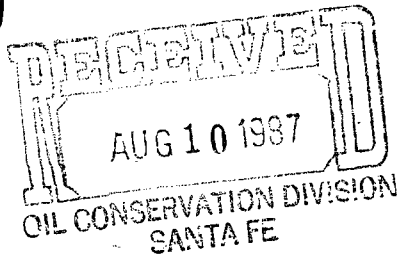




National Cooperative Refinery Association

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. 20A
Unit 0, 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. 20A 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 76 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 59.3 percent gas production to the Mesaverde.
2. Allocate 40.7 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

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

P.O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-116
Revised 10-1-78

GAS-OIL RATIO TESTS

Operator		Pool		County											
National Cooperative Refinery Asso.		Blanco Mesaverde/Otero Chacra		Rio Arriba											
Address		City		State											
1775 Sherman, Suite 3000		Denver, CO		80203											
LEASE NAME		WELL NO.	LOCATION			DATE OF TEST	CHOKE SIZE	T.B.G. PRESS.	DAILY ALLOWABLE	LENGTH OF TEST HOURS	PROD. DURING TEST			GAS - OIL RATIO	
			U	S	T	R					WATER BALS.	GRAV. OIL	OIL BALS.	GAS M.C.F.	CU.FT./BSL
Candado No. 20A Mesaverde		20A	0	3	26N	7W	7/14/87	352		24	0		0.7	145	207,142
Candado No. 20A Chacra		20A	0	3	26N	7W	7/22/87	328		24	0		0	72	

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 301 and appropriate pool rules.

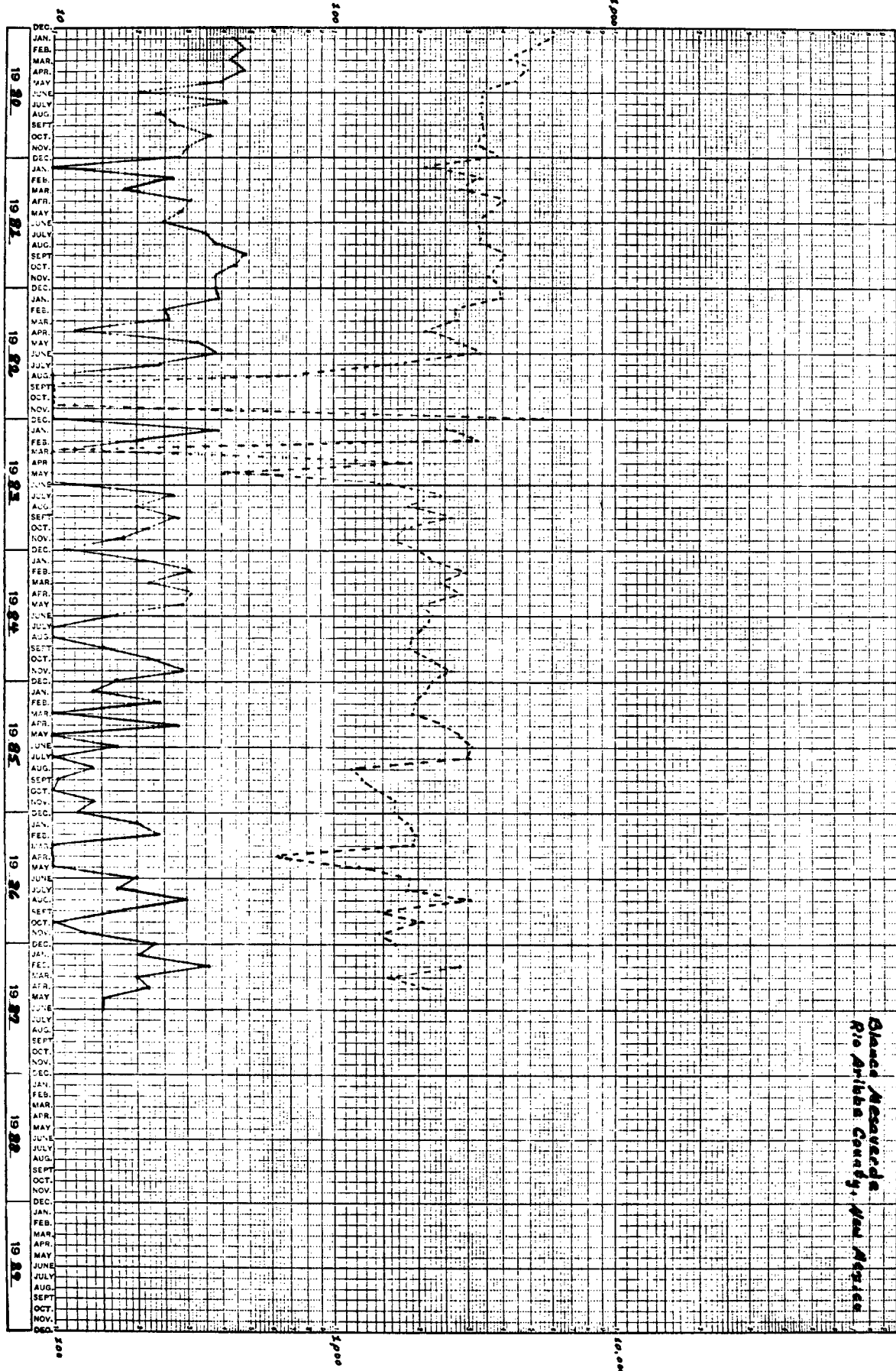
I hereby certify that the above information is true and complete to the best of my knowledge and belief.

A.M. O'Hare
A.M. O'Hare (Signature)

Joint Operations Supervisor

(Title)

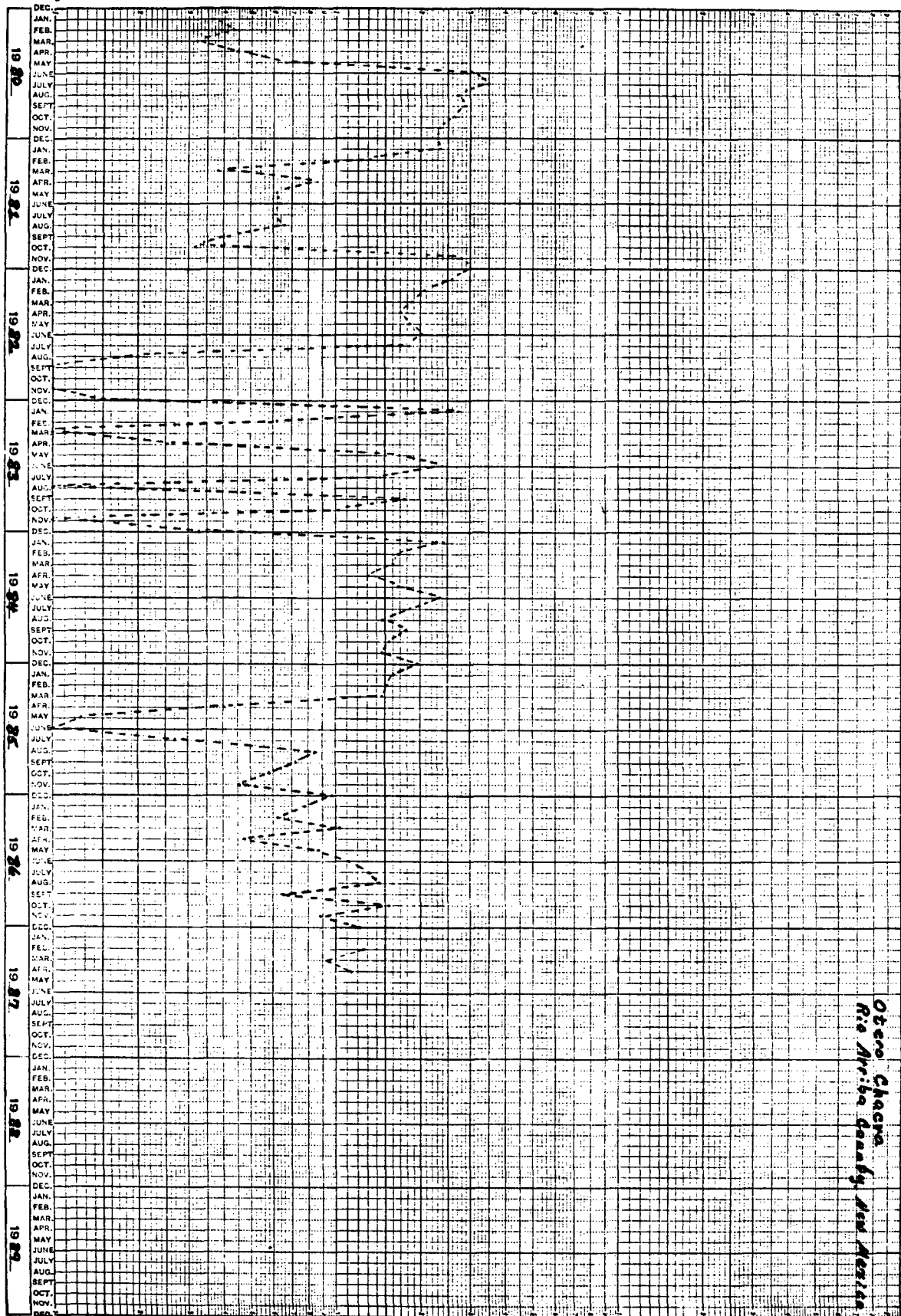
Condensate per Month



Canada No. 20-A
Blanco Nevada
Rio Arriba County, New Mexico

MCF per Month

1000 MCF per Month 10,000



Candado No. 20-A
Otero Chaco
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-A
County RIO ARRIBA State NEW MEXICO Date 6-25-87
Shut-In _____ Zero Point G.L. Tbg. Pressure 591
Casing Pressure _____ Tbg. Depth _____ Casing Perf. _____
Max. Temp. _____ Fluid Level _____

<u>DEPTH</u>	<u>PSIG</u>	<u>GRADIENT</u>
0	591	----
3650	666	.021
4900	693	.022
5000	695	.020

CANDADO No. 20A
CHACRA BOTTOM HOLE PRESSURE CALCULATION

Measured Surface Pressure, $P_s = 482 \text{ psig} = 496 \text{ psia}$

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

Estimated Bottom Hole Temperature, $\text{BHT} - 110^\circ\text{F} = 570^\circ\text{R}$
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 $\text{BHP} = 541 \text{ psia}$, $P = \frac{P_s + \text{BHP}}{2} = 518.5 \text{ psia}$

$$\rho = \frac{\bar{P}}{\bar{T}} \frac{M_A}{R} = \frac{518.5 \text{ psia} \cdot 20 \frac{\text{lbm}}{\text{lb} \cdot \text{mol}}}{545^\circ\text{R} - 10.73 \frac{\text{psia} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot ^\circ\text{R}}} = 1.773 \frac{\text{lb}}{\text{ft}^3}$$

$$\text{BHP} = P_s + \text{Depth} (\rho) = 496 \text{ psia} + 3650 \text{ ft} (1.773 \frac{\text{lb}}{\text{ft}^3}) \frac{1 \text{ft}^2}{144 \text{in}^2} =$$

$$\text{BHP} = 540.9 \approx 541 \text{ psia}$$

$$\text{BHP} = 541 \text{ psia} = 527 \text{ psig}$$

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

Report No: 1
Date: 3-23-87
County: SAN JUAN
Field: BLANCO
Formation: MESA VERDE
Lease: CANDADO
Well: 20A

WATER ANALYSIS

Specific Grav:	1.000	pH:	6.50
Chloride:	1,900 mg/l	Calcium:	56 mg/l
Bicarbonate:	61 mg/l	Magnesium:	49 mg/l
Sulfate:	0.	Total Iron:	0.
Sulfide:	0.	Sodium:	1,098 mg/l
Total Hardness		Total Disslvd	
(as CaCO ₃):	340 mg/l	Solids:	3,163 mg/l
Resistivity:	4.10	Ohm Meters @:	60 F
Potassium:	0.	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 #20A MV

METER STA 89988
OPER 6311

TYPE CODE	SAMPLE DATE	EFF. DATE	USE MOS	H2S GRAINS	LOCATION
00 ***	04-15-87	04-28-87	06	0	4 F 13

	NORMAL MOL%	GPM
CO2	.64	.000
H2S	.00	.000
N2	.92	.000
METHANE	76.71	.000
ETHANE	11.42	3.055
PROPANE	6.31	1.739
ISO-BUTANE	1.12	.366
NORM-BUTANE	1.77	.558
ISO-PENTANE	.55	.201
NORM-PENTANE	.38	.138
HEXANE PLUS	.18	.078
	100.00	6.135

SPECIFIC GRAVITY .748

MIXTURE HEATING VALUE
(BTU/CF @14.73 PSIA, 60 DEGREES, DRY) 1284

RATIO OF SPECIFIC HEATS 1.275

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 #20A CH

METER STA 89995
OPER 6311

TYPE CODE	SAMPLE DATE	EFF. DATE	USE MOS	H2S GRAINS	LOCATION
00 ***	04-15-87	04-28-87	06	0	4 F 13

	NORMAL MOL%	GPM
CO2	.66	.000
H2S	.00	.000
N2	.75	.000
METHANE	83.95	.000
ETHANE	7.92	2.119
PROPANE	3.88	1.069
ISO-BUTANE	.73	.239
NORM-BUTANE	.97	.306
ISO-PENTANE	.38	.139
NORM-PENTANE	.27	.098
HEXANE PLUS	.49	.213
	100.00	4.183

SPECIFIC GRAVITY .692

MIXTURE HEATING VALUE
(BTU/CF @14.73 PSIA, 60 DEGREES, DRY) 1198

RATIO OF SPECIFIC HEATS 1.285

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.

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

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



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 #20A
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

/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. 20A and located in Unit 0, 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: _____

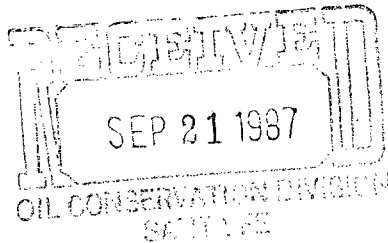
Date: _____

8/3/87



National Cooperative Refinery Association

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



*Crude Oil
Division
Office*

September 16, 1987

State of New Mexico
Oil and Gas Conservation Commission
Box 2088
Sante Fe, New Mexico 87501-2088

RE: Candado Wells
Rio Arriba, NM

Gentlemen:

Enclosed please find the signed Waiver of Objection covering each of the Candado wells from Union Oil of California, offset operator.

These Waiver of Objection's were inadvertantly returned to us and are being forwarded to you in order to obtain permission to commingle production in the wells specified.

If you have any questions, please contact the undersigned at (303) 861-4883. Thank you.

Sincerely,

Becky Van Lewen
Production Secretary

BVL/bms
enc

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

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 <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 1110' FSL x 1530' FEL		8. FARM OR LEASE NAME Candado
14. PERMIT NO.		9. WELL NO. 20A
15. ELEVATIONS (Show whether DF, RT, GR, etc.)		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"/>
(Other) <input type="checkbox"/>	Comingling 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

RECEIVED

SEP 8 1987

Production Unit

WAIVER OF OBJECTION

The undersigned, as an offset operator to National Cooperative Refinery Association's dual Mesaverde/Chacra producer known as Candado No. 20A and located in Unit 0, 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. Parde

Name(print): Lon H. Parde

Title: Casper District Oper. Manager

Firm: UNION OIL CO. OF CALIFORNIA

Date: 9-1-87

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. 20A and located in Unit 0, 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. 20A and located in Unit 0, 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

Title: Attorney-in-Fact

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. 20A and located in Unit 0, 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. Reiger
Name(print): G. F. Reiger
Title: Mgr. Outside Ops
Firm: DEPCO, INC
Date: 8-20-87

8/3/87



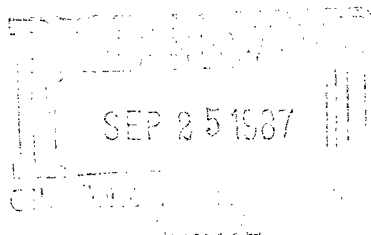
STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

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

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 #20A 0-3-26N-7W
Operator Lease and Well No. Unit, S-T-R

and my recommendations are as follows:

Approve with an allocation of 59% gas to the MV
and 41% gas to the Chacra-

Yours truly,

E. J. Bavel