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 National Cooperative Refinery Assoc. Caudado #21 B-4-26N-7W
Operator Lease and Well No. Unit, S-T-R

and my recommendations are as follows:

Approve with an allocation of 63% gas to the M.V. 37% to the Chacra

Yours truly,

Ernie Busch

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. 21
Unit B, Sec 4, 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. 21 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 63 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.

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 ~~63.4~~ 63 percent gas production to the Mesaverde.

2. Allocate ~~36.6~~ 37 percent gas production to the Chacra.

3. Allocate 100 percent condensate production to the Mesaverde.

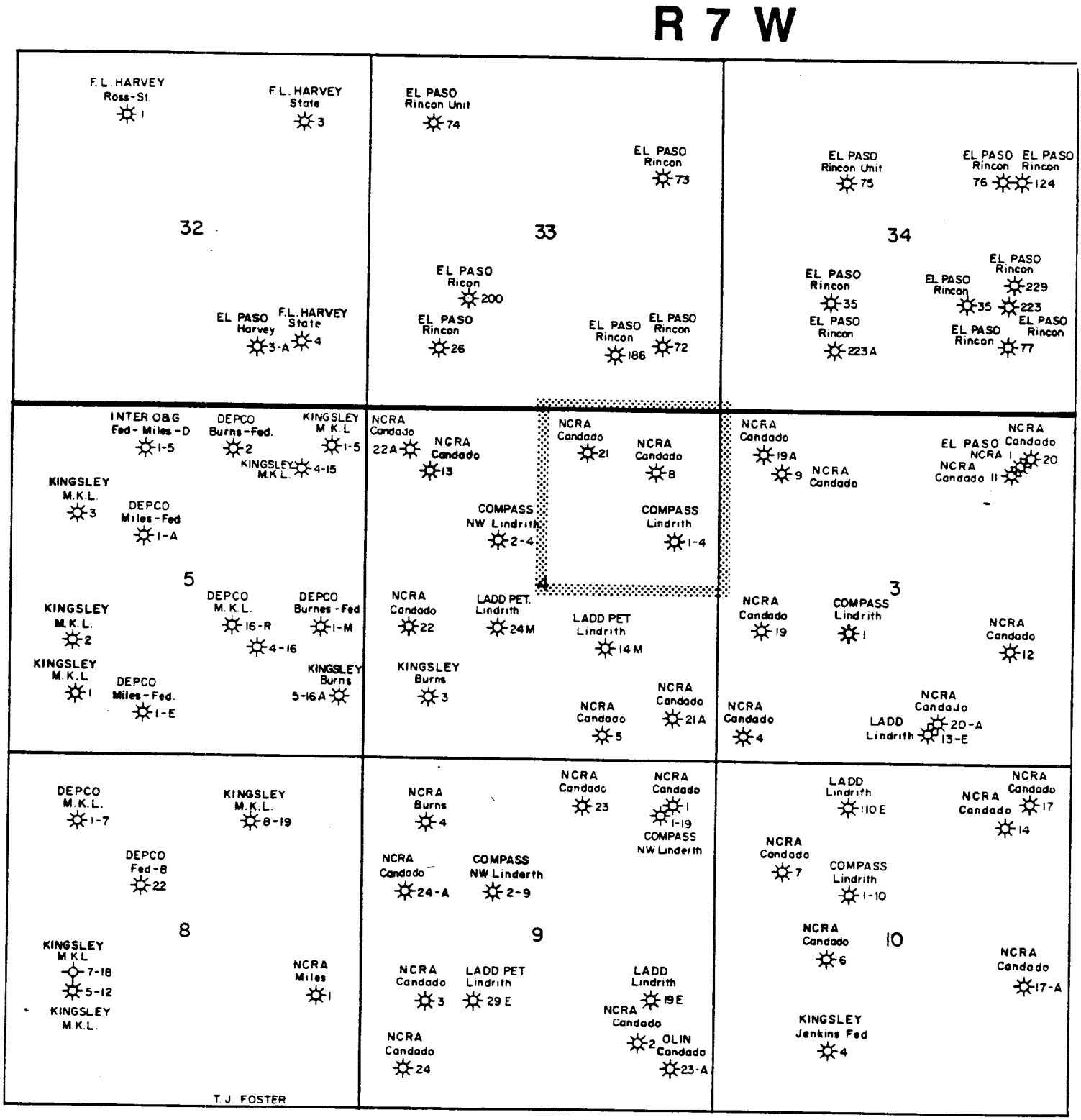
Questions concerning this commingling application should be directed to the undersigned at (303) 861-4883.

Sincerely,

A.M. O'Hare

A.M. O'Hare
Joint Operations Supervisor

MJB/bvl
enc

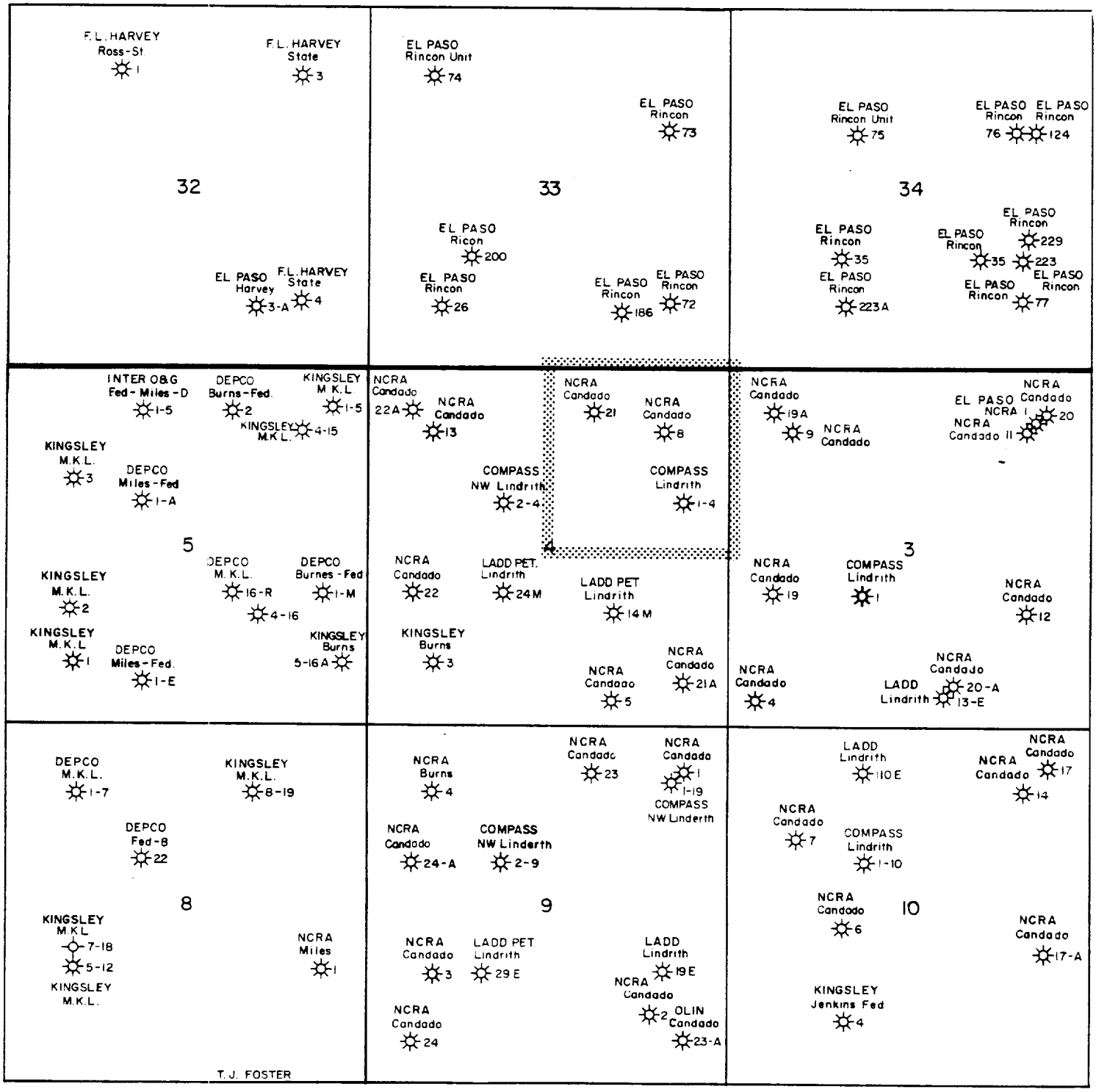


N.C.R.A.

Acerage Dedication Plat Showing Offset Ownership

Candado No. 21

Rio Arriba County, New Mexico



N.C.R.A.

Acerage Dedication Plat Showing Offset Ownership

Candado No. 21

Rio Arriba County, New Mexico

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

SANTA FE, NEW MEXICO 87501

Form C-116
Revised 10-1-78

GAS - OIL RATIO TESTS

Operator: National Cooperative Refinery Asso.
Pool: Blanco Mesaverde/Otero Chacra
County: Rio Arriba
Address: 1775 Sherman, Suite 300 Denver, CO 80203
TYPE OF TEST - (X): Scheduled [ ] Completion [ ] Special [XX]

LEASE NAME	WELL NO.	LOCATION U	S	T	R	DATE OF TEST	STATUS	CHOKE SIZE	TBG. PRESS.	DAILY ALLOWABLE	LENGTH OF TEST HOURS	PROD. DURING TEST WATER BBLS.	GRAV. OIL	OIL BBLS.	GAS M.C.F.	GAS - OIL RATIO CU.FT/BBL
Candado No. 21 Mesaverde	21	B	4	26N	7W	7/14/87			336		24	0		0.8	73	91,250
Candado No. 21 Chacra	21	B	4	26N	7W	7/22/87			353		24	0		0	74	

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)

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

SANTA FE, NEW MEXICO 87501

Form C-116
Revised 10-1-78

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

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

Condensate per Month

100 1000 10000

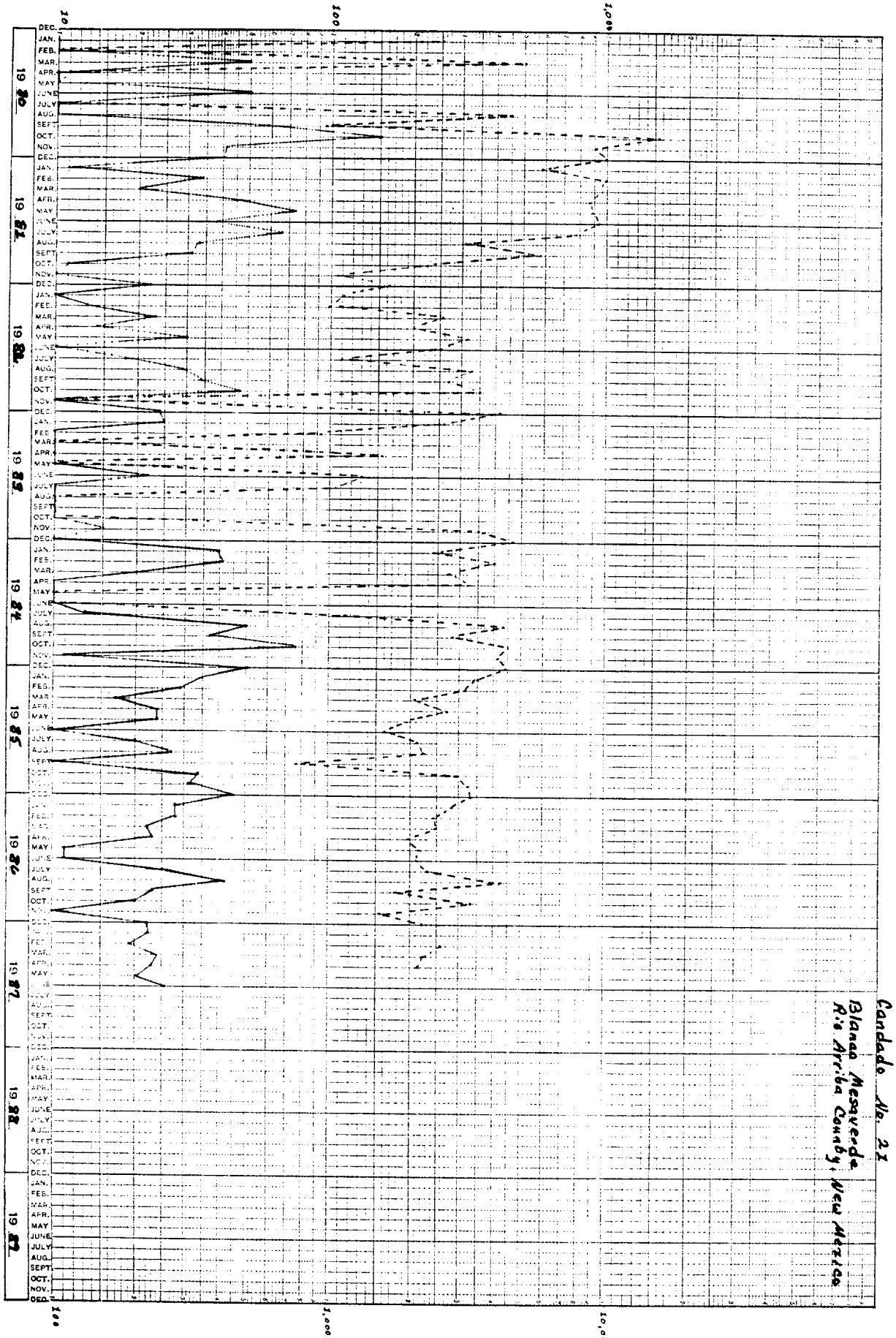
19 80 DEC. JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT OCT. NOV.
19 81 DEC. JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT OCT. NOV.
19 82 DEC. JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT OCT. NOV.
19 83 DEC. JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT OCT. NOV.
19 84 DEC. JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT OCT. NOV.
19 85 DEC. JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT OCT. NOV.
19 86 DEC. JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT OCT. NOV.
19 87 DEC. JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT OCT. NOV.
19 88 DEC. JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT OCT. NOV.
19 89 DEC. JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT OCT. NOV. DEC.

100 1,000 10,000

MCF per Month

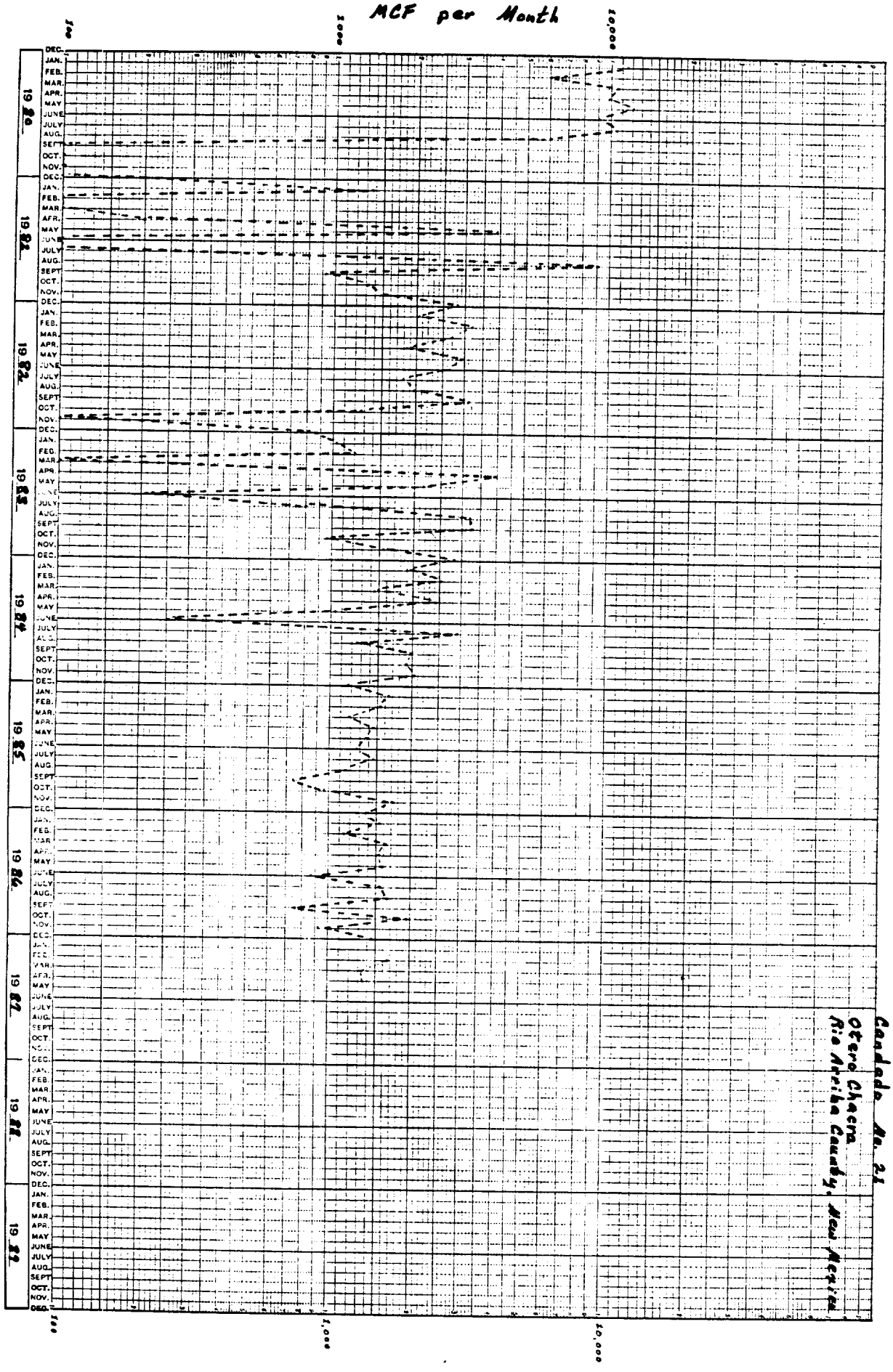
Candado No. 21
Blanco Mesaverde
R-4 Arriba County, New Mexico

Condensate per Month

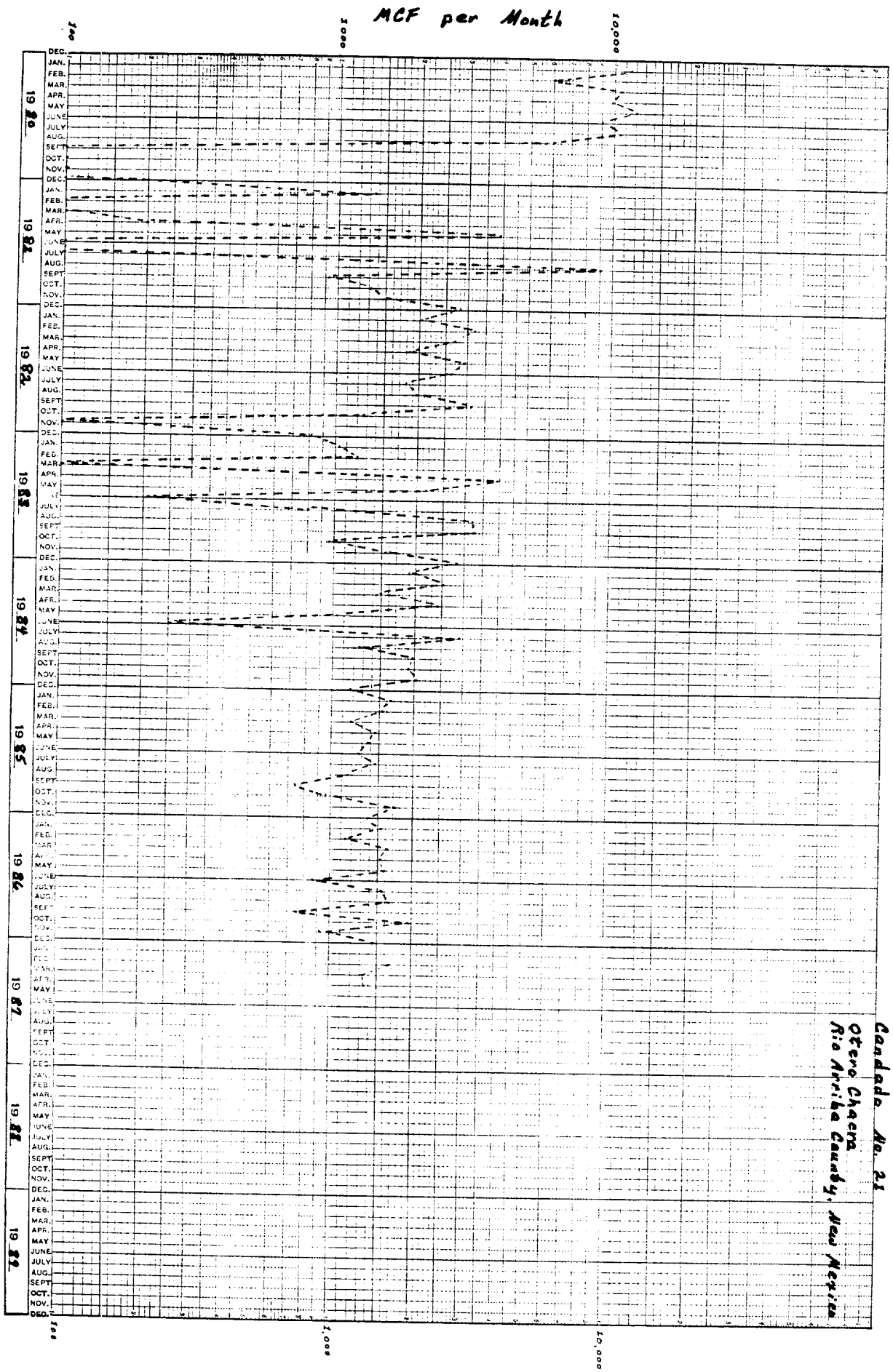


MCF per Month

Candado No. 21
Blanco Mesaverde
Rio Arriba County, New Mexico



Candado No. 21
Otero Chacra
Rio Arriba County, New Mexico



B & R SERVICE, INC.

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

ompany N.C.R.A.	Lease CANADO	Well #21
ounty RIO ARRIBA	State NEW MEXICO	Date 6-25-87
hut-In	Zero Point G.L.	Tbg. Pressure 529
asing Pressure	Tbg. Depth	Casing Perf.
lax. Temp.	Fluid Level 4650'	

DEPTH	PSIG	GRADIENT
0	529	----
3950	609	.020
5100	759	.130
5200	788	.290

B & R SERVICE, INC.

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

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CANDADO NO. 21

CHACRA BOTTOM HOLE PRESSURE CALCUALTION

Measured Surface Pressure, Ps = 453 psig = 467 psia

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

Estimated Bottom Hole Temperature, BHT = 110°F = 570°R

Surface Temperature, Ts = 60°F = 520°R

$$\overline{T} = \frac{BHT + Ts}{2} = \frac{570°R + 520°R}{2} = 545°R$$

Assume BHP = 513 psia, $P = \frac{467 + 513 \text{ psia}}{2} = 490$ psia

$$\rho = \frac{\overline{P}}{\overline{T}} \frac{M_A}{R} = \frac{490 \text{ psia} \cdot 20 \frac{lbm}{lb \cdot mol}}{545°R \cdot 10.73 \frac{psia \cdot ft^3}{lb \cdot mol \cdot °R}} = 1.676 \frac{lb}{ft^3}$$

$$BHP = Ps + \text{depth}\ (\rho) = 467 \text{ psia} + 3950 \text{ ft} \left(1.676 \frac{lb}{ft^3}\right) \frac{1 ft^2}{144 in^2} =$$

BHP = 512.9 psia ≈ 513 psia

BHP = 513 psia = 499 psig

CANDADO NO. 21

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BHP = 513 psia = 499 psig

		Lab. No:	[illegible]
		Date:	3-23-87
Company:	[illegible]	County:	[illegible]
Address:		Field:	[illegible]
		Formation:	[illegible]
Attention:	MIKE BARNES	Lease:	[illegible]
Date Sampled:	3-20-87	Well:	1.

WATER ANALYSIS

Specific Grav:	1.000	pH:	8.50
Chlorides:	5,000 mg/l	Calcium:	80 mg/l
Bicarbonate:	61 mg/l	Magnesium:	18 mg/l
Sulfate:	0.	Total Iron:	0.
Sulfide:	0.	Sodium:	4,410 mg/l
Total Hardness (as CaCO3):	280 mg/l	Total Dissolved Solids:	9,630 mg/l
Resistivity:	1.70	Ohm Meters @:	60 F
Potassium:	0.	Carbonate:	0

Sample Source:

Remarks:

Analyst: M. CORREY

Emtech Representative: M. CORREY

		Report No:	1
		Date:	3-23-7
Company:	N.C.R.A	County:	SAN JUAN
Address:		Field:	BLANCO
		Formation:	MESA VERDE
Attention:	MIKE BARNES	Lease:	CANDADO
Date Sampled:	3-22-87	well:	21

WATER ANALYSIS

Specific Grav:	1.000	pH:	6.50
Chloride:	2,899 mg/l	Calcium:	60 mg/l
Bicarbonate:	61 mg/l	Magnesium:	12 mg/l
Sulfate:	0.	Total Iron:	0.
Sulfide:	0.	Sodium:	1,810 mg/l
Total Hardness (as CaCO3):	200 mg/l	Total Dislvd Solics:	4,843 mg/l
Resistivity:	2.70	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 #21 MY

METER STA 90720
OPER 6311

TYPE CODE	SAMPLE DATE	EFF. DATE	USE MOS	H2S GRAINS	LOCATION
00 ***	04-16-87	04-28-87	06	0	4 F 13

	NORMAL MOL%	GPM
CO2	.38	.000
H2S	.00	.000
N2	2.73	.000
METHANE	78.23	.000
ETHANE	7.69	2.057
PROPANE	5.44	1.499
ISO-BUTANE	1.69	.553
NORM-BUTANE	1.65	.520
ISO-PENTANE	.86	.315
NORM-PENTANE	.56	.203
HEXANE PLUS	.77	.335
	100.00	5.482

SPECIFIC GRAVITY	.758
MIXTURE HEATING VALUE (BTU/CF @14.73 PSIA, 60 DEGREES,DRY)	1276
RATIO OF SPECIFIC HEATS	1.279

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 #21 MV

METER STA 90720
OPER 6311

TYPE CODE	SAMPLE DATE	EFF. DATE	USE MOS	H2S GRAINS	LOCATION
00 ***	04-16-87	04-28-87	06	0	4 F 13

	NORMAL MOL%	GPM
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GXC

06-05-87

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

MAILEE
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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 #21 CH

METER STA 90723
OPER 6311

TYPE CODE	SAMPLE DATE	EFF. DATE	USE MOS	H2S GRAINS	LOCATION
00 ***	04-16-87	04-28-87	06	0	4 F 13

	NORMAL MOL%	GPM
CO2	.36	.000
H2S	.00	.000
N2	1.03	.000
METHANE	82.82	.000
ETHANE	8.32	2.226
PROPANE	4.54	1.251
ISO-BUTANE	.80	.262
NORM-BUTANE	1.17	.369
ISO-PENTANE	.38	.139
NORM-PENTANE	.28	.101
HEXANE PLUS	.30	.130
	100.00	4.478

SPECIFIC GRAVITY	.697
MIXTURE HEATING VALUE (BTU/CF @14.73 PSIA, 60 DEGREES,DRY)	1210
RATIO OF SPECIFIC HEATS	1.284

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 #21 CH

METER STA 90723
OPER 6311

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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.

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

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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 #21
Section 4, 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

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

July 29, 1987

Offset Operators

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Section 4, T26N-R7W
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A.M. O'Hare

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. 21 and located in Unit B, Section 4, 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

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By: _____

Name(print): _____

Title: _____

Firm: _____

Date: _____

8/3/87

(November 1983)
(Formerly 9–331)

UNITED STATES
DEPARTMENT OF THE INTERIOR (Other instructions on reverse side)
BUREAU OF LAND MANAGEMENT

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.)

5. LEASE DESIGNATION AND SERIAL NO.: SF-079161

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

1. OIL WELL ☐ GAS WELL ☒ OTHER

7. UNIT AGREEMENT NAME:

2. NAME OF OPERATOR: National Cooperative Refinery Association

8. FARM OR LEASE NAME: Candado

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

9. WELL NO.: 21

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 1030' FSL x 935' FEL

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

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 4, T26N-R7W

14. PERMIT NO.

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

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	☐	PULL OR ALTER CASING	☐	WATER SHUT-OFF	☐	REPAIRING WELL	☐
FRACTURE TREAT	☐	MULTIPLE COMPLETE	☐	FRACTURE TREATMENT	☐	ALTERING CASING	☐
SHOOT OR ACIDIZE	☐	ABANDON*	☐	SHOOTING OR ACIDIZING	☐	ABANDONMENT*	☐
REPAIR WELL	☐	CHANGE PLANS	☐	(Other)			
(Other) Comingle Well			☒	(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 [signature] 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

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(November 1983)
(Formerly 9–331)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE (Other instructions on reverse side)

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.)

5. LEASE DESIGNATION AND SERIAL NO.: SF-079161

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

1. OIL WELL ☐ GAS WELL ☒ OTHER

7. UNIT AGREEMENT NAME:

2. NAME OF OPERATOR: National Cooperative Refinery Association

8. FARM OR LEASE NAME: Candado

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

9. WELL NO.: 21

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 1030' FSL x 935' FEL

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FRACTURE TREAT	☐	MULTIPLE COMPLETE	☐	FRACTURE TREATMENT	☐	ALTERING CASING	☐
SHOOT OR ACIDIZE	☐	ABANDON*	☐	SHOOTING OR ACIDIZING	☐	ABANDONMENT*	☐
REPAIR WELL	☐	CHANGE PLANS	☐	(Other)			
(Other) Comingle Well	☒			(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

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

SIGNED T. 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

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