



L. O. Speer, Jr.
Area Superintendent

November 11, 1975

Mr. Joe D. Ramey (2)
Secretary-Director
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

File: LOS-443-986.510

Dear Sir:

Proposed Downhole Commingling of
Jicarilla Apache 102 No. 8 and No. 10
Rio Arriba County, New Mexico

Amoco Production Company requests approval from the Secretary-Director of the Oil Conservation Commission to downhole commingle two gas wells, the Jicarilla Apache 102 No. 8 and the Jicarilla Apache 102 No. 10 as provided by Commission Order No. R-4059 in Case No. 4443 dated November 10, 1970.

K
D These wells are operated by Amoco Production Company located at 501 Airport Drive, Farmington, New Mexico 87401. Well No. 8 is located in the SW/4 of Section 3, T-26-N, R-4-W, Rio Arriba County, New Mexico, and Well No. 10 is located in the NW/4 of Section 4, T-26-N, R-4-W, Rio Arriba County, New Mexico. Both wells are dual completions and both are B.S. Mesa Gallup and Basin Dakota producers. Commission Order No. MC-1856 authorized the multiple completion of Well No. 8 and Commission Order No. MC-1771 authorized the multiple completion of Well No. 10. Northwest Pipeline collects gas made from the Gallup horizon and the Dakota horizon for both Amoco wells in question.

In Order No. R-4059 (Case No. 4443, November 10, 1970) a procedure was given whereby the Secretary-Director was empowered to administratively approve future downhole commingling applications on wells on the Jicarilla Apache 102 lease. In compliance with Order No. R-4059, we hereby submit the following data. Attachment No. 1 is a 24-hour productivity test on Commission Form C-116 that shows the amount of gas and water produced from each zone. Attachment No. 2 consists of decline curves for both zones in both wells showing an established decline for each zone for a period of at least one year. Attachment No. 3 includes wellbore diagrams depicting the

officer: Consol. O & G
E.P.N.G.

Not waiver from U.S.G.S too.

Amoco Production Company

Petroleum Center Building
501 Airport Drive
Farmington, New Mexico 87401

DHC-183
Date - 12/4/75



Mr. Joe D. Ramey
New Mexico Oil Conservation Commission
Page 2

mechanical arrangement of the Amoco wells. On the wellbore diagrams are the bottom hole pressures for each zone, and these pressures are underlined in "red". The bottom hole pressures were calculated from surface shut-in pressures by using pressure gradients. These shut-in pressures underlined in "blue" near top of the diagrams were taken from June, 1975 deliverability tests. Attachment No. 4a shows the bottom hole pressures for Dakota and Gallup zones in the Jicarilla Apache 102 No. 7, 9, 11, and 12 in 1970. There were at least 300 psia differences between the Gallup and Dakota zones for Well No. 7 and No. 12 and no problems with backflow occurred. The differences between shut-in pressures for Gallup and Dakota zones in Jicarilla Apache 102 No. 8 and No. 10 are both less than 300 psia (Attachment No. 4b). Therefore, we do not believe backflow into the Gallup formation will occur. The one-inch Gallup tubing in both wells hampers our obtaining a less than 30-day old measured bottom hole pressure for the upper horizon. Such a measured bottom hole pressure would have required us pulling the one-inch tubing to make the job of running our bottom hole pressure bomb possible.

Attachment No. 5 shows our computations, which state that the value of the commingled production will not be less than the sum of the values of the individual streams for both wells. As can be seen from the attachment, both gas compositions from the Gallup and Dakota horizons have approximately the same heating value and both gas streams are subject to the same pricing. Therefore, the value of the commingled production should be the same as the value of the individual streams. Attachment No. 5 also shows the description of the fluid characteristics of each zone in question. As can be seen, the Gallup and Dakota zones in both wells have virtually the same composition. There are other Amoco wells in Sections 3, 4, 9, and 10, T-26-N, R-4-W, that are commingled in the Gallup and Dakota horizons (Plat 1, Attachment No. 6), and these wells do not suffer from precipitate problems due to incompatible waters. Attachment No. 7 shows gas compositions of the commingled production in Jicarilla Apache 102 No. 7, 9, 11, and 12. These compositions resemble those of Well No. 8 and No. 10. Therefore, we feel there will be no precipitate problems due to incompatible waters in Wells No. 8 or No. 10.

And lastly, statements have been sent to all offset operators and the United States Geological Survey notifying them in writing of our proposed commingling.

Should the Secretary-Director of the Commission approve our proposed down-hole commingling, the Jicarilla Apache 102 No. 8 and No. 10 will be operated in accordance with provisions of the Administrative Order No. R-4059 which authorizes commingling. In addition, the allocation of production from each well will be in direct accordance with the allocating formula specified by the Oil Conservation Commission.

Mr. Joe D. Ramey
New Mexico Oil Conservation Commission
Page 3

Thank you very much for your consideration.

Yours very truly,

A handwritten signature in dark ink, appearing to read "L. Ramey". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Attachments

cc
Mr. A. R. Kendrick
New Mexico Oil Conservation Commission
Aztec, New Mexico

NEW MEXICO OIL CONSERVATION COMMISSION
GAS-OIL RATIO TESTS

ATTACHMENT NO. 1

C-116
Revised 1-1-65

Operator AMOCO PRODUCTION COMPANY		Pool		Basin		County		Rio Arriba								
Address 501 Airport Drive, Farmington, New Mexico 87401		TYPE OF TEST - (X)		SCHEDULED		Completion		Special								
LEASE NAME	WELL NO.	LOCATION			DATE OF TEST	CHOKES SIZE	TBG. PRESS.	DAILY ALLOWABLE	LENGTH OF TEST HOURS	PROD. DURING TEST			GAS - OIL RATIO CU.FT./BBL.			
		U	S	T						R	WATER BBLs.	GRAV. OIL		OIL BBLs.	GAS M.C.F.	
Jicarilla Apache 102	8	K	3	26	4	10-21-75	P	Open	330	-	24	1	62.0	6	289	48,167
	10	D	4	26	4	10-21-75	P	Open	246	-	24	1	64.0	3	190	63,333

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

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 Commission.

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 Commission in accordance with Rule 301 and appropriate pool rules.

(Signature)

Area Superintendent
(Title)

November 4, 1975
(Date)

NEW MEXICO OIL CONSERVATION COMMISSION
GAS-OIL RATIO TESTS

attachment No. 1
C-116
Revised 1-1-65

Operator AMOCO PRODUCTION COMPANY		Pool B. S. Mesa Gallup		County Rio Arriba												
Address 501 Airport Drive, Farmington, New Mexico 87401		TYPE OF TEST - (X)		Completion ☐ Special ☒												
LEASE NAME	WELL NO.	LOCATION			DATE OF TEST	STATUS	CHOKES SIZE	TBG. PRESS.	DAILY ALLOWABLE	LENGTH OF TEST HOURS	PROD. DURING TEST				GAS - OIL RATIO CU.FT./BBL.	
		U	S	T							R	WATER BBL.S.	GRAV. OIL	OIL BBL.S.		GAS M.C.F.
Jicarilla Apache 102	8	K	3	26	4	10-21-75	P	Open	316	-	24	0.25	68.0	4	289	72,250
	10	D	4	26	4	10-21-75	P	Open	241	-	24	0.12	69.0	0	81	-

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 Commission.
 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 Commission 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.

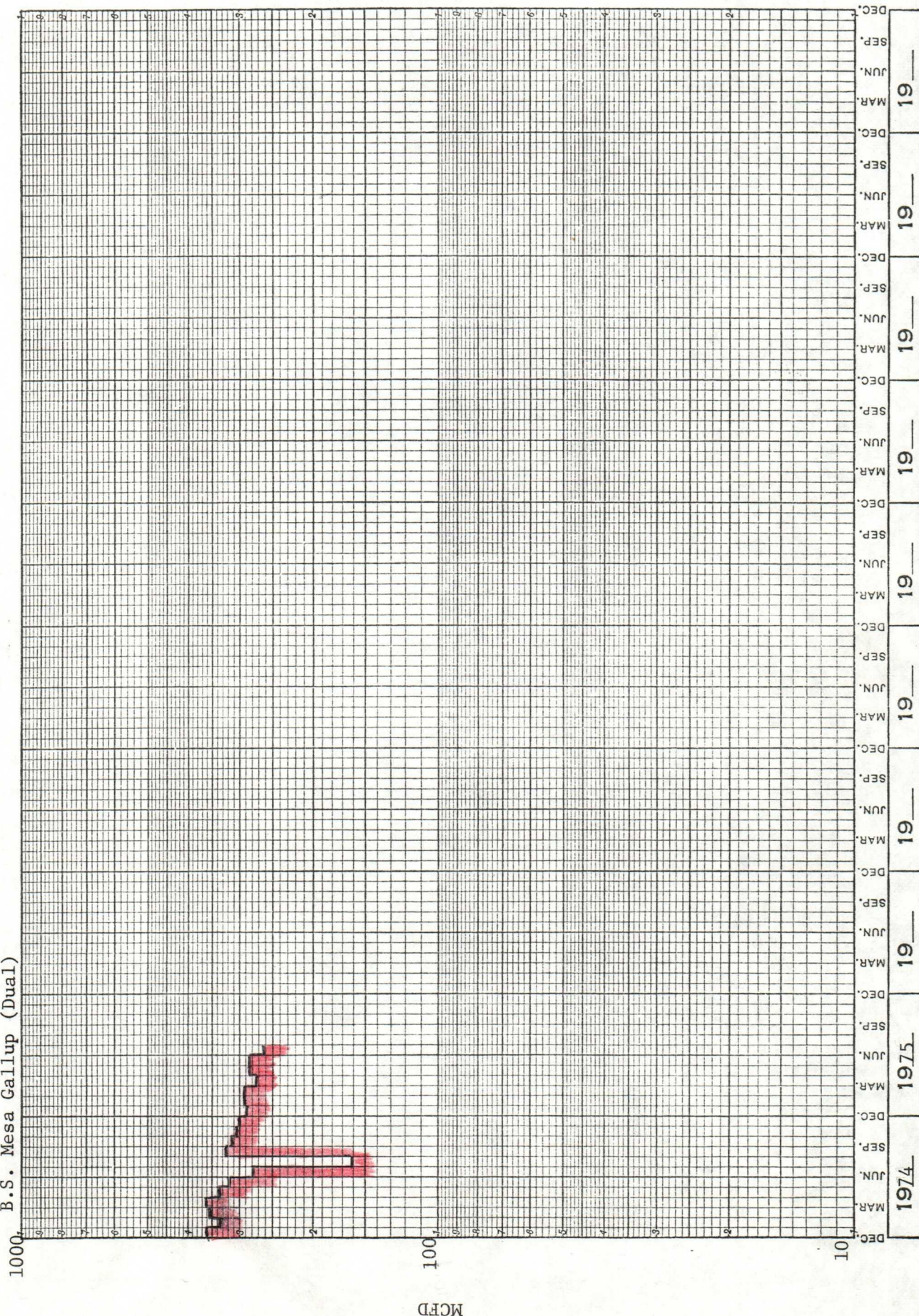
(Signature)
 Area Superintendent

(Title)
 November 4, 1975

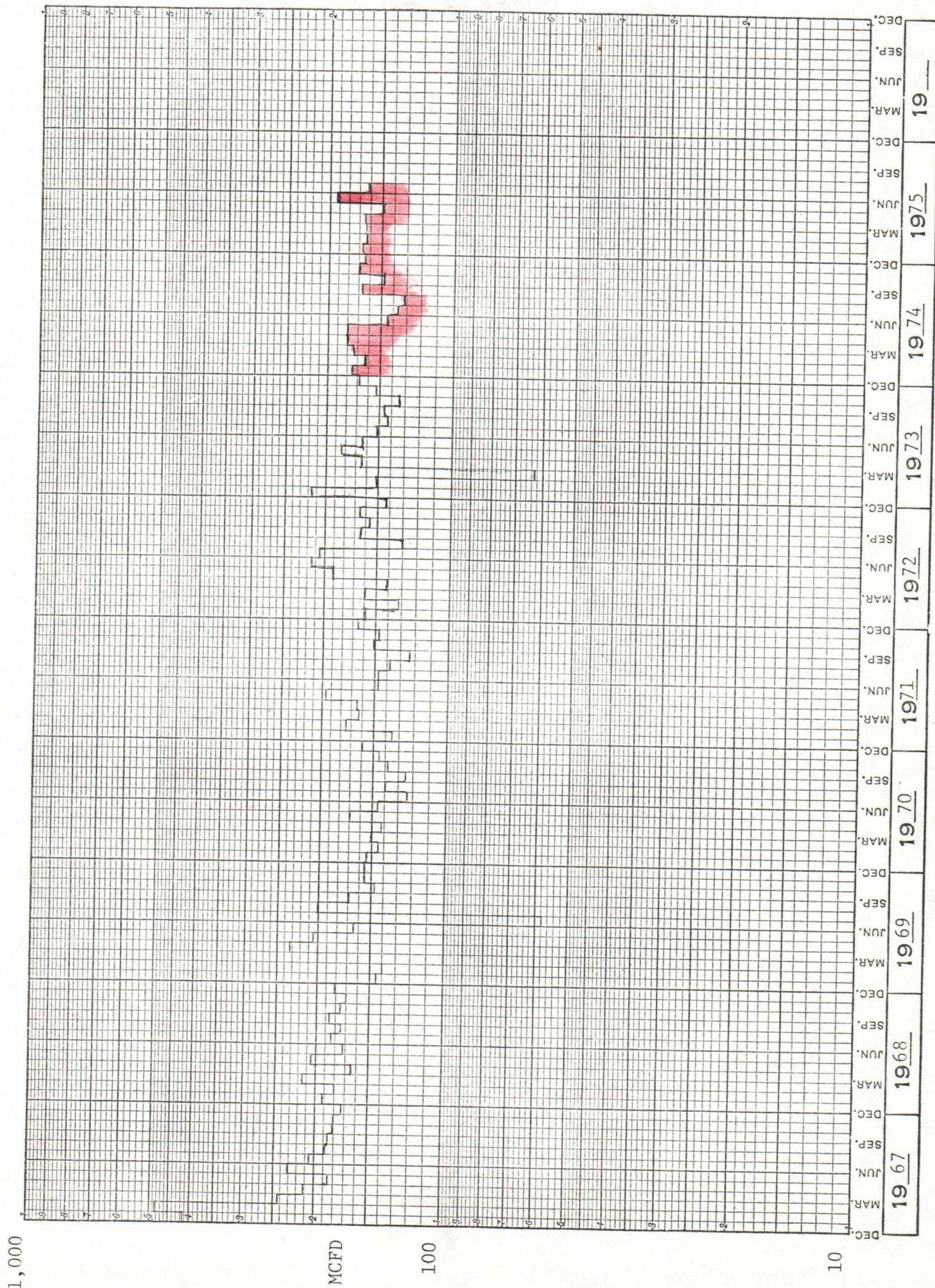
(Date)

ATTACHMENT NO. 2

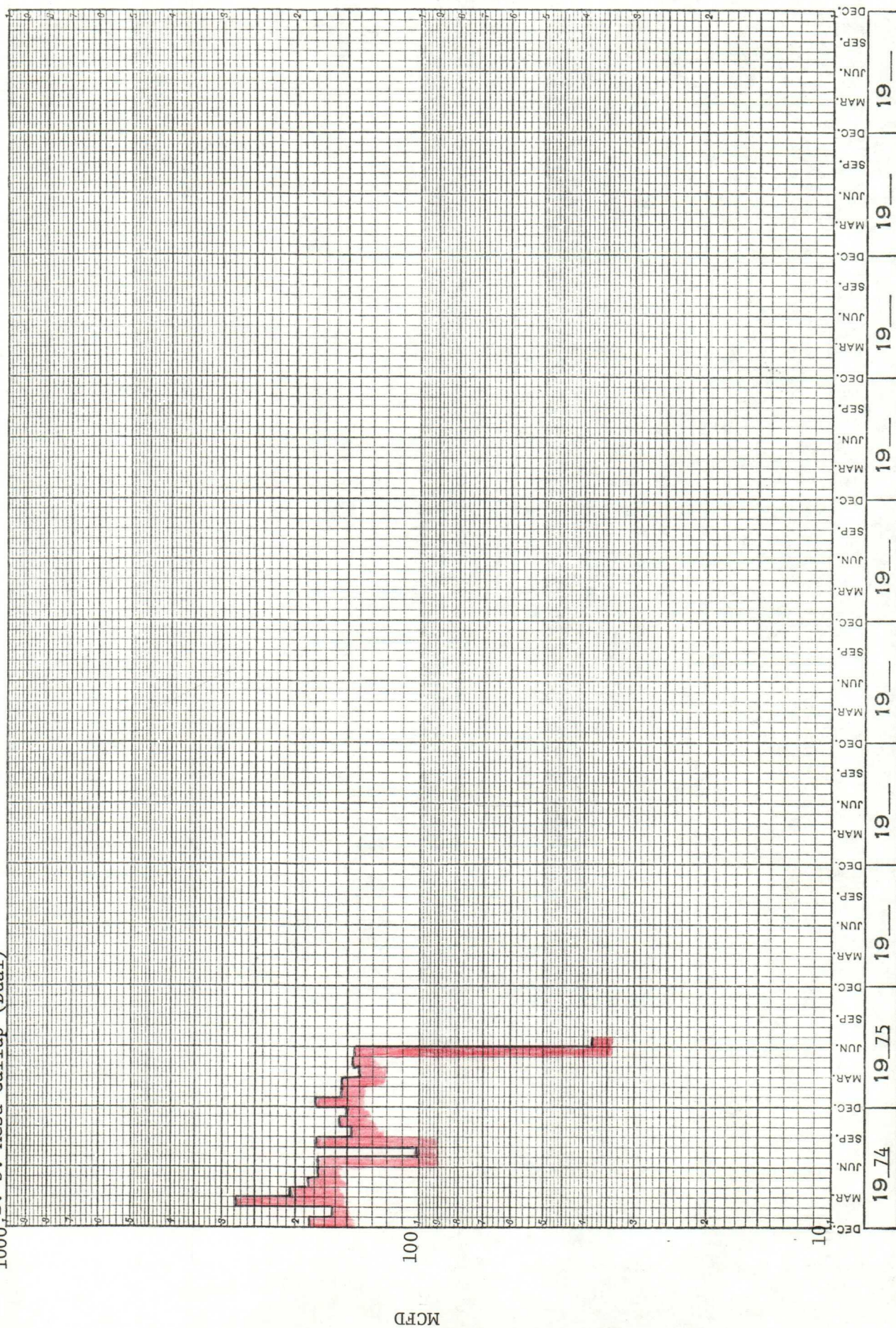
Jicarilla Apache 102 No. 8
B.S. Mesa Gallup (Dual)



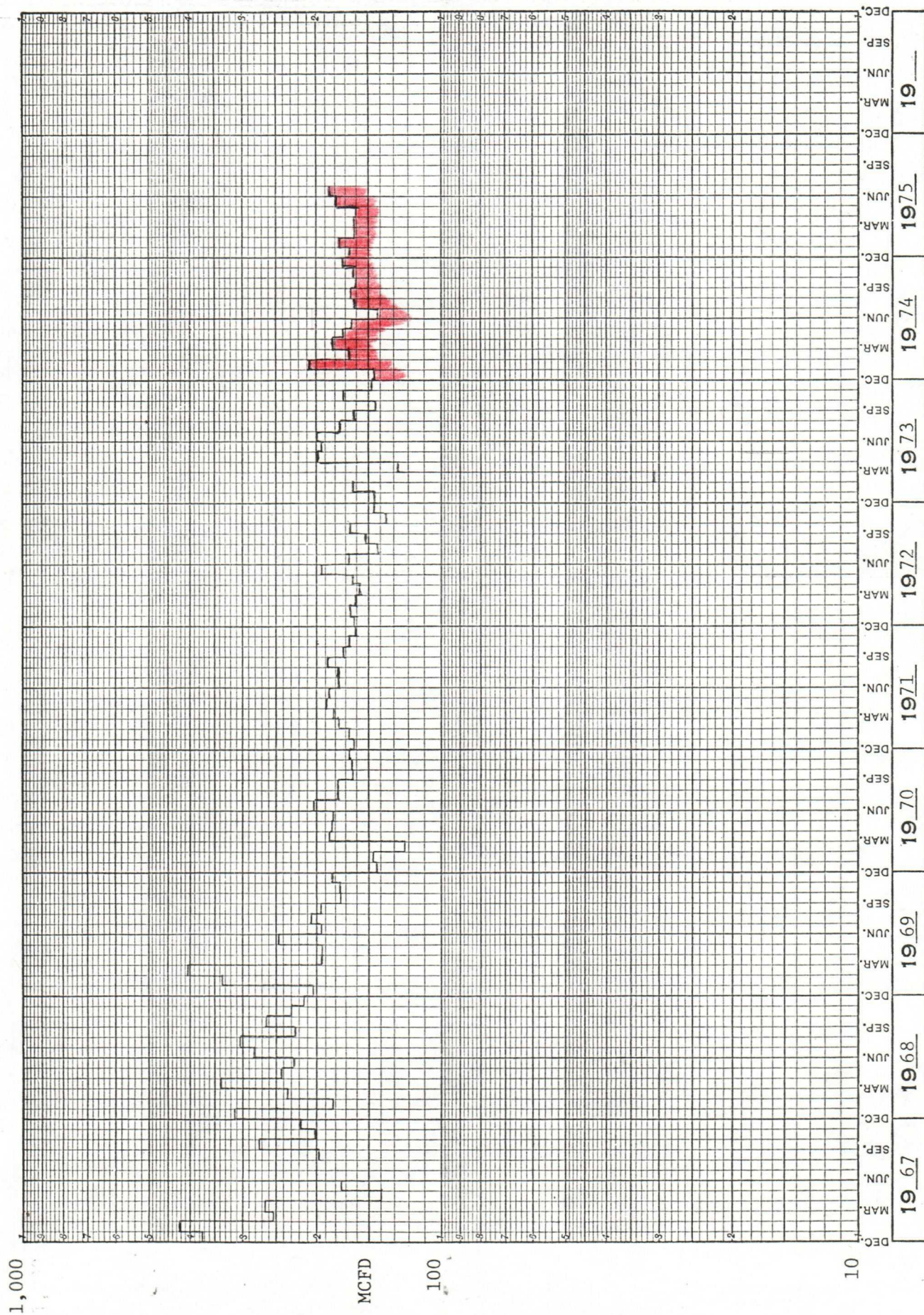
Basin Dakota
Jicarilla Apache Tribal 102 No. 8 (Dual)



Jicarilla Apache 102 No. 10
1000 B. S. Mesa Gallup (Dual)



Basin Dakota
Jicarilla Apache Tribal 102 No. 10 (Dual)





Amoco Production Company

ATTACHMENT NO. 3

ENGINEERING CHART

SHEET NO.

OF

FILE

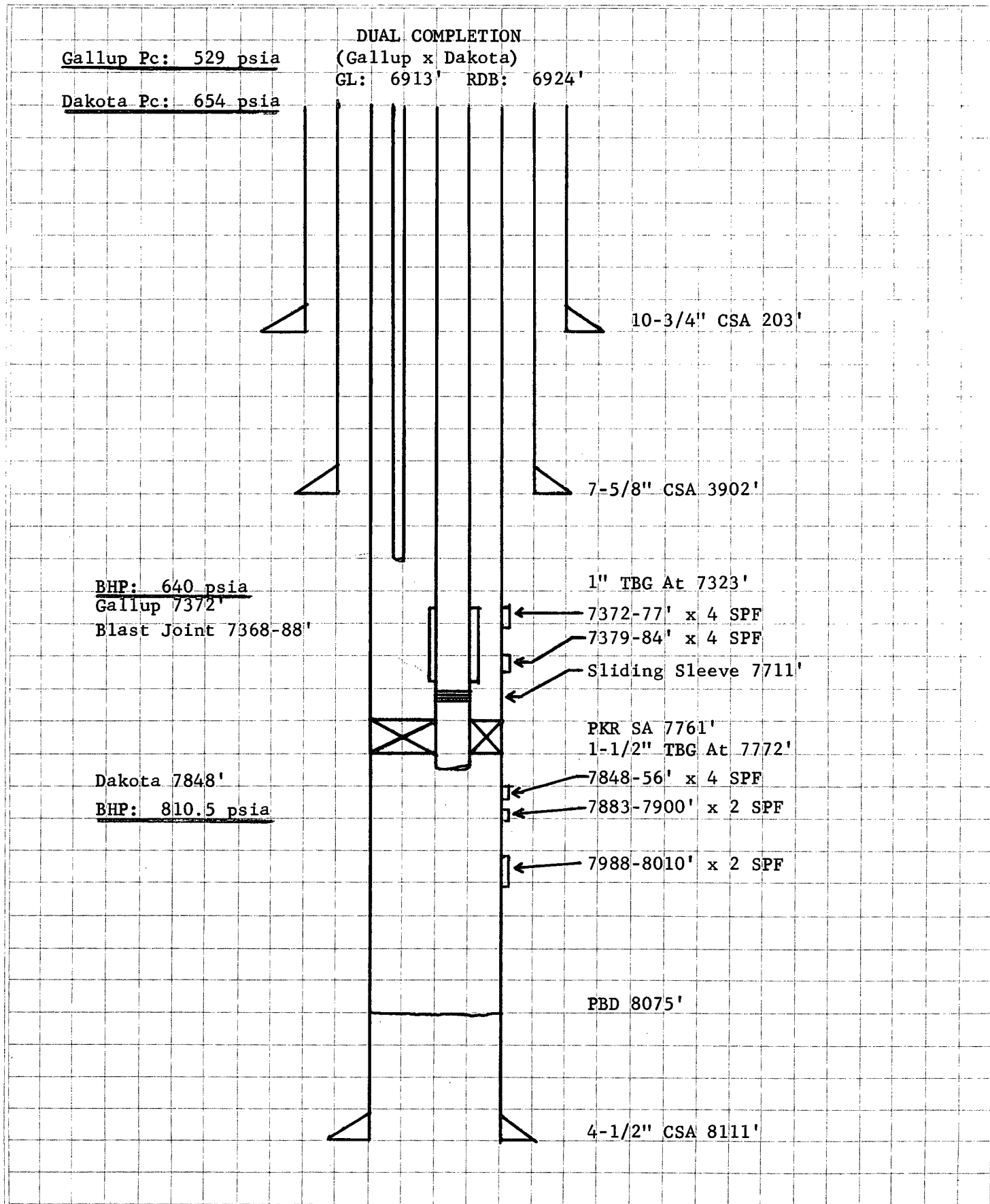
APPN

DATE

BY

SUBJECT Jicarilla Apache 102 No. 8

Section 3, T-26-N, R-4-W, Rio Arriba County, NM





Amoco Production Company

ENGINEERING CHART

SHEET NO. _____

OF _____

FILE _____

APPN _____

DATE _____

BY _____

SUBJECT Jicarilla Apache 102 No. 10Section 4, T-26-N, R-4-W, Rio Arriba County, NMGallup Pc: 437 psiaDakota Pc: 630 psia

DUAL COMPLETION

(Gallup x Dakota)

GL: 7179' RDB: 7189'

Gallup 7310'

BHP: 533 psia

Blast Joint 7652-80'

PKR SA 8014'

(Graneros

Dakota 8142'

(Main Dakota

8282'

BHP: 786 psia

10-3/4" CSA 197'

7-5/8" CSA 4161'

1" TBG At 7655'

7664-78' x 4 SPF

Sliding Sleeve 7943'

8150-88' x 2 SPF

1-1/2" TBG At 8207'

8285-8310' x 4 SPF

8335-45' x 4 SPF

PBD 8360'

4-1/2" CSA 8375'

1970
PRODUCTION DATA

JICARILLA APACHE 102 LEASE GALLUP--DAKOTA DUAL COMPLETIONS

Well	Gallup			Dakota - Latest Deliverability Test				Remarks
	Latest Shut In Pressure	Latest Test Or Production Rate	Flow Pressure	Present Status	Pc-PSIA	Rate MCFD	Flow Pressure, PSIA	Year of Test
No. 7	1356 (4-14-70)	183 MCFD on 3/4" ch. 183 MCFD CAOF	4 psig	SI	799	130 (8/70)	501	1970
No. 9	895 (6-24-70)	93 MCFD on line	440 psia	Producing to the line	812	198	431	1970
No. 11	1230 (3-25-70)	595 MCFD on 3/4" ch.	40 psig	SI	945	218 (8/70)	592	1970
No. 12	1293 (5-30-69)	229 MCFD on 3/4" ch. 259 MCFD CAOF	8 psig	SI	940	136	518	1970

Pressures from April, 1970
Packer Leakage Test

Potential Test Gallup completed 7-1-68. Flow 533 MCFD on 3/4" ch. AOF 615 MCFD. TPF 34 psig. S/P 1304 psig.

Pressures from March, 1970
Packer Leakage Test

PRODUCTION DATA

JICARILLA APACHE 102 LEASE GALLUP-DAKOTA DUAL COMPLETIONS

Well	Gallup			Dakota			Remarks
	Shut In Pressure, PSIA	Test Rate MCFD	Flow Pressure PSIA	Shut In Pressure, PSIA	Test Rate MCFD	Flow Pressure PSIA	
No. 8	529 (6-9-75)	265	316	654 (6-9-75)	146	330	Pressures from 1975 Deliverability Test
No. 10	437 (6-18-75)	162	241	630 (6-18-75)	161	246	Pressures from 1975 Deliverability Test

ATTACHMENT NO. 5
VALUE OF COMMINGLED GAS

This section will show that the value of the commingled production will not be less than the sum of the values of the individual streams of gas for both the Jicarilla Apache 102 No. 8 and the Jicarilla Apache 102 No. 10. The following data applies to our computation:

Gallup Production

Price: 23¢/MCF based on 1000 BTU*/SCF
Condensate = \$4.91/bbl.

Dakota Production

Price: 23¢/MCF based on 1000 BTU*/SCF
Condensate = \$4.91/bbl.

*In the event the total gross heating value of gas delivered from a well shall be either more or less than 1000 BTU/SCF, then price payable for gas delivered from either well shall be either increased or reduced. Such a reduced or increased price shall be determined by multiplying the price otherwise payable by a fraction, the numerator of which is the actual total gross heating value of such gas expressed in British thermal units per cubic foot, and the denominator of which is one thousand (1000).

The fluid characteristics are included at the end of this attachment. As can be seen the gas from both zones is very similar for each well. Therefore, for the Jicarilla Apache 102 No. 8, the commingled gas will never have a heating value lower than 1247 BTU/SCF nor higher than 1265 BTU/SCF. The Jicarilla Apache 102 No. 10 will never have a commingled gas heating value lower than 1252 BTU/SCF nor higher than 1278 BTU/SCF. Therefore, the value for commingled gas will be the same as the values of the individual streams. This is shown mathematically below:

Jicarilla Apache 102 No. 8

$$\text{Lowest Value: } (\$0.23/\text{MCF}) \left(\frac{1247}{1000} \right) = \$0.29/\text{MCF}$$

$$\text{Highest Value: } (\$0.23/\text{MCF}) \left(\frac{1265}{1000} \right) = \$0.29/\text{MCF}$$

Jicarilla Apache 102 No. 10

$$\text{Lowest Value: } (\$0.23/\text{MCF}) \left(\frac{1252}{1000} \right) = \$0.29/\text{MCF}$$

$$\text{Highest Value: } (\$0.23/\text{MCF}) \left(\frac{1278}{1000} \right) = \$0.29/\text{MCF}$$

FLUID CHARACTERISTICS
OF JICARILLA APACHE 102 NO. 8

BS Mesa Gallup

Date: 4-28-75

<u>Component</u>	<u>BTU</u>	<u>MOL, %</u>
N2	0	0.24
CH4	804	79.405
C2	211	11.917
CO2	0	0.754
C3	115	4.566
IC4	26	0.783
NC4	43	1.304
IC5	19	0.485
NC5	11	0.278
C6+	14	0.268
	<u>1247</u>	<u>100.000</u>

Basin Dakota

Date: 4-28-75

<u>Component</u>	<u>BTU</u>	<u>MOL, %</u>
N2	0	0.377
CH4	786	77.689
C2	223	12.554
CO2	0	0.906
C3	130	5.138
IC4	23	0.695
NC4	46	1.416
IC5	19	0.474
NC5	16	0.397
C6+	18	0.354
	<u>1265</u>	<u>100.000</u>

FLUID CHARACTERISTICS
OF JICARILLA APACHE 102 NO. 10

BS Mesa Gallup

Date: 6-20-75

<u>Component</u>	<u>BTU</u>	<u>MOL, %</u>
N2	0	0.26
CH4	782	77.25
C2	227	12.82
CO2	0	0.76
C3	134	5.33
IC4	28	0.87
NC4	50	1.54
IC5	20	0.49
NC5	13	0.31
C6+	19	0.37
	1278	100.000

Basin Dakota

Date: 6-20-75

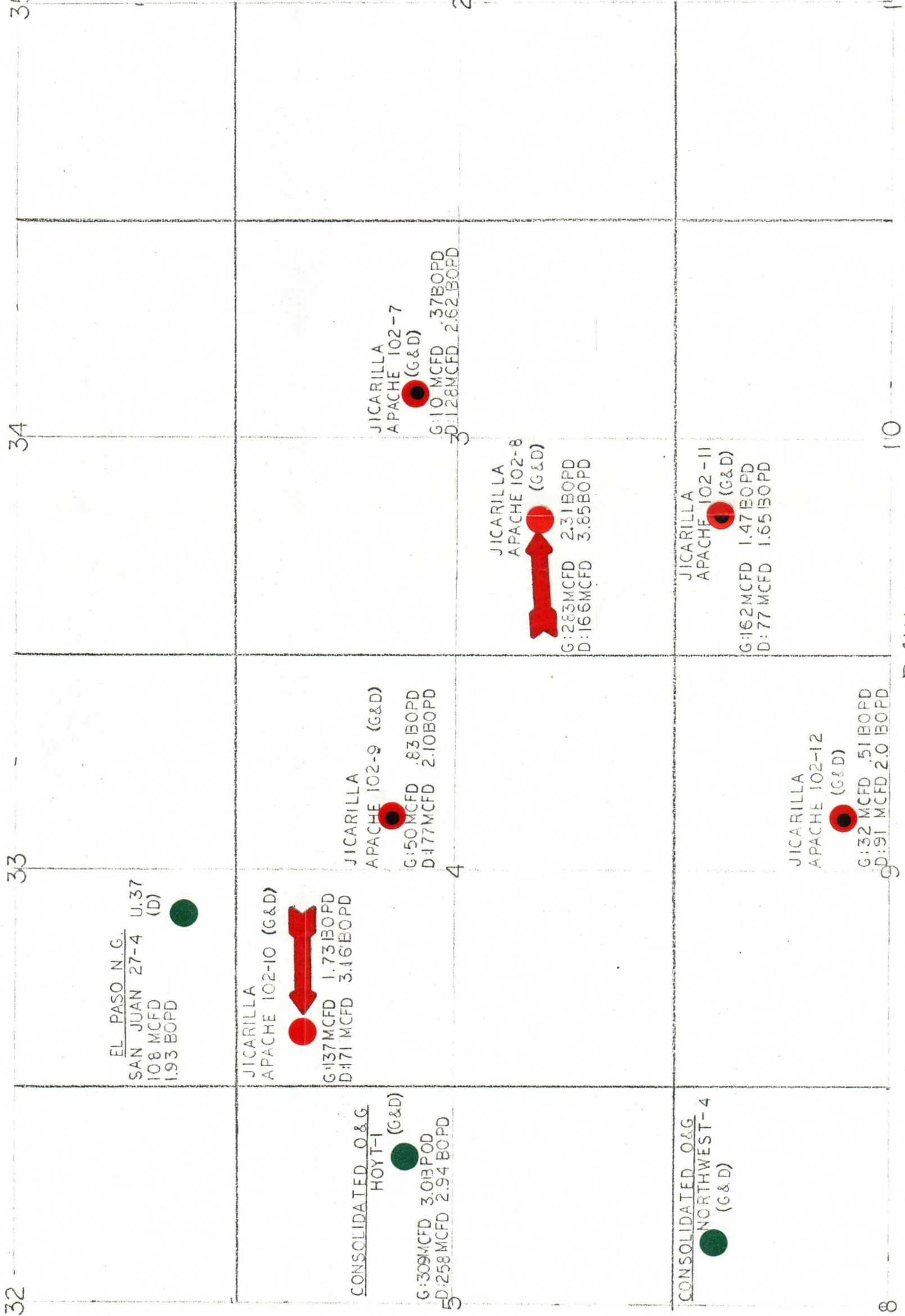
<u>Component</u>	<u>BTU</u>	<u>MOL, %</u>
N2	0	0.29
CH4	795	78.53
C2	215	12.15
CO2	0	0.97
C3	125	4.95
IC4	25	0.77
NC4	45	1.37
IC5	16	0.40
NC5	11	0.28
C6+	15	0.29
	1252	100.000

T 35
27
N

T 26
N

KEY

- AMOCO WELL
- OUTSIDE OR. WELL
- G: GALLUP (B.S. MESA)
- D: DAKOTA
- COMMINGLED WELL



PAN AMERICAN
PETROLEUM CORPORATION

DR.	CK.	AP.	AP.	NO.
SCALE NONE				DATE

AVG. PROD. AMOCO WELLS: JAN - JULY, 1975
AVG. PROD. OUTSIDE OPERATED: JAN - JULY, 1975

R4-W

FLUID CHARACTERISTICS

Jicarilla Apache 102 No. 7

Test: 12-19-73

<u>Component</u>	<u>BTU</u>	<u>MOL, %</u>
N2		0.62
CH4		75.97
C2		12.66
CO2		0.71
C3		5.91
IC4		0.95
NC4		1.90
IC5		0.63
NC5		0.50
C6+		0.15
	1293	100.00

Jicarilla Apache 102 No. 9

Test: 1-2-73

<u>Component</u>	<u>BTU</u>	<u>MOL, %</u>
N2		0.71
CH4		77.48
C2		12.47
CO2		0.77
C3		5.42
IC4		0.76
NC4		1.44
IC5		0.42
NC5		0.32
C6+		0.21
	1259	100.00

Jicarilla Apache 102 No. 11

Test: 12-19-73

<u>Component</u>	<u>BTU</u>	<u>MOL, %</u>
N2		0.57
CH4		77.24
C2		12.38
CO2		0.74
C3		5.58
IC4		0.82
NC4		1.66
IC5		0.45
NC5		0.35
C6+		<u>0.21</u>
	1271	100.00

Jicarilla Apache 102 No. 12

Test: 12-19-73

<u>Component</u>	<u>BTU</u>	<u>MOL, %</u>
N2		0.62
CH4		76.06
C2		12.50
CO2		0.79
C3		5.96
IC4		0.89
NC4		1.94
IC5		0.61
NC5		0.47
C6+		<u>0.16</u>
	1290	100.00

FLUID CHARACTERISTICS
OF JICARILLA APACHE 102 NO. 8

BS Mesa Gallup

Date: 4-28-75

<u>Component</u>	<u>BTU</u>	<u>MOL, %</u>
N2	0	0.24
CH4	804	79.405
C2	211	11.917
CO2	0	0.754
C3	115	4.566
IC4	26	0.783
NC4	43	1.304
IC5	19	0.485
NC5	11	0.278
C6+	14	0.268
	<u>1247</u>	<u>100.000</u>

Basin Dakota

Date: 4-28-75

<u>Component</u>	<u>BTU</u>	<u>MOL, %</u>
N2	0	0.377
CH4	786	77.689
C2	223	12.554
CO2	0	0.906
C3	130	5.138
IC4	23	0.695
NC4	46	1.416
IC5	19	0.474
NC5	16	0.397
C6+	18	0.354
	<u>1265</u>	<u>100.000</u>

FLUID CHARACTERISTICS
OF JICARILLA APACHE 102 NO. 10

BS Mesa Gallup

Date: 6-20-75

<u>Component</u>	<u>BTU</u>	<u>MOL, %</u>
N2	0	0.26
CH4	782	77.25
C2	227	12.82
CO2	0	0.76
C3	134	5.33
IC4	28	0.87
NC4	50	1.54
IC5	20	0.49
NC5	13	0.31
C6+	19	0.37
	1278	100.000

Basin Dakota

Date: 6-20-75

<u>Component</u>	<u>BTU</u>	<u>MOL, %</u>
N2	0	0.29
CH4	795	78.53
C2	215	12.15
CO2	0	0.97
C3	125	4.95
IC4	25	0.77
NC4	45	1.37
IC5	16	0.40
NC5	11	0.28
C6+	15	0.29
	1252	100.000

OIL CONSERVATION COMMISSION
Artec DISTRICT

OIL CONSERVATION COMMISSION
BOX 2088
SANTA FE, NEW MEXICO

DATE Nov 14, 1975

Carl Ulvog



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

Gentlemen:

I have examined the application dated Nov 11, 1975,
for the Amoco Production Co. see below
Operator Lease and Well No. Unit, S-T-R

and my recommendations are as follows:

Jicarilla Apache 102 #8 K-3-26N-4W
Jicarilla Apache 102 #10 D-4-26N-4W

Approve

Yours very truly,

AR Kendrick