



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 Sept. 24, 1985

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

Gentlemen:

I have examined the application dated Sept. 6, 1985
for the Jennies Richie A #1 A-9-77N-90
Operator Lease and Well No. Unit, S-T-R

and my recommendations are as follows:

Approve

Yours truly,

James D. Day

Tenneco Oil
Exploration and Production
A Tenneco Company

6162 South Willow Drive
P.O. Box 3249
Englewood, Colorado 80155
(303) 740-4800



Western Rocky Mountain Division

July 31, 1985

RECEIVED
SEP 06 1985
OIL CON. DIV.
DIST. 2

New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Attention: Gilbert Quintana

RE: Riddle A 1
810' FNL, 1090' FEL
Sec. 9, T27N, R9W
San Juan County, New Mexico

Gentlemen:

We have enclosed all necessary data for administrative approval to commingle production in the referenced well.

Questions concerning this request can be directed to Mr. Frank Weiss (303) 740-4836.

Very truly yours,

TENNECO OIL COMPANY

A handwritten signature in dark ink, appearing to read "PAUL DOYLE".

Paul Doyle
Division Production Engineer

SMc:st

Enclosures

cc: Mr. Jerry Hertzler
Mr. Frank Weiss

Plc liquids

Tenneco Oil
Exploration and Production
A Tenneco Company

6162 South Willow Drive
P.O. Box 3249
Englewood, Colorado 80155
(303) 740-4800



Western Rocky Mountain Division

August 1, 1985

El Paso Natural Gas
Post Office Box 4990
Farmington, NM 87499

Attention: Don Reed

RE: Riddle A 1
810' FNL, 1090' FEL
Sec. 9, T27N, R9W
San Juan County, New Mexico

RECEIVED
SEP 06 1985
OIL CON. L. V.
DIST. 3

Gentlemen:

Tenneco has applied for administrative approval to commingle production from the Mesaverde and Dakota zones in the above referenced well. If you as an offset operator have no objection to the proposed commingling, please sign the waiver at the bottom of this page and forward to:

New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501
Attention: Gilbert Quintana

We would appreciate your returning one copy to the undersigned.

Very truly yours,

TENNECO OIL COMPANY

PA Doyle

Paul Doyle
Division Production Engineer

SMc:st

WAIVER

We hereby waive any objections to Tenneco Oil Company's application to commingle production as set forth above.

Name: _____ Title: _____

Date: _____

Tenneco Oil
Exploration and Production
A Tenneco Company

6162 South Willow Drive
P.O. Box 3249
Englewood, Colorado 80155
(303) 740-4800



Western Rocky Mountain Division

August 1, 1985

Southland Royalty
Post Office Drawer 570
Farmington, NM 87401

RE: Riddle A 1
810' FNL, 1090' FEL
Sec. 9, T27N, R9W
San Juan County, New Mexico

Gentlemen:

Tenneco has applied for administrative approval to commingle production from the Mesaverde and Dakota zones in the above referenced well. If you as an offset operator have no objection to the proposed commingling, please sign the waiver at the bottom of this page and forward to:

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P. O. Box 2088
Santa Fe, New Mexico 87501
Attention: Gilbert Quintana

We would appreciate your returning one copy to the undersigned.

Very truly yours,

TENNECO OIL COMPANY

A handwritten signature in dark ink, appearing to read "PA Doyle".

Paul Doyle
Division Production Engineer

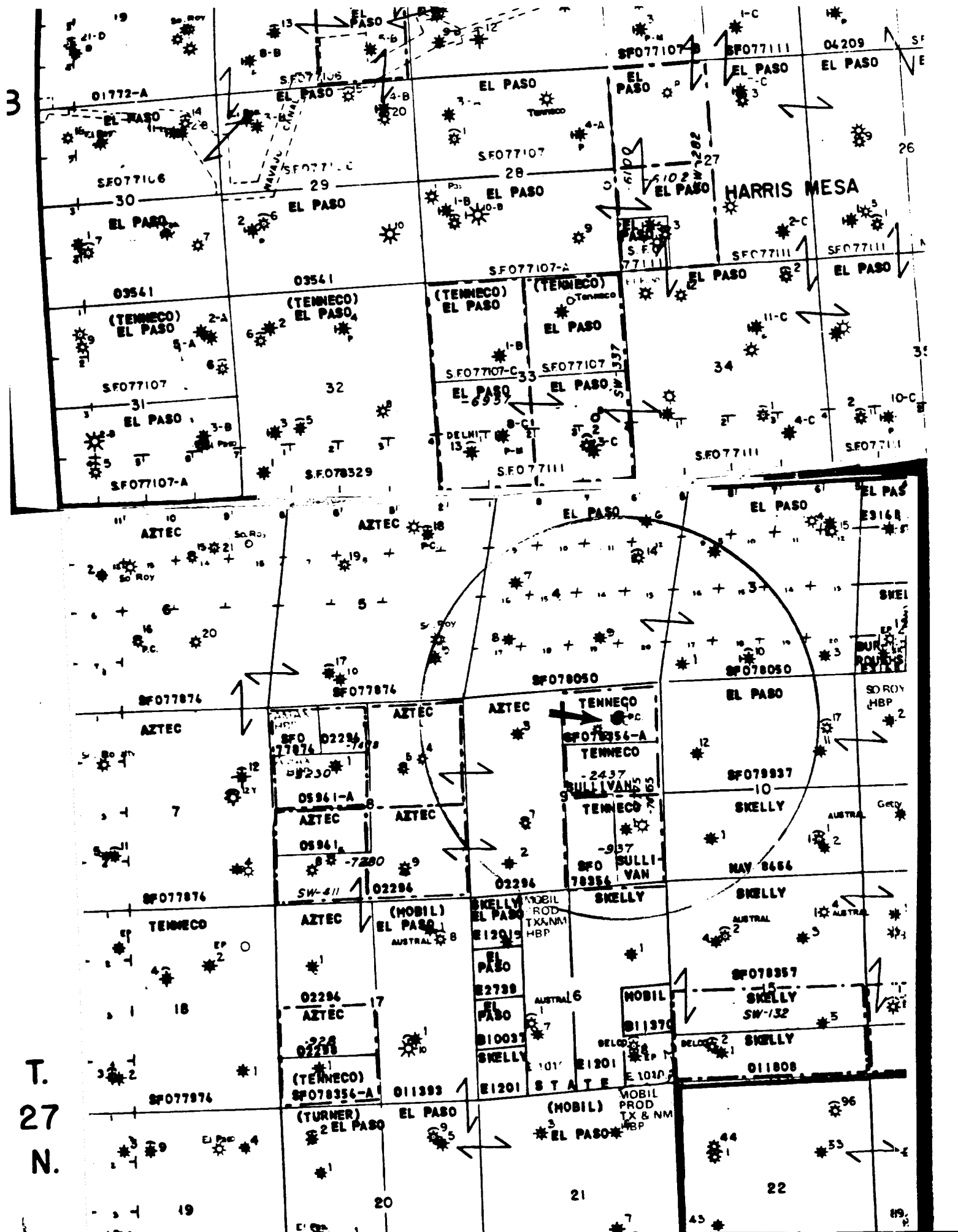
SMc:st

WAIVER

We hereby waive any objections to Tenneco Oil Company's application to commingle production as set forth above.

Name: _____ Title: _____

Date: _____





Western Rocky Mountain Division

The Riddle A #1 was completed as a Mesaverde-Dakota dual in May of 1961 with 4-1/2" casing and one string of 2-3/8" tubing. The Dakota produces up the tubing and the Mesaverde flows up the casing-tubing annulus. Because of the large flow area in the annulus, the Mesaverde is experiencing liquid loading problems which are restricting the production from that zone.

Enclosed are decline curves for both the Mesaverde and Dakota zones.

The bottom-hole pressure of the Dakota was measured with a pressure bomb and found to be 1072 psig at 6665' after 8 days of shut in. This Dakota pressure corrected to a datum of 5000' was 1024 psig. A pressure bomb could not be run for the Mesaverde since this zone produces up the annulus.

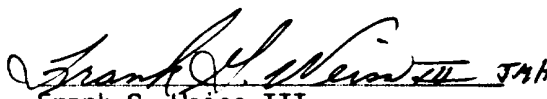
A dead weight surface pressure of 640 psig was recorded for the Mesaverde after 8 days of shut in. The fluid level could not be established. The bottom-hole pressure for the Mesaverde was calculated to be 730 psig at a datum of 5000'. The requirement that the lower pressured zone have a pressure that is greater than 50% of the pressure of the higher pressured zone corrected to a common datum is; therefore, satisfied.

Compatibility tests were conducted using Dakota water and Mesaverde water from the Riddle A#1. The testing indicates that no scale or precipitate problems should result from the commingling of these two zones. In addition, the salinities of the two zones are similar enough that no formation damage should occur in either zone.

The intent of commingling these two zones is to increase the total production from the well. This will be accomplished by increasing the flow velocity by flowing both zones up the tubing. The cross-sectional area of the tubing is 3.13 square inches, as opposed to 11.27 square inches for the tubing and annulus. Even if no production increase were realized, a 3.6 fold increase in average flow velocity would result from this commingling. This velocity increase will enable the well to unload produced fluids and will result in increased gas production from each zone. This greater production rate will increase the velocity in the tubing, yielding even more liquid lifting capacity.

Based upon the decline curves and reserve estimates for these zones, I recommend that the production be allocated on strict percentage basis with 55% assigned to the Mesaverde and 45% assigned to the Dakota.

If you need any additional information, feel free to call me at (303) 740-4836.


Frank G. Weiss III
Senior Production Engineer-WRMD

MESAVERDE

RIDDLE A#1 MV/DK
MESAVERDE DAKOTA COMMINGLING
2-3/8X4-1/2 ANNULUS

DATE: 7/10/85
FILE: FILE102
PROJ: 0

G A S W E L L P R E S S U R E S

MEASURED DEPTH, FEET	5000.	FLOW STREAM ID, INCHES	2.375
TRUE VERTICAL DEPTH, FEET	5000.	FLOW STREAM OD, INCHES	6.456
GAS GRAVITY	0.684	CRITICAL TEMPERATURE	385.
BOTTOM HOLE TEMPERATURE	150.	CRITICAL PRESSURE	666.
NITROGEN, MOL %	0.	CONDENSATE GRAVITY, DEG API	50.0
CARBON DIOXIDE, MOL %	0.	WATER GRAVITY	1.047
HYDROGEN SULFIDE, MOL %	0.	PIPE ROUGHNESS, INCHES	0.00060

GAS RATE M/D	WH TEMP DEG F	WELLHEAD PSIG	BOTTOMHOLE PSIG	P/Z PSIG	CONDENSATE STB/MMCF	WATER BW/MMCF
0.	60.	640	730 AT 5000 FEET 730 AT 5000 FEET		(MEAS) (MEAS)	FLUID LEVEL (WTR)

0350

B & R SERVICE, INC.

P. O. Box 1048
Farmington, New Mexico 87401
(505) 325-2393

Company TENNECO OIL CO. Lease RIDDLE Well A-1
County SAN JUAN State NEW MEXICO Date 6-20-85
Shut-In _____ Zero Point G.L. Tbg. Pressure 888
Casing Pressure PACKER Tbg. Depth _____ Casing Perf. DAKOTA
Max. Temp. _____ Fluid Level _____

<u>DEPTH</u>	<u>PSIG</u>	<u>GRADIENT</u>
0	888	----
1000	916	.028
2000	944	.028
3000	970	.026
4000	998	.028
5000	1024	.026
6000	1052	.028
6525	1067	.029
6665	1072	.125

MESAVERDE

8 DAY SHUT IN PRESSURE TEST

DEAD WEIGHT SURFACE PRESSURE 640 PSIG

02/01/85

EL PASO NATURAL GAS COMPANY
MEASUREMENT DEPARTMENT
POST OFFICE BOX 1492
EL PASO, TEXAS 79999

CHROMATOGRAPHIC GAS ANALYSIS REPORTS

TENNECO OIL COMPANY
P. O. BOX 3249
ENGLEWOOD, COLO. 80155
ATTN: STEPHEN MARKEL

ANAL DATE 01 24 85 METER STATION NAME METER STA 73290
RIDDLE A #1 MV OPER 8720

TYPE CODE	SAMPLE DATE	EFF. DATE	USE MOS.	SCALE	H2S GRAINS	LOCATION
00 ***	01 24 85	02 22 85	06			4 F 02

	NORMAL MOL %	GPM
C O 2	.20	.000
H 2 S	.00	.000
N2	.36	.000
METHANE	85.06	.000
ETHANE	7.77	2.077
PROPANE	3.86	1.062
ISO-BUTANE	.61	.199
NORM-BUTANE	.95	.299
ISO-PENTANE	.34	.124
NORM-PENTANE	.27	.098
HEXANE PLUS	.58	.253
TOTALS	100.00	4.112

SPECIFIC GRAVITY .684

MIXTURE HEATING VALUE

(BTU/CF AT 14.73 PSIA, 60 DEGREES, DRY) 1,206

RATIO OF SPECIFIC HEATS 1.288

NO TEST SECURED FOR H2S CONTENT

*** TYPE CODE EXPLANATION: SINGLE METER ANALYSIS

SMITH ENERGY SERVICES
Division of Smith International, Inc.

2198 East Bloomfield Highway
Farmington, New Mexico 87401
Phone (505) 327-7281

June 5, 1985

Tenneco Oil Co.
Western Rocky Mtn. Div.
P.O. Box 3249
Englewood, Co. 80155
ATTN: Frank Weiss

Dear Mr. Weiss:

Water analysis and compatibility studies were conducted using the following formation water samples:

- | | |
|---|----------------------------|
| 1. Dawson A#1 | Mesa Verde formation water |
| Dawson A#1 | Dakota formation water |
| (Mesa Verde sample may show scaling tendency, but no incompatibility was seen between the two samples.) | |
| 2. Florance #19A | Mesa Verde formation water |
| Florance #19 | Dakota formation water |
| 3. <u>Riddle A #1</u> | Mesa Verde formation water |
| <u>Riddle A #1</u> | Dakota formation water |
| 4. Moore #1A | Mesa Verde formation water |
| Moore #6E | Dakota formation water |
| 5. State Com #1A | Mesa Verde formation water |
| State Com #1 | Dakota formation water |
| 6. Florance #31 | Mesa Verde formation water |
| Florance #31 | Dakota formation water |
| 7. Florance #7A | Mesa Verde formation water |
| Florance #6 | Dakota formation water |
| 8. Florance #36 | Mesa Verde formation water |
| Florance #36 | Dakota formation water |

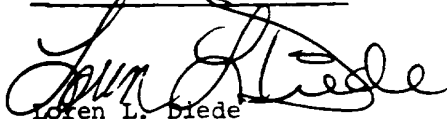
A small amount of reddish orange precipitate formed but this is to be expected when oxygen is admitted to a water sample containing even a trace of iron.

Tenneco, water analysis con't June 5, 1985

This precipitate should pose no problems in a closed system. No solid precipitates of any other types were noted and these samples should be considered to be compatible for mixing as per the listing above.

Sincerely,

SMITH ENERGY SERVICES



Loren L. Biede
District Engineer

LLD/kr

- TENNECO WELL HISTORY -

2607/5

Well Name Riddle "A" #1 Unit A Sec 9 T 27N R 9W
 TD 7014 PBDT 6978 County San Juan State New Mex WI 1.00 RI .79
 Drlg Cost _____ Comp Cost _____ Comp Date 7-23-61 Trn On Date 7-23-61
 Dakota IP _____ BOPD 1933 MCFD _____ BWPD 3 Hours 1974 SIWHP
 MV IP _____ BOPD 1450 MCFD _____ BWPD 3 Hours 892 SIWHP

- TUBULAR RECORD -

Size	Weight	Grade	Depth	Cement	Top Hole		Remarks
					Cement	Size	
8-5/8	24	J-55	296	230	Surf	12-1/4	
4-1/2	11.56	J-55	7014	270/390	5300/1700	7-7/8	DV @ 4868
2-3/8	4.7	J-55	6707				1-7/8" below pkr

Packer? Yes No Type Model "D" Depth 6699
 Anchor? Yes No Type _____ Depth _____
 Pump Type _____

- COMPLETION & WORKOVER RECORD -

Zone #1 - Formation Dakota Date 5-26-61 Perfs w/JSPF 4 JSPF @
6933-31, 6926-23, 6904-6894, 6888-86, 6812-10, 6796-91, 6759-57, 6725-23

Press Tstd _____ PSI, Spot Acid - Type _____ Gallons _____ BDISIP
 Acid: Vol. & Type 500 gal BDA, # balls _____, Rate _____ BPM, Press. 3900 PSI
 Frac: Fluid Volume & Type 100,000 g Sw, Sand: 150,000# 20/40 Mesh
 Frac Rate 47 BPM Frac Pressure 2700 PSI ISIP 1400 PSI
 Comments Dropped 40 balls @ end of frac treatment

Zone #2 - Formation MV Date 5-31-61 Perfs w/JSPF 4 JSPF @
4740-37, 26-21, 11-02, 4690-86, 74-68, 59-54

Press Tstd _____ PSI, Spot Acid - Type _____ Gallons _____ BDISIP
 Acid: Vol. & Type 500 g BDA, # balls _____, Rate _____ BPM, Press. 1800 PSI
130,000 20/40
 Frac: Fluid Volume & Type 100,000 g Sw, Sand: 20,000# 10/20 Mesh
 Frac Rate 65 BPM Frac Pressure 1850 PSI ISIP 600 PSI
 Comments Dropped 60 balls @ end of treatment

Zone #3 - Formation _____ Date _____ Perfs w/JSPF _____

Press Tstd _____ PSI, Spot Acid - Type _____ Gallons _____ BDISIP
 Acid: Vol. & Type _____, # balls _____, Rate _____ BPM, Press. _____ PSI
 Frac: Fluid Volume & Type _____, Sand: _____ # _____ Mesh
 Frac Rate _____ BPM Frac Pressure _____ PSI ISIP _____ PSI
 Comments _____

- CASING REPAIR RECORD -

Depth of Leak _____, # of squeezes required _____, # of sx used _____
 Cathodic Protection? Yes No Date Installed _____

Comments Loc: 810' FNL, 1090' FEL

Prepared By: CS Date: 3/5/84 Verified By: _____ Date: _____

S. M. Struna

PAQ

**NEW MEXICO OIL CONSERVATION COMMISSION
GAS-OIL RATIO TESTS**

C-116
Revised 1-1-65

Operator Tenneco Oil Company		Pool Mesaverde		County San Juan											
Address P.O. Box 3249, Englewood, CO 80155		TYPE OF TEST - (X)		Completion ☐ 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 BBL'S.	GRAV. OIL		OIL BBL'S.	GAS M.C.F.
Riddle	A1	A	9	27	9	5/17/85	F	N/A	210	24	1	49.6	0	25.24	0

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.

Ursula Sugrue
(Signature)

Administrative Supervisor

(Title)

(Date)

NEW MEXICO OIL CONSERVATION COMMISSION
GAS-OIL RATIO TESTS

C-116
Revised 1-1-65

Operator Tenneco Oil Company		Pool Dakota		County San Juan											
Address P.O. Box 3249, Englewood, CO 80155		TYPE OF TEST - (X)		Completion ☐ Special ☐											
LEASE NAME	WELL NO.	LOCATION			DATE OF TEST	CHOKE SIZE	T.B.G. PRESS.	DAILY ALLOW-ABLE	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.
Riddle	A1	A	9	27	9	5/17/85	F	N/A	215	24	0	49.6	.6	39.59	65,983

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.

Consuelo Lugo
(Signature)
Administrative Supervisor
(Title)

(Date)

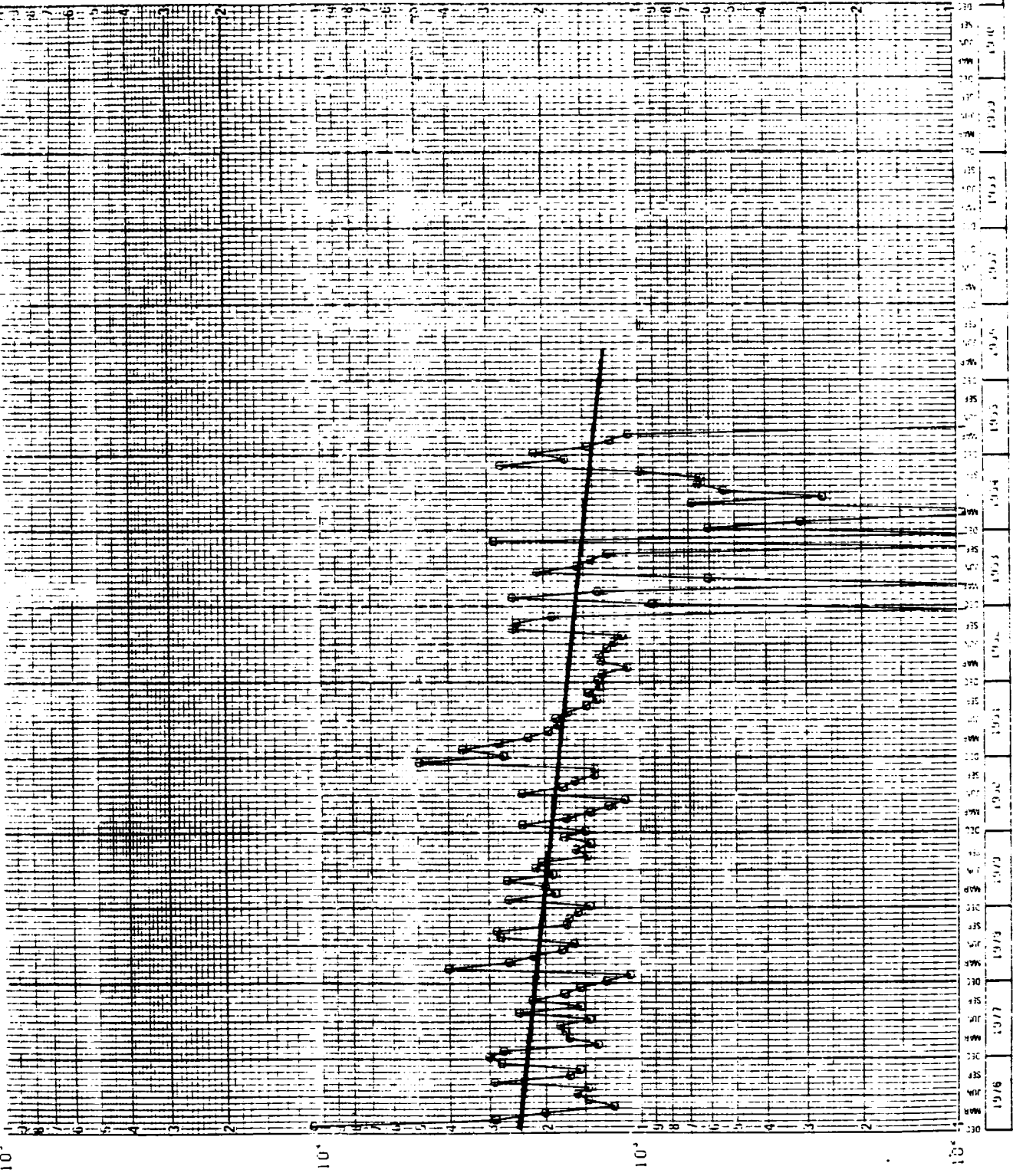
RIDDLE A#1

DETERMINATION OF ALLOCATION PERCENTAGES

The decline rates and reserve estimate for the Mesaverde and Dakota are indicated below:

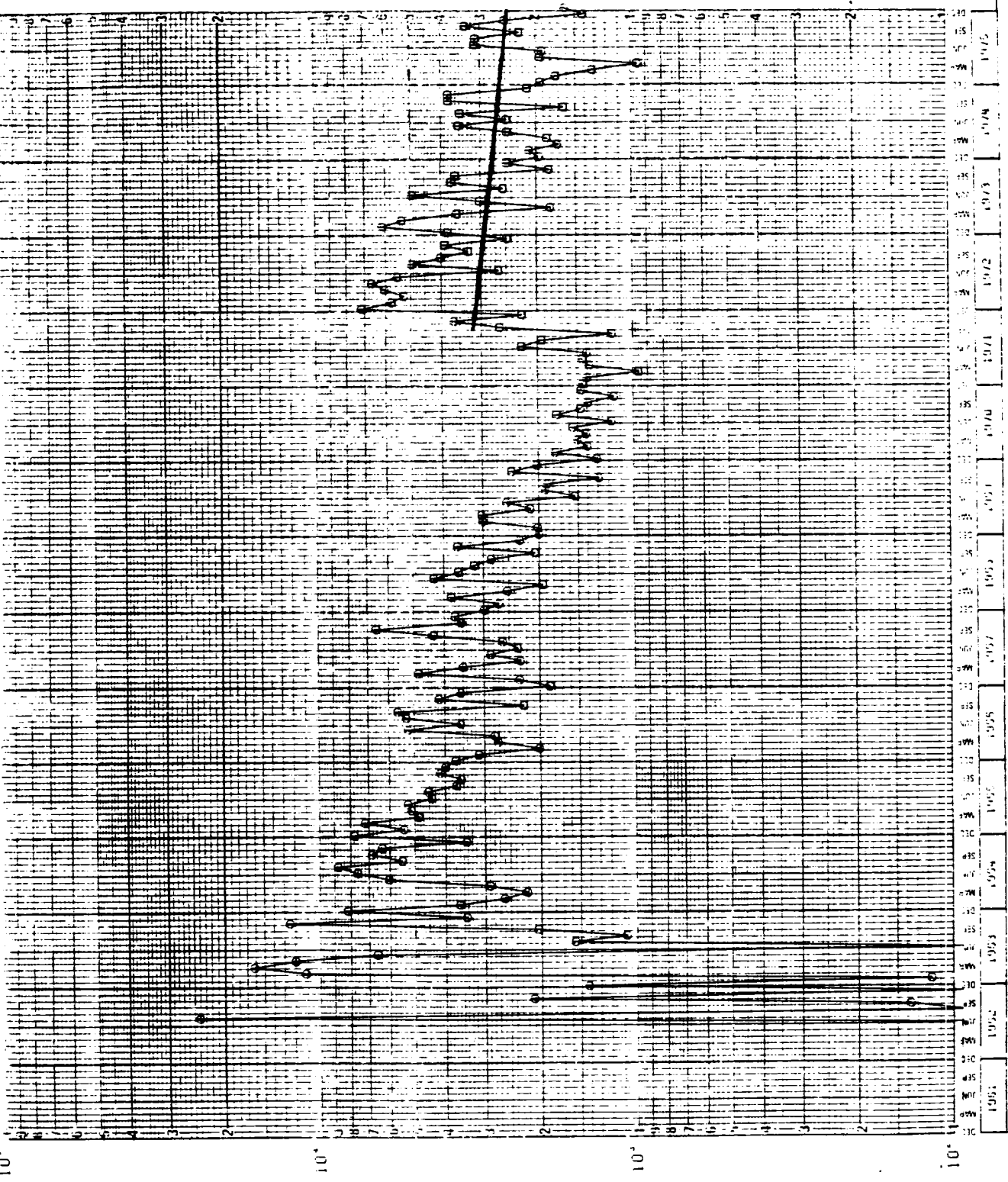
	<u>DECLINE PERCENTAGE</u>	<u>REMAINING RESERVES</u>
MESAVERDE	4%	234 MMCF
DAKOTA	8%	188 MMCF

R11001 H 1
 027N009W09A
 DAKOTA



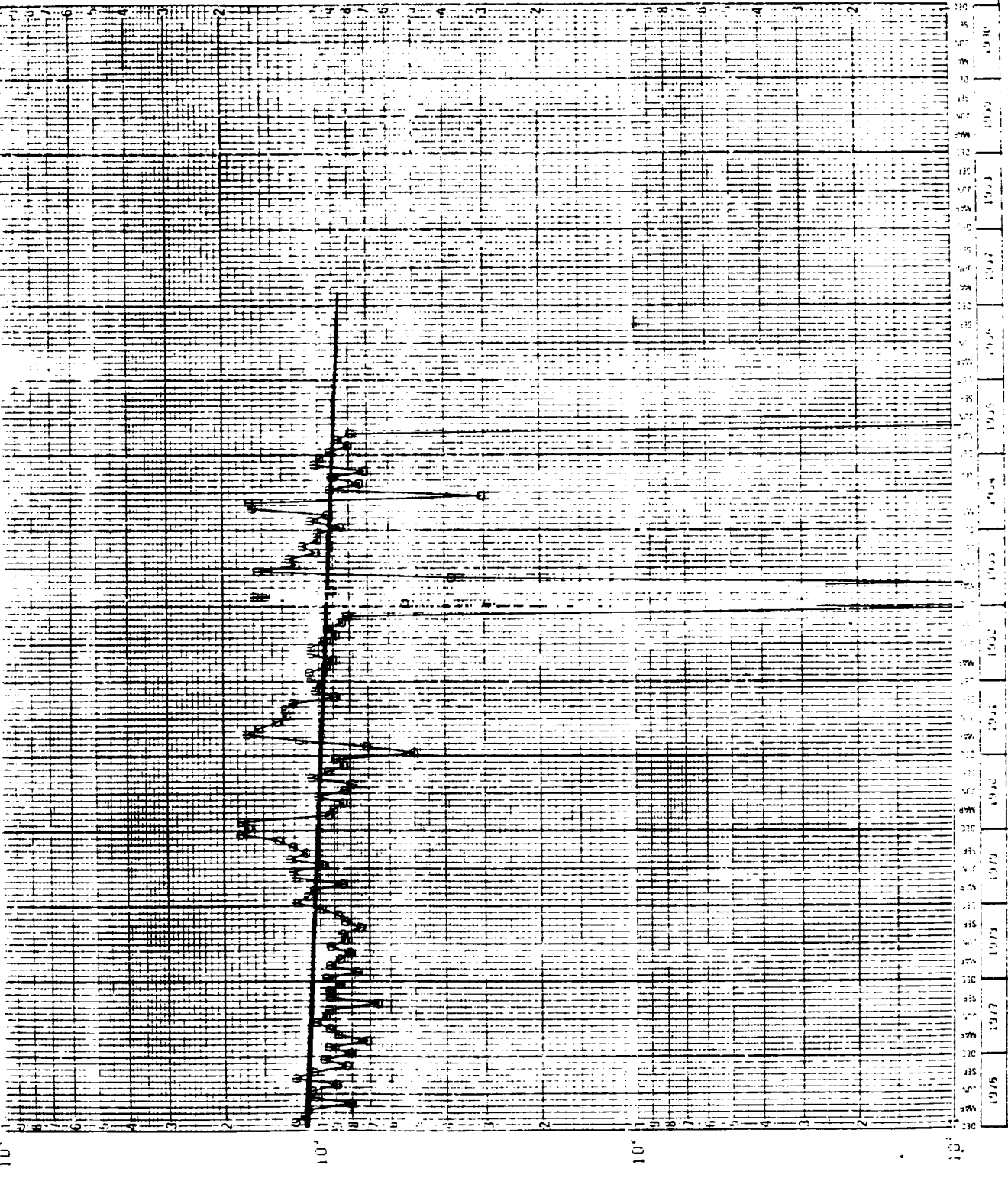
LEGEND
 (C) GAS PRODUCTION (MCF/M)

REPORT H 1
027H009W009H
DAKOTA



LEGEND
O GAS PRODUCTION (MCFM)

TABLE H 1
02/NOV/05
ME 5IVE RDE



LEGEND
GAS PRODUCTION (MCM)

R10001 H 1
027N009W09H
ME SAVE RDE

LEGEND
GAS PRODUCTION (MCFM)

