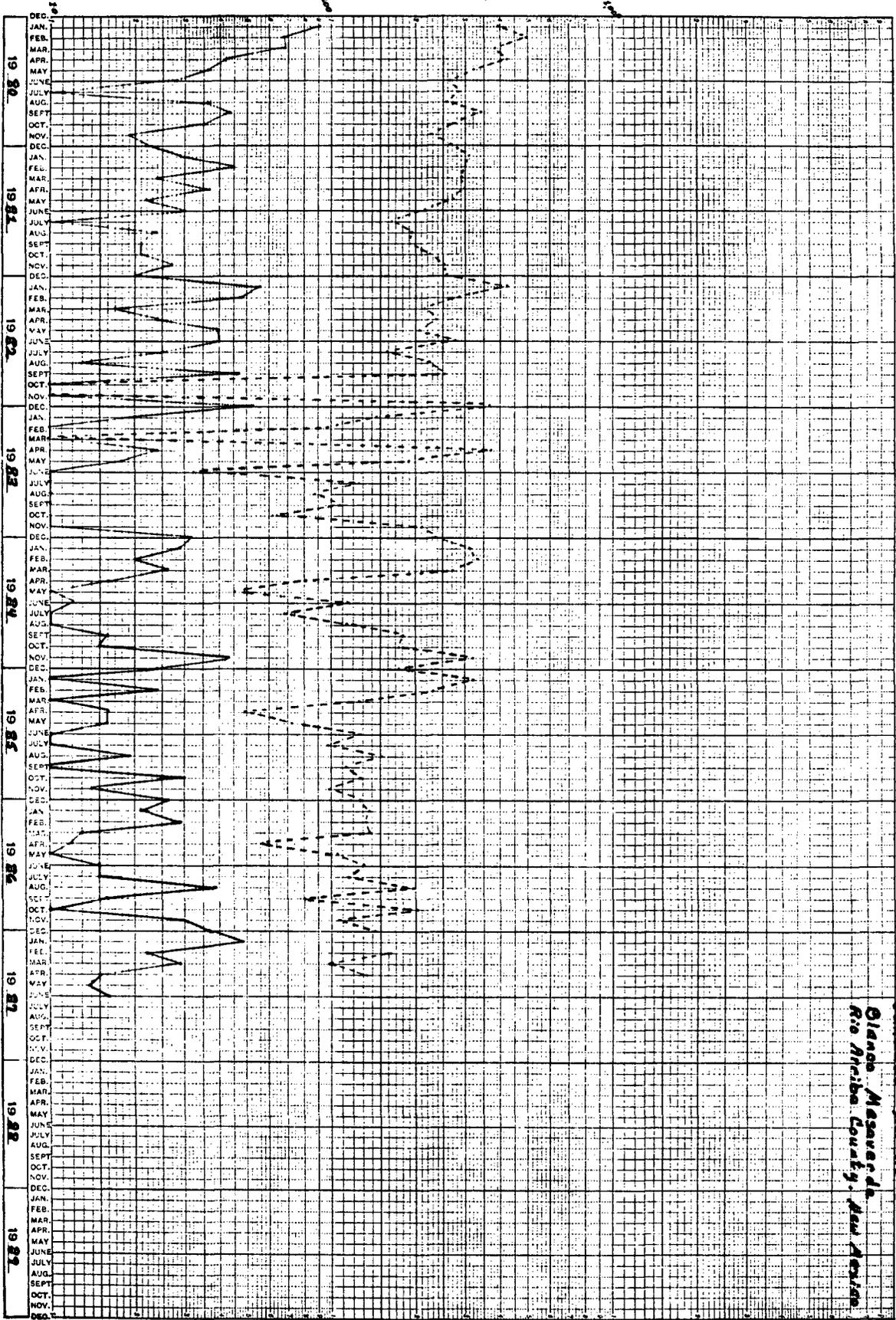
Report casing pressure in lieu of tubing pressure for any well producing through casing.

Mail original and one copy of this report to the district office of the New Mexico Oil Conservation Division in accordance with Rule 391 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)

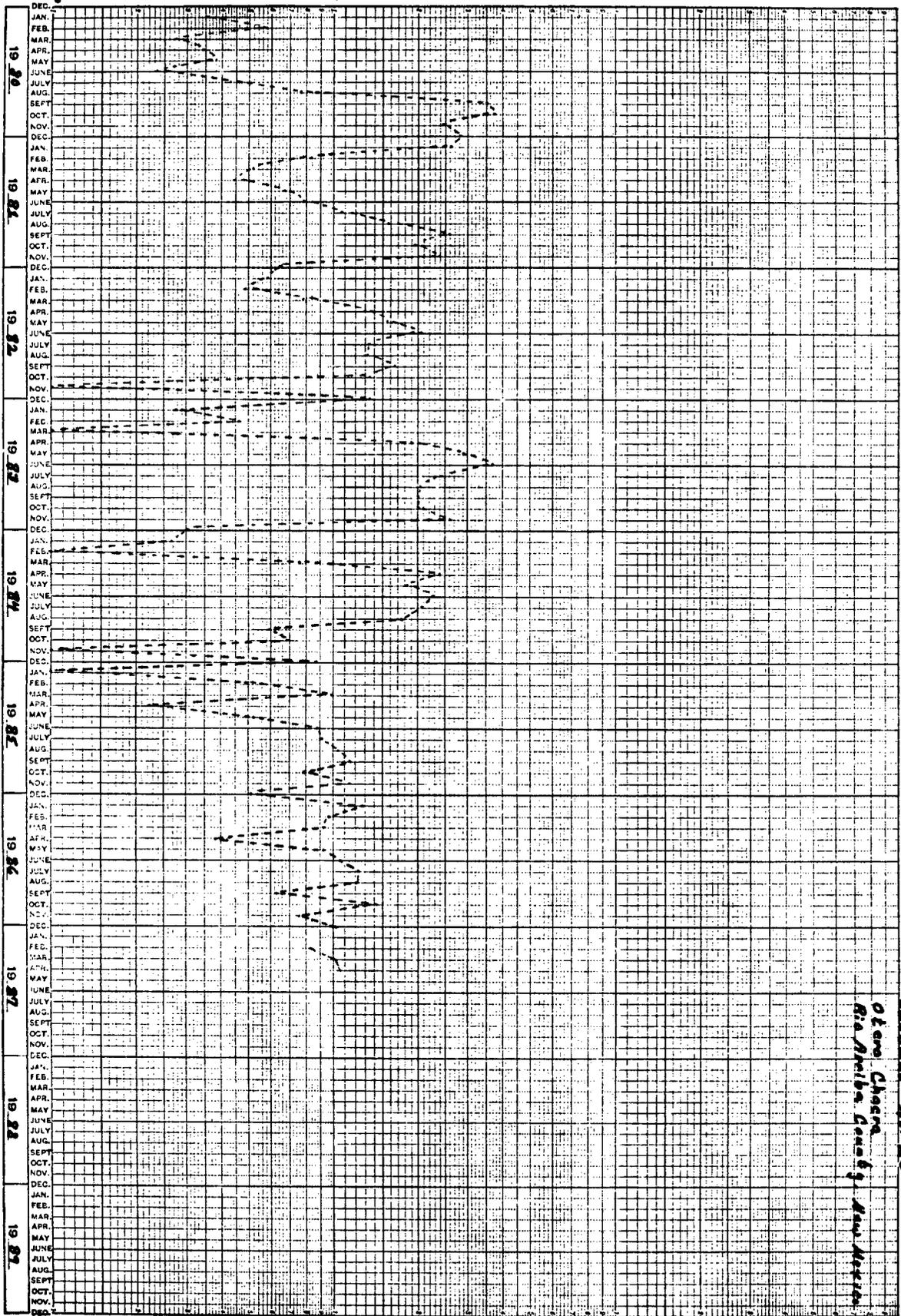
Condensate per Month



Condado No. 20  
Glance Masaner de  
Rio Arriba County, New Mexico

MCF per Month

ACF per Month



Canada, W. 20  
Otero, Chocoma  
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 #20  
County RIO ARRIBA State NEW MEXICO Date 6-25-87  
Shut-In \_\_\_\_\_ Zero Point G.L. Tbg. Pressure 576  
Casing Pressure \_\_\_\_\_ Tbg. Depth \_\_\_\_\_ Casing Perf. \_\_\_\_\_  
Max. Temp. \_\_\_\_\_ Fluid Level \_\_\_\_\_

<u>DEPTH</u>	<u>PSIG</u>	<u>GRADIENT</u>
0	576	----
3900	659	.021
5000	682	.021
5100	686	.040

CANDADO NO. 20

CHACRA BOTTOM HOLE PRESSURE CALCULATION

Measured Surface Pressure,  $P_s = 518 \text{ psig} = 532 \text{ psia}$

From Gas Analysis, Apparent Molecular Weight,  $M_A = 21 \frac{\text{lbm}}{\text{lb} \cdot \text{mol}}$

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

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

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

Assume BHP = 586 psia,  $P = \frac{P_s + \text{BHP}}{2} = 559 \text{ psia}$

$$\rho = \frac{P}{\bar{T}} \frac{M_A}{R} = \frac{559 \text{ psia} \cdot 21 \frac{\text{lbm}}{\text{lb} \cdot \text{mol}}}{545^\circ\text{R} \cdot 10.73 \frac{\text{psia} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot ^\circ\text{R}}} = 2.007 \frac{\text{lb}}{\text{ft}^3}$$

$$\text{BHP} = P_s + \text{Depth} (\rho) = 532 \text{ psia} + 3900 \text{ ft} \left( \frac{2.007 \text{ lb}}{\text{ft}^3} \right) \frac{1 \text{ ft}^3}{144 \text{ in}} =$$

$$\text{BHP} = 586.4 \text{ psia} \approx 586 \text{ psia}$$

$$\text{BHP} = 586 \text{ psia} = 572 \text{ psig}$$

Company: N. C. R. A.  
Address:  
Attention: MIKE BARNES  
Date Sampled: 4-1-87

Report No: 1  
Date: 4-2-87  
County: SAN JUAN  
Field: BLANCO  
Formation: MESA VERDE  
Lease: CANDADO  
Well: 20

#### WATER ANALYSIS

Specific Grav:	1.000	pH:	7.00
Chloride:	3,199 mg/l	Calcium:	56 mg/l
Bicarbonate:	N D	Magnesium:	5 mg/l
Sulfate:	0.	Total Iron:	0.
Sulfide:	0.	Sodium:	2,000 mg/l
Total Hardness		Total Disslvd	
(as CaCO3):	160 mg/l	Solids:	5,260 mg/l
Resistivity:	2.06	Ohm Meters @:	60 F
Potassium:	0.	Carbonate:	30 mg/l

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 #20 MV

METER STA 89989  
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	.63	.000
H2S	.00	.000
N2	1.05	.000
METHANE	73.84	.000
ETHANE	12.44	3.328
PROPANE	6.97	1.921
ISO-BUTANE	1.33	.435
NORM-BUTANE	2.15	.678
ISO-PENTANE	.74	.271
NORM-PENTANE	.50	.181
HEXANE PLUS	.35	.152
	100.00	6.966

SPECIFIC GRAVITY .779

MIXTURE HEATING VALUE  
(BTU/CF @14.73 PSIA, 60 DEGREES, DRY) 1331

RATIO OF SPECIFIC HEATS 1.270

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 #2D CH

METER STA 89990  
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	.38	.000
H2S	.00	.000
N2	.91	.000
METHANE	84.53	.000
ETHANE	7.69	2.057
PROPANE	3.94	1.086
ISO-BUTANE	.67	.219
NORM-BUTANE	1.01	.318
ISO-PENTANE	.33	.121
NORM-PENTANE	.25	.091
HEXANE PLUS	.29	.126
	100.00	4.018

SPECIFIC GRAVITY .682

MIXTURE HEATING VALUE  
(BTU/CF @14.73 PSIA, 60 DEGREES, DRY) 1188

RATIO OF SPECIFIC HEATS 1.286

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 #20  
Section 3, 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

/bv1  
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. 20 and located in Unit A, Section 3, 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 reverse side)

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

**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. <input type="checkbox"/> OIL WELL <input type="checkbox"/> GAS WELL <input checked="" type="checkbox"/> OTHER		5. LEASE DESIGNATION AND SERIAL NO. SF-079161
2. NAME OF OPERATOR National Cooperative Refinery Association		6. IF INDIAN, ALLOTTEE OR TRIBE NAME
3. ADDRESS OF OPERATOR 1775 Sherman Street, Suite 3000, Denver, CO 80203		7. UNIT AGREEMENT NAME
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface  1175' FNL x 1020' FEL		8. FARM OR LEASE NAME Candado
14. PERMIT NO.	15. ELEVATIONS (Show whether DF, RT, GR, etc.)	9. WELL NO. 20
		10. FIELD AND POOL, OR WILDCAT Blanco Mesa Verde-Otero Chacra
		11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 3, T26N-R7W
		12. COUNTY OR PARISH Rio Arriba
		13. STATE NM

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

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETE <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON* <input type="checkbox"/>	SHOOTING OR ACIDIZING <input type="checkbox"/>	ABANDONMENT* <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	(Other) <input type="checkbox"/>	
(Other) <input type="checkbox"/>	Comingle Well <input checked="" type="checkbox"/>		

(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. 20 and located in Unit A, Section 3, 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 E. 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. 20 and located in Unit A, Section 3, 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. 20 and located in Unit A, Section 3, 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: J. F. Reizen  
Name(print): G. F. REIGEL  
Title: Mgr. Outside Opns.  
Firm: DEPCO, Inc  
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. 20 and located in Unit A, Section 3, 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. Parout  
Name(print): Lon H. PAROUT  
Title: Casper District Oper. Manager  
Firm: UNION OIL CO. OF CALIFORNIA  
Date: 8-1-87

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

DATE 9-18-87

RECEIVED  
SEP 25 1987  
OIL CONSERVATION DIVISION

RE: Proposed MC \_\_\_\_\_  
Proposed DHC  \_\_\_\_\_  
Proposed NSL \_\_\_\_\_  
Proposed SWD \_\_\_\_\_  
Proposed WFX \_\_\_\_\_  
Proposed PMX \_\_\_\_\_

Gentlemen:

I have examined the application dated 9-15-87

for the Natl Cooperative Refinery Assoc Colorado #20 A-3-26N-7W  
Operator Lease and Well No. Unit, S-T-R

and my recommendations are as follows:

Approve with an allocation of 61% gas to the M.I.  
and 39% gas to the Chucra

Yours truly,

E. Bruch