

CENTRAL

RESOURCES, INC.

OIL CONSERVATION DIVISION
APR 17 1994

FILE NO: 15 APR 8 52

November 1, 1994

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

Re: Commingling Application
Candado 24
Unit M, Section 9-T26N-R7W
Rio Arriba County, New Mexico

Dear Sir/Madam:

Central Resources, Inc. requests administrative approval to downhole commingle production from the Blanco Mesaverde and Otera Chacra in the Candado 24 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. Both the Chacra and Mesaverde zones will produce through tubing.

The downhole commingling of the Candado 24 is necessary to improve the producing efficiency, and thereby prevent waste of the Mesaverde gas resources. Currently, the Mesaverde logs off frequently 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. Artificial lift can be readily applied to the single tubing string.

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

1. The bottom hole pressure of the Chacra is 62.5% of the Mesaverde bottom hole pressure, based on 7 day shut-in pressures.
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 similar 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:

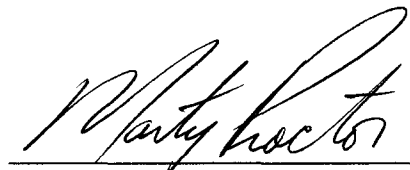
1. Well location map showing acreage dedicated to the well and ownership of the offset leases.
2. Division Form C-116, 24 hour productivity test.
3. Performance curve for the Mesaverde.
4. Performance curve for the Chacra.
5. Bottom hole pressure information for the Mesaverde and Chacra formations.
6. Gas analysis for the Mesaverde.
7. Gas analysis for the Chacra.
8. Water analysis for the Mesaverde (the Chacra does not produce any liquids).
9. Formula for the allocation of production for each commingled zone.
10. A copy of the letter sent to all offset operators notifying them of our intent to commingle.

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

1. Allocate 76% of the gas production to the Mesaverde.
2. Allocate 24% of the gas production to the Chacra.
3. Allocate 100% condensate production to the Mesaverde.

Questions concerning this commingling application should be directed to Marty Proctor at (303)830-0100.

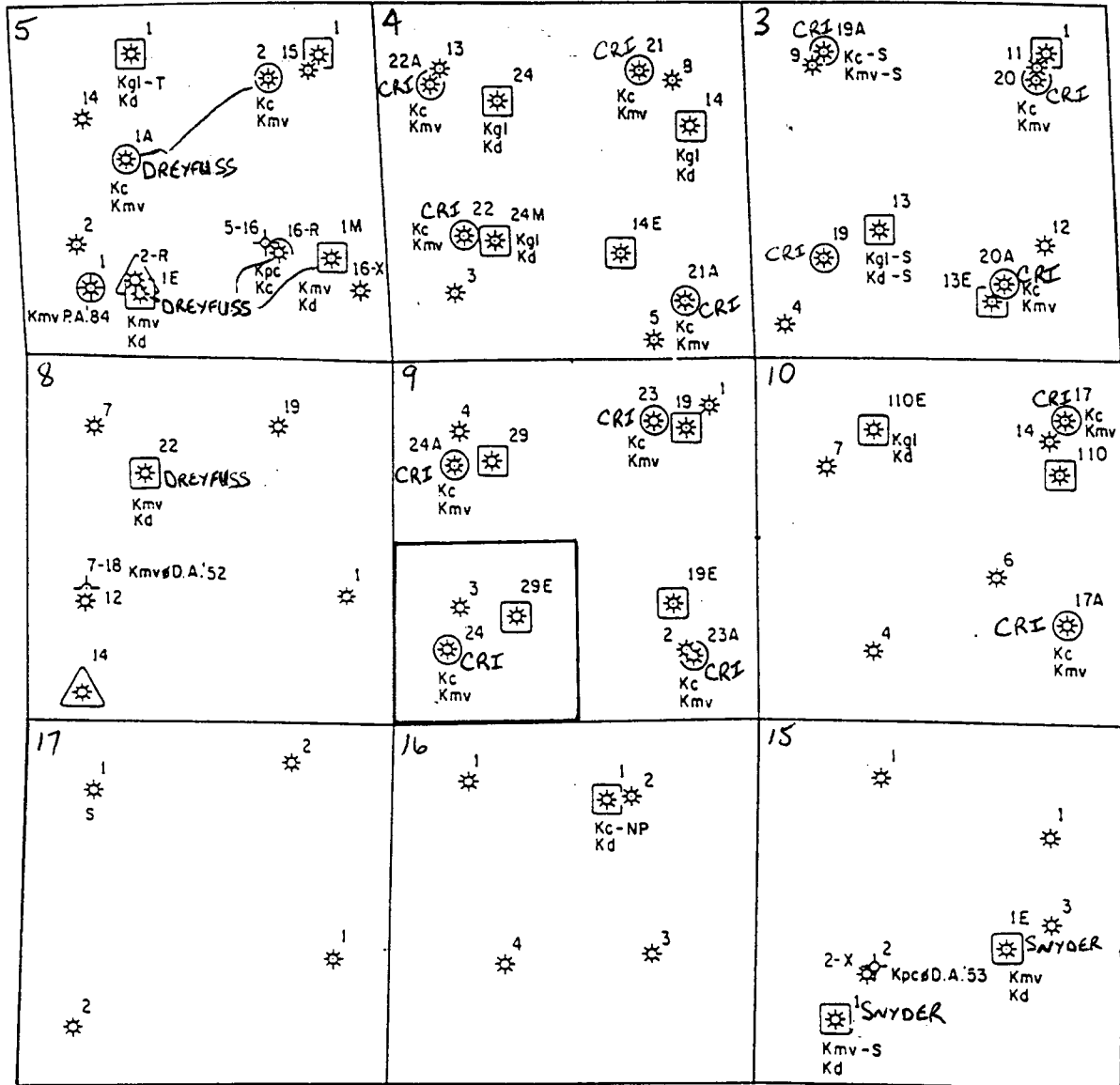
Sincerely yours



Marty Proctor, Superintendent/Engineer

Enclosures

Central Resources, Inc.



T26N

R 7W

Acreage Dedication Plat Showing Offset Ownership

Candado No. 24

Unit M, Section 9, T26N, R7W

Rio Arriba County, New Mexico

GAS-OIL RATIO TESTS

Operator		Pool	County												
Central Resources, Inc.		Blanco Mesaverde/Otero Chacra	Rio Arriba												
Address		TYPE OF TEST - (X)		Scheduled	Completion	Special									
LEASE NAME	WELL NO.	LOCATION			DATE OF TEST	CHOKES SIZE	TBG. PRESS.	DAILY ALLOW. ABLE	LENGTH OF TEST HOURS	PROD. DURING TEST			GAS - OIL RATIO CU.FT./BE		
		U	S	T						R	WATER BBL'S	GRAV. OIL		OIL BBL'S	GAS M.C.F.
Candado No. 24 Mesaverde	24	M	9	26N	7W	9/30/94		220		24	0	63	0.5	29	58000
	24	M	9	26N	7W	Unable to test due to packer leak									

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

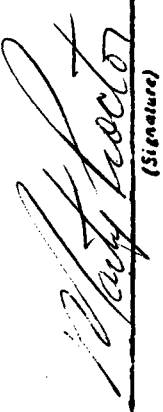
During gas-out ratio test, each well shall be produced at a rate not exceeding the top unit allowable for the pool in which well is located by more than 33 percent. Operator is encouraged to take advantage of this 33 percent tolerance in order that well can be assigned increased allowable when authorized by the Division.

Gas volumes must be reported in MCF measured at a pressure base of 15.033 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 303 and appropriate pool rules.

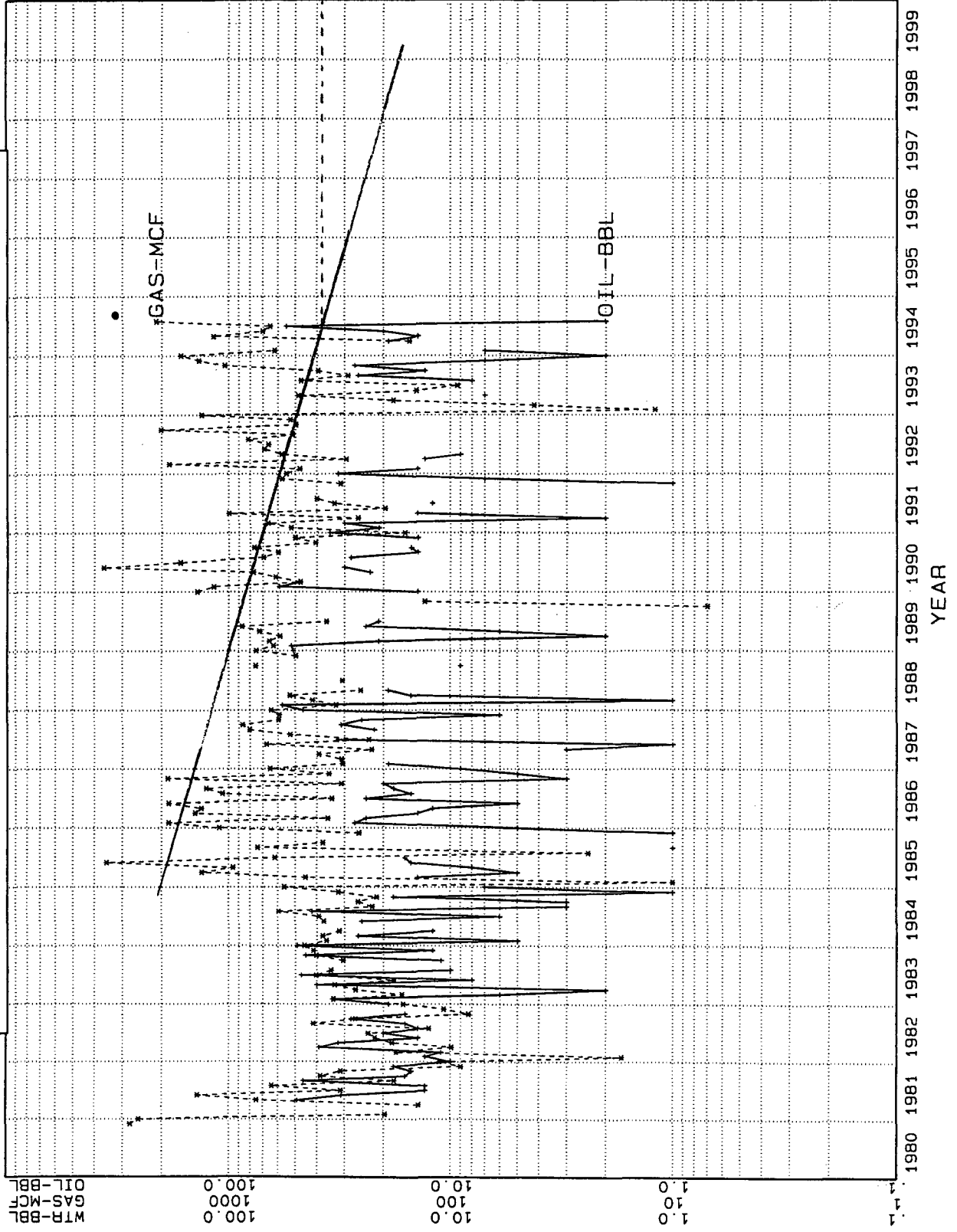
I hereby certify that the above information is true and complete to the best of my knowledge and belief.


(Signature)

Superintendent/Engineer
(Title)

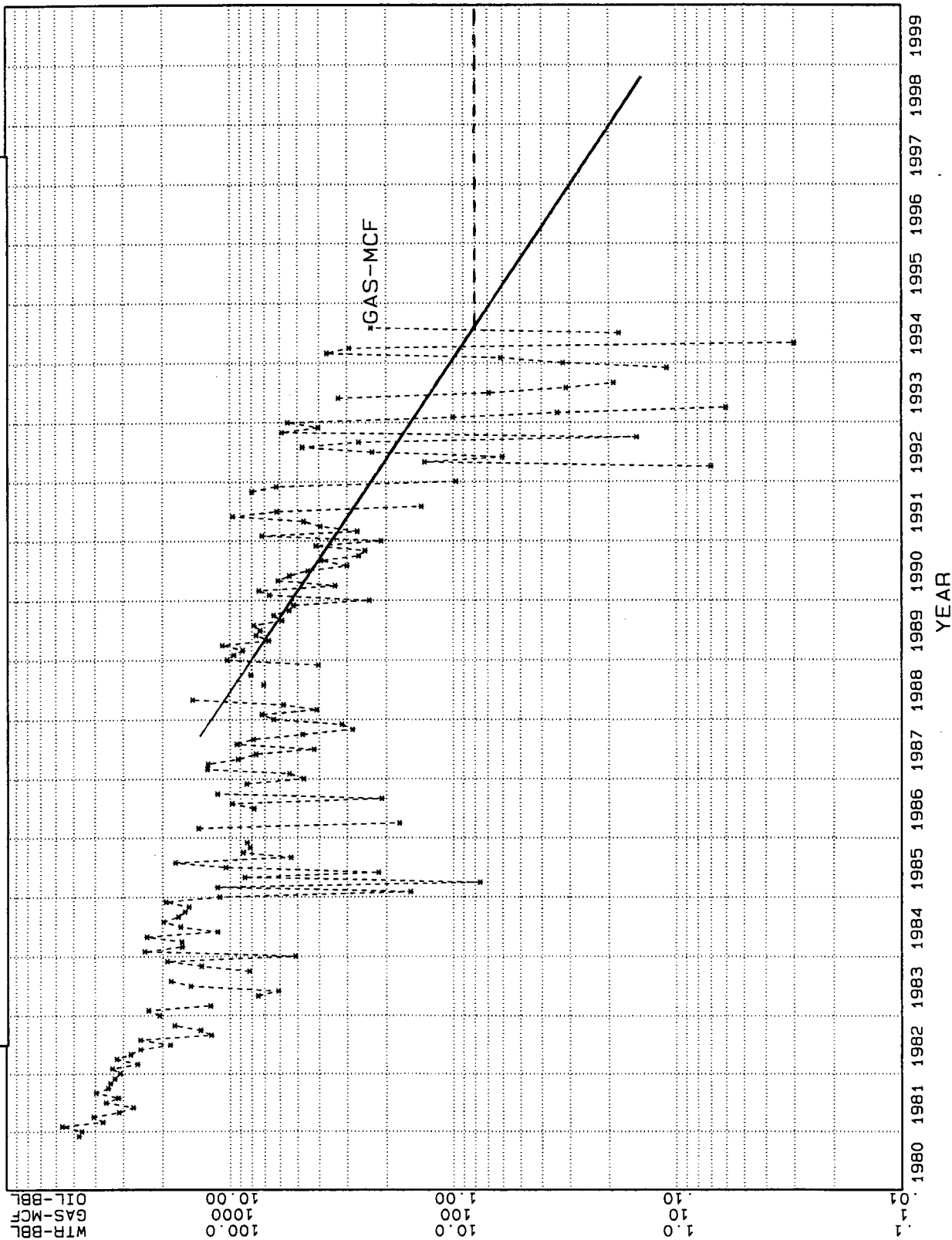
LEASE : CANDADO 24 MV
FIELD : BLANCO
COUNTY: RIO ARriba , STATE : NM

10/18/94



LEASE : CANDADO 24 CH
 FIELD : OTERO CHACRA
 COUNTY: RIO ARRIBA STATE : NM

10/27/94



- mid-1994
 $Q_m = 120 \text{ mcf/m}$

Chacra and Mesaverde Bottomhole Pressures

Chacra Formation: Due to a packer leak, we are unable to get a current pressure on the Chacra. Attached is a copy of report Form C-125 which was filed in January of this year for the Candado 24 Chacra formation.

Chacra bottomhole pressure = 367 psi.

Mesaverde Formation: During a 7 day shut-in, the Mesaverde formation built to 527 psi in June, 1994. The gas gravity of MV gas is 0.689. The bottomhole pressure can be calculated from the following equation:

$$\frac{dp}{dh} = \frac{g}{g_c} \rho_c$$

Using the average temperature and pressure method, and substituting $\rho_g = pM/ZRT$, this equation can be expressed in conventional field units as follows:

$$p_{ws} = p_{ts} \exp [(0.01875 \times \gamma_g \times H)/(\bar{T} \times \bar{Z})]$$

where

p_{ws} = static BHP

p_{ts} = static tubing pressure

γ_g = gas gravity

H = well depth

$\bar{T}$ = average temp. in the tubing

$\bar{Z}$ = gas comp. @ $T, p = (p_{ws} + p_{ts})/2$

For the iterative average temperature and pressure method, first assume $p_{ws}^* = 587$ psi.

$$\bar{T} = (T_s + T_p)/2 = (60 + 120) / 2 = 90^\circ\text{F} = 550^\circ\text{R}$$

$$\bar{p} = (p_{ts} + p_{ws}^*)/2 = (527 + 587)/2 = 557 \text{ psi}$$

$$p_{pc} = 709.6 - 58.7 (.689) = 669.2 \text{ psi}$$

$$T_{pc} = 170.5 + 307.3 (.689) = 382.2^\circ\text{R}$$

$$p_{pr} = \bar{p}/p_{pc} = 557/669.2 = 0.8323$$

$$T_{pr} = \bar{T}/T_{pc} = 550/382.2 = 1.439$$

using p_{pr} and T_{pr} , and reading from a Z-factor chart, $Z = 0.905$.

then $p_{ws} = 527 \times \text{EXP} [(0.01875 \times 0.689 \times 4126)/(550 \times 0.905)] = 586.6$ psi, which is close to the assumed value of bottomhole pressure.

Mesaverde bottomhole pressure = 587 psi

Therefore the Chacra formation = $367/587 = 62.5\%$ of the Mesaverde formation pressure.

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

1000 RIO BRAZOS ROAD

AZTEC, NEW MEXICO 87410

NW GAS WELL SHUT-IN PRESSURE REPORT

1993 YEAR / FORM C-125 NW

*** RIO ARriba COUNTY ***

NATIONAL COOPERATIVE REFINERY ASSOCIATES

9307 W. CR 28

PLATTEVILLE CO 80651

WELL	LOC	S	T	I	O	N	DATE	PRESS	TIME	SI	HIGHER OF	
											CSG OR TBG	SI-PRESS
							RUN		DAYS		PSIG(DWT)	PSIA
CANDADO	20A	3	26N	7W	CK		7/29/93		7		496	511
	X A 19D	3	26N	7W	CK							
	A 200	3	26N	7W	CK		7/29/93		7		501	516
	21B	4	26N	7W	CK		7/31/93		7		397	412
	A 22D	4	26N	7W	CK		7/31/93		7		412	427
	22L	4	26N	7W	CK		7/30/93		7		410	425
	A 21P	4	26N	7W	CK		7/30/93		7		403	418
	23B	9	26N	7W	CK		8/16/93		8		376	391
	A 24E	9	26N	7W	CK		7/29/93		7		495	510
	24M	9	26N	7W	CK		8/7/93		7		352	367

I HEREBY CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

SEE RULE 402.

SIGNATURE

Darryl Parker

TITLE

Reservoir Engineer

DATE

1/14/94

MEASUREMENT SYSTEM Gas Analysis (Chromatograph)

Display

Meter Station 93293 CANDADO #24 MV
ME Strip Type ACQUISITION
Volume Type WELLHEAD

Status ACTIVE METER
Source ORIFICE CHART

Analysis Effective On 08/01/1994 Test Life 6 Record Type 2 ACTUAL

Sample Taken On 07/25/1994
Lab Location D DANIELS FM
Chromo Mode

Analysis Run On 07/27/1994
GPM Type Test
H2S Grains 0

Component Normalized %			
Carbon Dioxide	0.24	Hydr Sulphide	0.00
Methane	84.42	Ethane	8.01
Iso Butane	0.64	Normal Butane	1.17
Normal Pentane	0.33	Hexane & Heavier	0.39
Heptane	0.00	Octane	0.00
		Nitrogen	0.48
		Propane	3.87
		Iso Pentane	0.45
		Hexane	0.00
		Nonane	0.00

MEASUREMENT SYSTEM Gas Analysis (Chromatograph)

Display

Component GPM			
Carbon Dioxide	0.000	Hydr Sulphide	0.000
Methane	0.000	Ethane	2.143
Iso Butane	0.209	Normal Butane	0.369
Normal Pentane	0.120	Hexane & Heavier	0.170
Heptane	0.000	Octane	0.000
		Nitrogen	0.000
		Propane	1.067
		Iso Pentane	0.165
		Hexane	0.000
		Nonane	0.000

GPM 4.243 BTU 1,209
Specific Gravity 0.689 Ratio Spec. Heat 0.000
Z Factor 0.9967869

Chromatograph Delinquent
Chromatograph Delinquency Approved By
Delinquency Approval Date
Chromatograph Test Frequency

(YMD)

Meter is set for Chromatograph to be EFFECTIVE 1ST NEXT MONTH
Vol Calc Status USED IN CALCULATION

Last Updated 07/28/1994 By SYS

M E A S U R E M E N T S Y S T E M

Display

Meter Station 93294 CANDADO #24 CH
ME Strip Type ACQUISITION
Volume Type WELLHEAD

Status ACTIVE METER
Source ORIFICE CHART

Analysis Effective On 11/01/1992 Test Life 6 Record Type 2 ACTUAL

Sample Taken On	10/07/1992	Analysis Run On	10/14/1992
Lab Location	F FARM BECK	GPM Type Test	
Chromo Mode		H2S Grains	0
		Component Normalized %	
Carbon Dioxide	0.29	Hydr Sulphide	0.00
Methane	85.27	Ethane	7.75
Iso Butane	0.62	Normal Butane	1.00
Normal Pentane	0.25	Hexane & Heavier	0.29
Heptane	0.00	Octane	0.00
		Nitrogen	0.48
		Propane	3.72
		Iso Pentane	0.33
		Hexane	0.00
		Nonane	0.00

M E A S U R E M E N T S Y S T E M

Display

Gas Analysis (Chromatograph)

Component GPM

Carbon Dioxide	0.000	Hydr Sulphide	0.000	Nitrogen	0.000
Methane	0.000	Ethane	2.073	Propane	1.025
Iso Butane	0.203	Normal Butane	0.315	Iso Pentane	0.121
Normal Pentane	0.091	Hexane & Heavier	0.127	Hexane	0.000
Heptane	0.000	Octane	0.000	Nonane	0.000

GPM	3.955	BTU	1,189
Specific Gravity	0.677	Ratio Spec. Heat	0.000
		Z Factor	0.9969175

Chromatograph Delinquent
Chromatograph Delinquency Approved By
Delinquency Approval Date
Chromatograph Test Frequency

(YMD)

Meter is set for Chromatograph to be EFFECTIVE 1ST NEXT MONTH

Vol Calc Status USED IN CALCULATION Last Updated 10/15/1992 By SYS



1115 Farmington Avenue - Farmington, NM 87401
(505) 325-1085

Lab Number:

W94-350

Standard A.P.I. Water Analysis Report

Company: CENTRAL RES. INC.

Date Collected: 11/9/94

Sample ID: CANDADO 24

Date Received: 11/10/94

Formation: Mesaverde

Date Analyzed: 11/10-11/94

Location:

County: Rio Arriba State: New Mexico

Collected By:

Analyst: Bill S. *Bill*

Remarks:

Attention: Marty Proctor

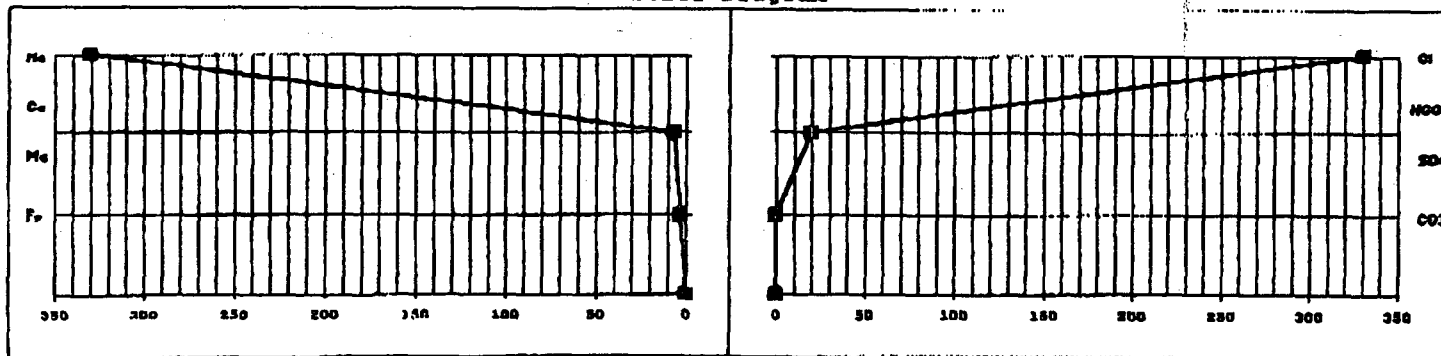
PARAMETER	AS REQ	Comment	PARAMETER	AS REQ	Comment
Sodium, Na	7,600 mg/l		Chloride, Cl	11,700 mg/l	
Potassium, K	70 mg/l		Sulfate, SO ₄	<10 mg/l	
Calcium, Ca	132 mg/l		Hydroxide, OH	0 mg/l	
Magnesium, Mg	34 mg/l		Carbonate, CO ₃	0 mg/l	
Iron, Fe (total)	mg/l	NOT RUN	Bicarbonate, HCO ₃	1,220 mg/l	
Sulfide	mg/l	NOT RUN	Resistivity	0.28 ohm-m	
pH	7.6 units		Conductivity	35,200 uS/cm	
Total Dissolved Solids	18,300 mg/l		Specific Gravity	1.015	
			(@25 Degrees C)		
			(@60 Degrees F)		

Remarks:

Anion/Cation:

102%

Stiff Diagram



Scale: Meq/L

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 1994. 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.

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

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

Referring to the performance curves for both zones and using the production values extrapolated to mid-1994, the allocation factors are determined as follows:

$$\text{Chacra Allocation} = \frac{120 \text{ mcf/m}}{(380 + 120) \text{ mcf/m}} \times 100\% = 24\%$$

$$\text{Mesaverde Allocation} = \frac{380 \text{ mcf/m}}{(380 + 120) \text{ mcf/m}} \times 100\% = 76\%$$

CENTRAL

RESOURCES, INC.

November 1, 1994

Offset Operators

Re: Candado 24
Section 9-T26N-R7W
Rio Arriba County, New Mexico

Dear Sir/Madam:

Central Resources 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 any objections to this application, please notify the NMOCD within twenty (20) days. Please contact Marty Proctor at 303-830-0100 if you have any questions pertaining to the application.

Sincerely,

Central Resources, Inc.

Marty Proctor
Superintendent/Engineer



STATE OF NEW MEXICO

ENERGY, MINERALS and NATURAL RESOURCES DIVISION

OIL CONSERVATION DIVISION RECEIVED

AZTEC DISTRICT OFFICE

95 JAN 20 AM 8 52

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

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

Date: _____

Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504-2088

DHC-1061

RE: Proposed MC _____
Proposed NSL _____
Proposed WFX _____
Proposed NSP _____

Proposed DHC X _____
Proposed SWD _____
Proposed PMX _____
Proposed DD _____

Gentlemen:

I have examined the application received on 12/27/94

for the CRI Cardado # 24
OPERATOR LEASE & WELL NO.

M-9-26N-7W and my recommendations are as follows:
UL-S-T-R

Approve

Yours truly,

[Signature]