Texaco Exploration and Production Inc
3300 N Butler
Farmington NM 87401

OIL CONSERVATION DIVISION
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February 15, 1993

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
PO BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504

Attention: Michael E. Stogner
Chief Hearing Officer/Engineer

RE: **Application for exception to NMOCD Rule 303-A:Downhole Commingle State of New Mexico Keys Unit No. 1E: 1750' FNL & 1770' FWL Unit F, Sec. 32-T29N-R10W, NMPM, San Juan County, New Mexico**

Dear Mr. Stogner:

Please find attached, additional information to be added to our December 12, 1992 request to downhole commingle the Armenta Gallup Oil Pool and Basin Dakota Gas Pool within the referenced well. At the time of the original application a bridge plug, isolating the Gallup and Dakota completions, prevented a Dakota bottom hole pressure from being measured. An estimated pressure of 925 psi was submitted for the Dakota formation. Following a seven day shut-in period the attached survey was run on the Dakota, indicating the bottom hole pressure to be **563 psi.**

If you have any questions concerning this matter please contact Mr. Darren Segrest at (505) 325-4397. Your attention to this matter is greatly appreciated.

Sincerely,

Ted A. Tipton
AREA MANAGER

DBS/s

Attachments
NMOCD - Aztec
file

B & R SERVICE, INC.

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

Company TEXACO INC. Lease KEYS COM. Well 1-E

County SAN JUAN State N. MEX. Date 2/11/93

Shut-In _____ Zero Point K.B. Tbg. Pressure 448

Casing Pressure _____ Tbg. Depth 6382 Casing Perf. 6312-6416

Max. Temp. _____ Fluid Level _____

DEPTH	PSIG	GRADIENT
0	448	----
1000	459	.011
2000	471	.012
3000	484	.013
4000	496	.012
5000	507	.011
6000	522	.015
6364	563	.113

Submit 2 copies to Appropriate District Office.
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240
DISTRICT II
P.O. Drawer DD, Artesia, NM 88210
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-116
Revised 1/1/89

Attachment II

GAS - OIL RATIO TEST

Operator	Pool	County
Texaco Exploration & Production Inc.	Armenta GP Basin DK	San Juan

Address	TYPE OF TEST - (X)			
3300 N. Butler Farmington, NM 87401	Scheduled ☐	Completion ☐	Special ☒	

LEASE NAME	WELL NO.	LOCATION U	S	T	R	DATE OF TEST	STATUS	CHOKE SIZE	TBG. PRESS.	DAILY ALLOW-ABLE	LENGTH OF TEST HOURS	PROD. DURING TEST WATER BBLS.	GRAV. OIL	OIL BBLS.	GAS M.C.F.	GAS - OIL RATIO CU.FT/BBL.
State of New Mexico Keys Unit (Gallup)	1E	F	32	29N	10W	10-6-92					24hrs	14	38	4	220	55000
(Dakota)											24hrs	2	55	2	95	47500

Instructions:

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.

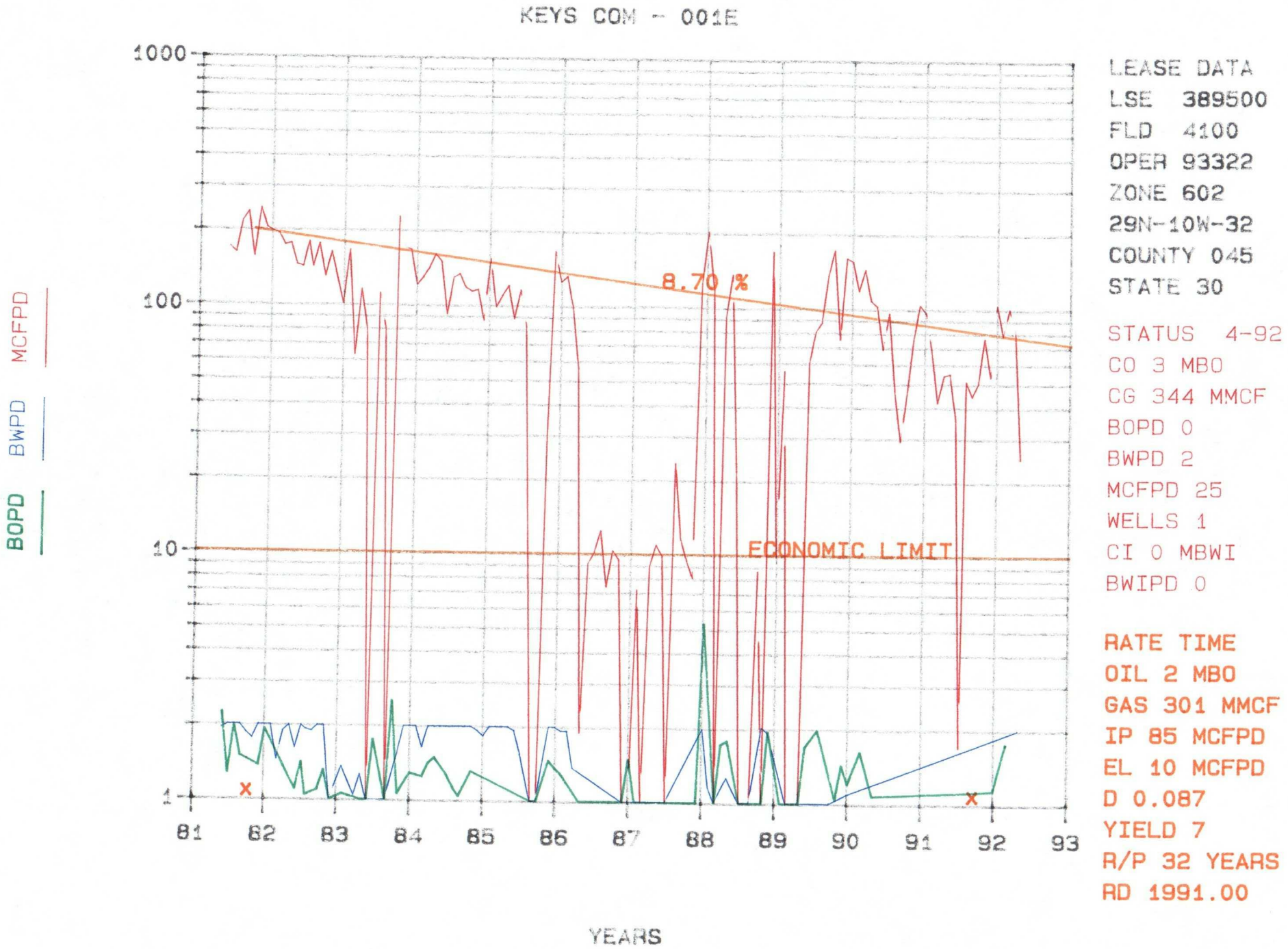
(See Rule 301, Rule 1116 & appropriate pool rules.)

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

Signature

Printed name and title

Date Telephone No.


KEYS COM - 001E
1000
100
10
1
MCFPD
BWPD
BOPD
8.70 %
ECONOMIC LIMIT
81
82
83
84
85
86
87
88
89
90
91
92
93
YEARS
LEASE DATA
LSE 389500
FLD 4100
OPER 93322
ZONE 602
29N-10W-32
COUNTY 045
STATE 30
STATUS 4-92
CO 3 MBO
CG 344 MMCF
BOPD 0
BWPD 2
MCFPD 25
WELLS 1
CI 0 MBWI
BWIPD 0
RATE TIME
OIL 2 MBO
GAS 301 MMCF
IP 85 MCFPD
EL 10 MCFPD
D 0.087
YIELD 7
R/P 32 YEARS
RD 1991.00

P/Z GAS WELL RESERVES WORKSHEET INPUT2

(ALL DATA PRECEDED BY AN * IS TO BE INPUTED BY THE AREA)

GENERAL DATA

*LEASE & WELL NUMBER KEYS COM # 1E

*FIELD/RESERVOIR BASIN DAKOTA

*RRC DISTRICT 3 *RRC NUMBER E 3149

*BEGIN. DATE SI TEST 4-3-92 * END. DATE SHUT-IN TEST 4-10-92

* SHUT-IN HOURS 168 MAJOR FIELD X MINOR FIELD

* CSG PRESS BEFORE SI 402 PSIA * SHUT-IN CSG PRESS 437 PSIA

INPUT DATA

1. PRESENT CUM. GAS PRODUCTION (MMCF)
   ■MCF

*2. CURRENT FLOW RATES PRIOR TO SHUT-IN TEST
   50 ■MCF/DAY 0.5 BBLS COND/DAY 0.3 BW/DAY

3. GAS FLOW RATE AT ECONOMIC LIMIT (MMCF/DAY)
   ■MCF/DAY

*4. SHUT-IN WELLHEAD PRESSURE (PSIA)
   377 PSIA

*5. FLOWING WELLHEAD PRESSURE (PSIA) PRIOR TO SHUT-IN TEST
   350 PSIA

*6. WELLHEAD PRESSURE AT ECONOMIC LIMIT (PSIA)
   337 PSIA

7. TEMPERATURE GRADIENT IN DEGREES F/100 FEET
   DEGREES F/100 FEET

*8. TUBING I. D. (IN) FOR 1ST STRING (TOP STRING)
   1.995 INCHES

*9. TUBING LENGTH FOR 1ST STRING. (TOP STRING)
   6420 FEET

*18. MID-PERF DEPTH (FEET)
   6366 FEET

*19. GAS-OIL RATIO (SCF/STB)
   100,000 SCF/STB

*20. GAS GRAVITY (AIR=1.0)
   0.653

*21. CONDENSATE GRAV. (API)
   '52 @ 60 DEGREES API

CALCULATED OUTPUT

BHP (SHUT-IN)

Z FACTOR (SHUT-IN)

ABANDONMENT RESERVOIR PRESSURE/ECON. LMT Z FACTOR

SWL/8-22-86

(REMEMBER; PSIA = PSIG + 12.0)

1. If well is on compression use compressor suction pressure rather than sales line pressure. Also, indicate on the form that the well is on compression.

COMPANY: TEXACO PRODUCING INC.

WELL: KEYSCOM #1-E GP

AREA: SAN JUAN COUNTY, NEW MEXICO

TEST: BUILDUP TEST 9/10 - 9/18, 1992

Date: 10-SEP-92 Ticket No: 005230 Page No: 1.2

TEST PERIOD SUMMARY

Gauge No.: 10597 Depth: 5720.00 ft Blanked off: No

ID	PERIOD	DESCRIPTION	PRESSURE (psi)	DURATION (min)
A	1	Start Build-up	177.43	
B		End Build-up	925.83	11223.03

NOTE: for Pressure vs. Time Plot, see next page.

Application for Exception to Rule 303-SEGREGATION OF PRODUCTION FROM POOLS

D. REQUIREMENTS

(1) Name and address of the operator.

Texaco Exploration and Production Inc.
3300 N. Butler Suite 100
Farmington, NM. 87401

(2) Lease name, well number, well location, name of the pools to be commingled.

Lease name: State of New Mexico Keys Unit
Well number: 1E
Well location: 1750' FNL & 1770' FWL, Unit "F"
Sec. 32. T29N-R10W, NMPM
San Juan County, New Mexico
Pools commingled: Armenta, Gallup
Basin, Dakota

(3) A plat of the area showing the acreage dedicated to the well and the ownership of all offsetting leases.

Attached. **(attachment I)**

(4) A current (within 30 days) 24-hour productivity test on Division Form C-116 showing the amount of oil, gas, and water produced from each zone.

Attached. **(attachment II)**

(5) A production decline curve for both zones showing that for a period of at least one year a steady rate of decline has been established for each zone which will permit a reasonable allocation of the commingled production to each zone for statistical purposes. (This requirement may be dispensed with in the case of a newly completed or recently completed well which gas little of no production history. However, a complete resume of the well's completion history including description of treating, testing, etc., of each zone, and a prognostication of future production from each zone shall be submitted.)

Dakota completion: Decline curve attached, well has effective annual decline of 8.7% and a calculated GOR of 47,500 $^{SCF}/_{STB}$.
(attachment III)

Gallup completion: New completion, no production history available. The Armenta Gallup formation was perforated and stimulated in two stages. On September 23, 1992 the lower Gallup was perforated from 5690'-5720' using 4 JSPF. The fluid was swabbed off the perforated interval and the lower Gallup was flow tested through a 1/4" orifice plate at 5 MCFD. The well was fractured treated using 37,200 gallons of cross linked gel and 100,000 pounds of 20/40 Brady sand. A retrievable bridge plug was set above the lower Gallup perforations and the Gallup was perforated from 5475'-5550' using 4 JSPF. This interval was acidized using 24 BBLS of 15% HCl. Following the acid treatment the interval was fractured treated using 46,250 gallons of cross linked gel and 76,000 pounds of 20/40 Brady sand. The retrievable bridge plug set above the lower Gallup interval was removed from the well and both intervals were flow tested together at 220 MCFD/4 BOPD/14 BWPD. The well is currently shut-in awaiting final production equipment and regulatory approvals.

(6) Estimated bottomhole pressure for each artificially lifted zone. A current (within 30 days) measured bottom hole pressure for each zone capable of flowing.

Dakota completion: 392 psi **(attachment IV)**
Gallup completion: 925 psi **(attachment V)**

The Gallup P_{BH} was obtained using a bottomhole pressure recording device. The Dakota P_{BH} was calculated using a seven day shut-in pressure, read at the surface. Because of the rapid drawdown the Armenta Gallup will exhibit following the initial production, the pressure differential between the zones will not present a crossflow problem. The proposed production method is to run a standing valve, tailpipe and packer between the Dakota and Gallup formations, with a profile nipple and sliding sleeve located above the packer. This will keep all Gallup fluids off the Dakota formation. In addition this completion will allow a blanking plug to be installed between the zones in the case of any extended shut-in periods.

(7) A description of the fluid characteristics of each zone showing that the fluids will not be incompatible in the wellbore.

The fluids have no abnormal components that would prohibit commingling, or promote the creation of emulsions or scale (see attached produced water analysis).

(8) A computation showing that the value of the commingled production will not be less than the sum of the values of the individual streams.

Dakota Production		Gallup Production	
Oil, BOPD	2	Oil, BOPD	4
Gas, MCFD	95	Gas, MCFD	220
Water, BWPD	2	Water, BWPD	14

The combined production from the Gallup-Dakota formations will be approximately 315 MCFD/6 BOPD/16 BWPD. The calculated incremental pressure drop throughout the tubing string is 18 psi, or an increase of 5 %. This increase in pressure will not offer a significant restriction in production.

(9) A formula for the allocation of production to each of the commingled zones and a description of the factors or data used in determining such formula.

Monthly production from the Basin Dakota Gas Pool is proposed to be calculated using the following formula:

$Q_2=Q_1(1-D)^n$ MCFD **equation (I)**

Where: Q_2= future production rate MCFD
Q_1= current production rate MCFD
D = effective in %/yr, from decline curve
n = years into the future to Q_2 from Q_1

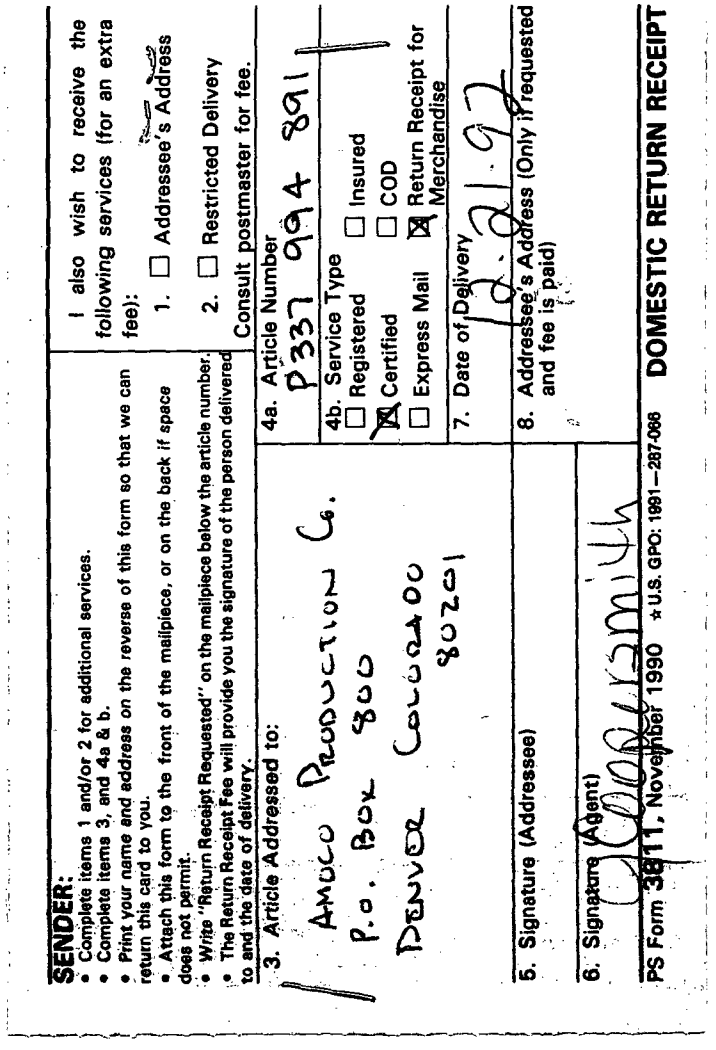
Oil and water production will be calculated using the existing GLR and GOR of the Dakota formation.

Any oil, gas and water production above what is calculated by equation (I) shall be attributed to the Armenta Gallup Oil Pool.

(10) A statement that all offset operators and, in the case of a well on federal land, the United States Bureau of Land Management, have been notified in writing of the proposed commingling.

All offset operators have been notified. Please find attached, signed return receipt cards from each operator. The offsetting operators are:

Amoco Production Company
P. O. Box 800
Denver, Colorado 80201



SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt Fee will provide you the signature of the person delivered to and the date of delivery.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Amoco Production Co.
P.O. Box 800
Denver Colorado 80201

4a. Article Number
P337 994 891

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery
12-21-92

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)
[illegible]

PS Form 3811, November 1990 *U.S. GPO: 1991—287-066 DOMESTIC RETURN RECEIPT