STATE OF NEW MEXICO

ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

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

Date: 4/17/98

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

RE: Proposed MC_____ Proposed DHC X
Proposed NSL_____ Proposed SWD_____
Proposed WFX_____ Proposed PMX_____
Proposed NSP_____ Proposed DD_____

Gentlemen:

I have examined the application received on 3/25/98

for the Dugan Jic Olson Com #1
OPERATOR LEASE & WELL NO.

M-22-29N-5W and my recommendations are as follows:
UL-S-T-R

Approve

Yours truly,

dugan production corp.

March 27, 1991

Mr. William J. LeMay, Director
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504

RE: Request for Administrative Approval of Downhole Commingling
Otero Gallup Oil Pool and Basin Dakota Gas Pool
Dugan Production Corp.
Jicarilla Otero Com No. 1
Jicarilla Contract No. 12 and 13
890' FSL & 990' FWL (Unit M),
Section 22, T-24N, R-5W
Rio Arriba County, NM

Dear Mr. LeMay:

Dugan Production Corp. herein requests administrative approval for the downhole commingling of existing production from the Basin Dakota Gas Pool with production that results from our proposed recompletion in the Otero Gallup Oil Pool in the captioned well.

The Jicarilla Otero Com No. 1 was completed on July 9, 1979 by Mobil Corp. in the Basin Dakota gas pool with a 320 acre spacing unit comprising of the S/2 of Section 22, T-24N, R-5W. The Dakota spacing unit consists of a 160 acre lease (SW/4) which is a portion of Jicarilla Contract No. 12 lease held by Mobil and a 160 acre lease (SE/4) which is a portion of the Jicarilla Contract No. 13 held by Amerada Hess Corp. Mobil's interest was purchased by Dugan Production Corp. effective December 1, 1988. Production from this well averages 4 to 12 MCFD, depending upon pipeline pressure, + approximately 0.17 bbls condensate per day and is very near it's economic limit. As of March 1, 1991, cumulative production was 373,965 MCF + 3,518 bbls of condensate. In an effort to maintain a continuing economic operation in the well, Dugan Production has proposed that a completion attempt be made in the Otero Gallup Pool.

With reference to Attachment A, which is a copy of our Authorization for Expenditure (AFE) to perform this recompletion attempt (which has been approved by Dugan Production and our 50% working interest owner, Amerada Hess Corp.), it can be seen that an expenditure of approximately $106,600 will be required for the attempted Gallup recompletion which also includes $43,100 for the

709 E. MURRAY DR. • P. O. BOX 420 • FARMINGTON, N.M. 87499-0420 • PHONE: (505) 325-1821 • FAX# (505) 327-4613

installation of rod pump artificial lift equipment.

Attachment B presents the production history from the Dakota completion in the Jicarilla Otero Com No. 1, and as can be seen from the production plot, the Dakota completion has very little remaining reserves as of March 1, 1991. Production from the Dakota has been very erratic since 1985 and it is our belief that the Dakota reservoir pressure has reached a level that allows a relatively minor amount of liquid production to inhibit the well's ability to produce. The liquid production is very minor and we are not able to justify artificial lift equipment based upon the Dakota formation only. It is our belief that approximately 21,100 MCF of gas remains to be produced from the Dakota based upon curve #2 presented on Attachment B. It is conceivable that production could be restored to approximately 1500 MCF per month as indicated by curve #3 which would substantially increase the amount of recoverable gas remaining in the Dakota completion. The forecast presented by curve #3 is believed to be optimistic in view of past efforts to produce the well not only by Dugan Production since acquiring from Mobil, but also by Mobil Oil.

Attachment C presents a summary of production data for eight wells that have been completed in the Otero Gallup oil pool within a one mile radius of the subject well. As can be seen, the Gallup formation in this general area is marginal for a 5700' oil pool. Of the eight wells presented on Attachment C, one was plugged as noncommercial upon the initial completion and only seven have produced with cumulatives ranging from 7,136 to 42,228 BO. During the most recent three months of production, seven wells are currently averaging 3.1 BOPD + 0.14 BWPD + 16 MCFD. Based upon these production numbers, we do not believe that it is economical to drill a development well in the Otero Gallup pool at the current time, however, we do believe that economics are sufficient to justify our proposed recompletion attempt. In view of the low remaining potential in the existing Basin Dakota completion, we also believe that it is reasonable that the Dakota be produced in conjunction with our efforts to produce the Otero Gallup pool. Commingling of these two pools is common in the general area and Conoco, Inc. has been authorized to downhole commingle the Otero Gallup and Basin Dakota in several of their wells, two of which offset our acreage to the north, since 1976 (NMOCD Order R-5205 dated April 27, 1976). A copy of this order is presented in Attachment D.

Attachment E is a plat of the area on which we have identified the Dakota and Gallup spacing units for the Jicarilla Otero Com No. 1 as well as the ownership of all offsetting leases. The Basin Dakota spacing unit comprises the South half of the section and consists of 320 acres, 160 acres being Dugan Production Corp's Jicarilla Contract No. 12 and 160 acres Amerada Hess' Jicarilla

Contract No. 13. The royalty for both leases is 12-1/2% and is held by the Jicarilla Indian Tribe. The proposed spacing unit for the Otero Gallup comprises the SW/4 SW/4 of the section and consists of 40 acres on Dugan Production's Jicarilla Contract No. 12. You will note that all acreage within this general area is within the boundaries of the Jicarilla Indian reservation. As mentioned earlier, two of the Conoco wells offsetting the subject well to the north (the NE Haynes No. 5 and No. 4) have previously been commingled downhole in a manner similar to that proposed by Dugan Production for our Jicarilla Otero Com No. 1.

Since the Gallup interval has not yet been completed in the subject well, the productivity from the Gallup is not known, however, with reference to Attachment C, we have presented production data for eight wells within a one mile radius of our well that have produced or have attempted a completion in the Otero Gallup interval. For the purposes of our application, Dugan's Jicarilla Otero Wells No. 4 and 5 were utilized as a basis for establishing production potential in the Gallup interval. Both wells have production histories in excess of six years and a cumulative production of 32,848 and 41,326 BO, respectively. Since the Jicarilla Otero No. 4 directly offsets the Jicarilla Otero Com No. 1 to the south, production performance from this well was used as a base for the proposed recompletion. The production history for the Jicarilla Otero No. 4 well is presented on page 8 of Attachment C. Based upon a standard decline curve analysis (considering exponential decline), our estimate of recoveries to be expected from the Jicarilla Otero Com. No. 1 is summarized as follows:

	Oil	Gas
Gallup	51,600 bbls (99.6%)	230,000 MCF (91.6%)
Dakota	200 bbls (0.4%)	21,100 MCF (8.4%)
Total	51,800 bbls	251,100 MCF

Based upon the anticipated production for the Gallup recompletion determined by drawing an analogy to the Jicarilla Otero No. 4 (Attachment C, page 8) and the anticipated production from the Dakota completion (Attachment B), the initial production anticipated for the commingled stream is summarized as follows:

	Oil	Gas
Gallup	26.00 BOPD (99.4%)	44 MCFD (80%)
Dakota	0.17 BOPD (0.6%)	11 MCFD (20%)
Total	26.17 BOPD	55 MCFD

Since the Gallup interval has not been completed, we would expect the bottom hole pressure to be in the range of approximately 2000 psi initially, however, based upon our analysis of production performance of the offset Gallup completions, we anticipate that due to the low permeability of the Gallup formation, the initial

pressure will drop fairly rapidly since we plan to maintain the operating bottom hole pressure (OBHP) in the Gallup at approximately 45 psi. We plan to pump the well from 6680' and anticipate that we will be able to pump the well off, maintaining an operating pressure of approximately 150 psi at the pump. This will allow the operating BHP in the Gallup to be approximately 45 psi at a mid perf depth of 5625' and the OBHP for the Dakota to be 155 psi at a mid perf depth of 6696'. In addition to being able to maintain a low operating BHP because of the low permeability of the Gallup we are confident that during periods of shut-in, the shut-in reservoir pressure will be slow to build up which will further serve to minimize any crossflow potential that might exist. We would expect down time to be minimal and will work diligently to insure minimal shut-in time on the Jicarilla Otero Com No. 1. It should be noted that the shut-in reservoir pressure in other Gallup completions on the Jicarilla Otero lease is calculated to be in the range of 500-600 psi based upon shut-in fluid level measurements. Thus, we are confident that upon installing a rod pump in the subject well, we will be able to maintain an operating BHP in the Gallup that will be compatible with the current BHP in the Dakota formation which is calculated to be 635 psi at a mid-perf datum of 6696' based upon a shut-in wellhead pressure of 522 psi measured on March 17, 1991. Thus, as a result of pressure depletion in the Dakota and low productivity in the Gallup, Dugan Production believes that cross-flow between formations will be minimal.

Based upon our knowledge of the fluid characteristics from each zone, we are not aware of any incompatibility that will result from the mixing of fluids from the Dakota and Gallup formations. Again, it should be stressed that downhole commingling of these formations is common in this general area. Based upon our position that the Dakota formation is at or near its economic limit, the proposed downhole commingling will allow for continued production of the Dakota formation and any production that results from this continued production will result in the recovery of reserves that will not otherwise be recovered from the subject well. Thus, we anticipate that a minimum of 21,100 MCF + 200 BO can be considered as increased recovery should the NMOCD permit the downhole commingling in the Jicarilla Otero Com No. 1. Should the proposed commingling not be authorized, it is likely that the reserves in the Dakota will never be recovered.

Based upon the fact that a stabilized production has not been established for the Gallup formation, and considering that for the first 3-4 years production decline will be more rapid in the newly completed Gallup than in the Dakota, it is proposed that the commingled production be allocated between the formations based upon our estimate of ultimate recovery from the well and as summarized above. The commingled production should be split as

follows:

	Oil	Gas
Gallup	99%	92%
Dakota	1%	8%

By copy of this application, we are notifying the offset operators as well as the Bureau of Land Management. Please note that only three operators are actually involved, two of which (Dugan Production Corp. and Amerada Hess Corp.) are working interest owners in the subject well, and the third (Conoco, Inc.) operates offset wells that have been previously authorized for downhole commingling.

In summary, Dugan Production respectfully requests administrative approval to downhole commingle production from the Otero Gallup and Basin Dakota formations in a manner that is commonly done in offset wells. The working interest and royalty interest in both formations is common. There are two leases involved, however, the royalty under each lease is owned by the Jicarilla Indian Tribe and the royalty rate for each lease is the same. There are no overriding royalty burdens on either lease. Even though the spacing is dissimilar for the Gallup and Dakota formations, the working interest ownership in the Gallup and Dakota has been pooled and is subject to an existing operating agreement. As mentioned earlier, both working interest owner parties in the subject well have approved the proposed recompletion as presented on Attachment A. Thus, the working interest and royalty interest dispersement for the Jicarilla Otero Com No. 1 will be the same irregardless of whether production is from the Gallup or the Dakota.

Should you have any questions regarding this proposal or our application, please feel free to contact me.

Sincerely,

John D. Roe

John D. Roe
Manager of Engineering

JDR/cg

cc: Amerada Hess Corp.
Conoco, Inc.
Bureau of Land Management, Farmington
New Mexico Oil Conservation Division, Aztec

Attachment A

dugan production corp.

REQUEST AUTHORIZATION FOR EXPENDITURE
To Complete Otero Gallup,
and Downhole Commingle with Basin Dakota
JICARILLA OTERO COM NO. 1
SWSW, Section 22, T-24N, R-5W, NMPM
Rio Arriba County, New Mexico

Expenditure Estimate

Pulling Unit	$12,000
Stimulation & Service	31,500
Cement & Service	1,800
Perforating & Wireline Service	5,600
Rental & Misc. Equipment	5,000
Production Equipment	43,100
Transportation & Hauling	3,400
Contract Labor	1,000
Supervision	3,200
TOTAL	$106,600

Reason for Expenditure:

Production from the current Basin Dakota completion is averaging 12.5 MCFD + 0.14 BC/D. It is proposed that the Otero Gallup interval be completed, downhole commingled with the Basin Dakota and rod pump equipment installed. Based upon an initial rate of 20 BOPD + 48 MCFD from the Gallup, this expenditure will payout in 1.5 years at $16.00/BO + $1.50/MCF.

OPERATOR APPROVAL
Dugan Production Corp.

By: _____ Date 2-6-91

WORKING INTEREST APPROVAL

Company: AMERADA HESS CORPORATION

By: _____ Date 3.19.91

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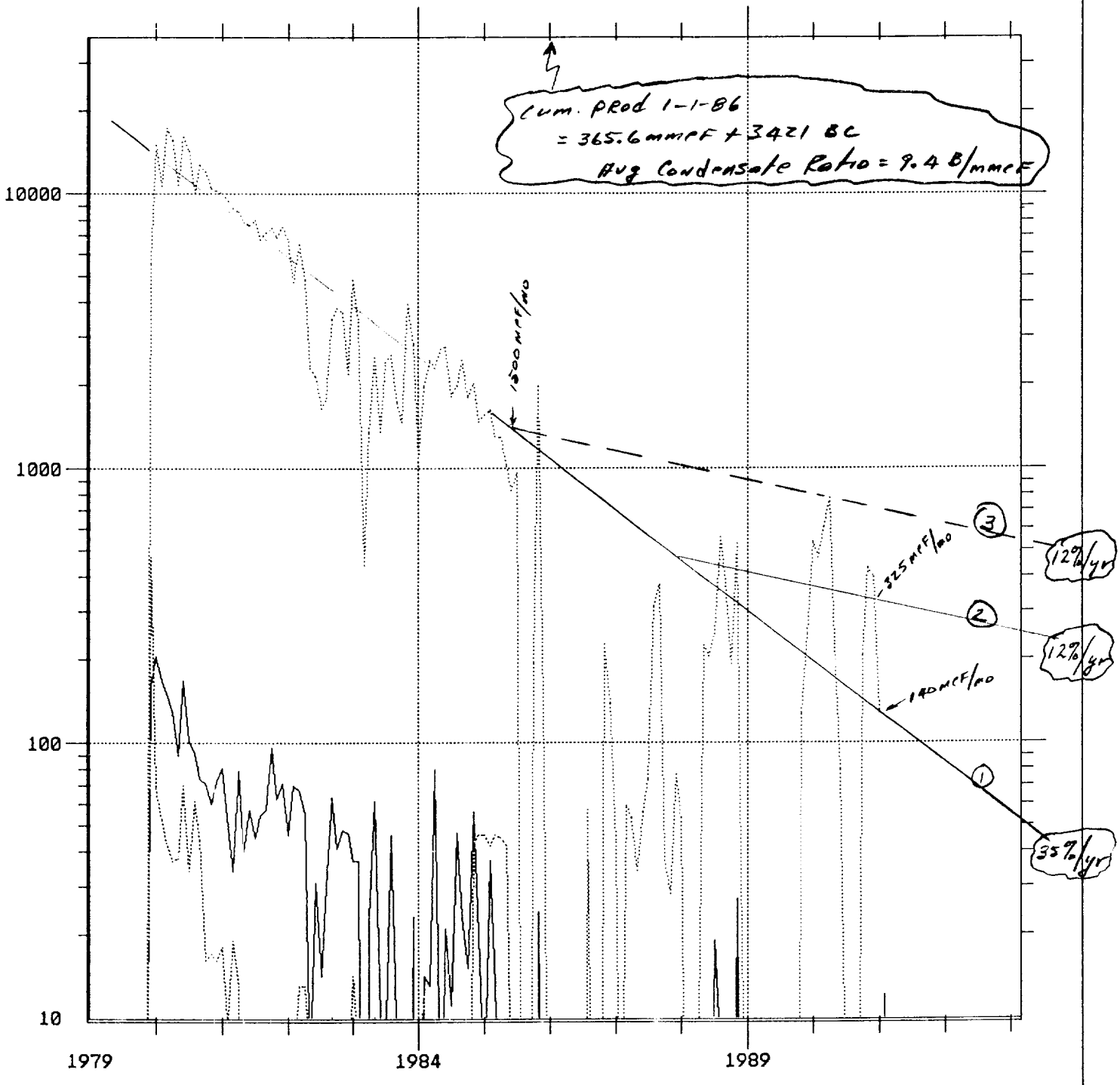
Attachment B

Dugan Production Corp.
Production Rate vs Time
BBl/Mo or Mcf/Mo vs Months
Jicarilla Otero Com #1
For the Period 01/1979 to 12/1991

Production
Oil
Gas
Water

BASIN DAKOTA GAS POOL
M-22-24N-5W



Curve No. 1 - Remaining Reserves = 0

Curve No. 2 - Remaining RsRV = (325 - 100) 93.9 = 21,100 mcf + 200 BC

Curve No. 3 - Remaining RsRV = (1500 - 100) 93.9 = 131,500 mcf + 1240 BC

Attachment C
Pg #1 of 8

OTERO GALLUP PRODUCTION SUMMARY
All Wells Within 1 Mile Radius
Dugan Production Corp's
Jicarilla Otero Com #1
M-22-T24N-R5W

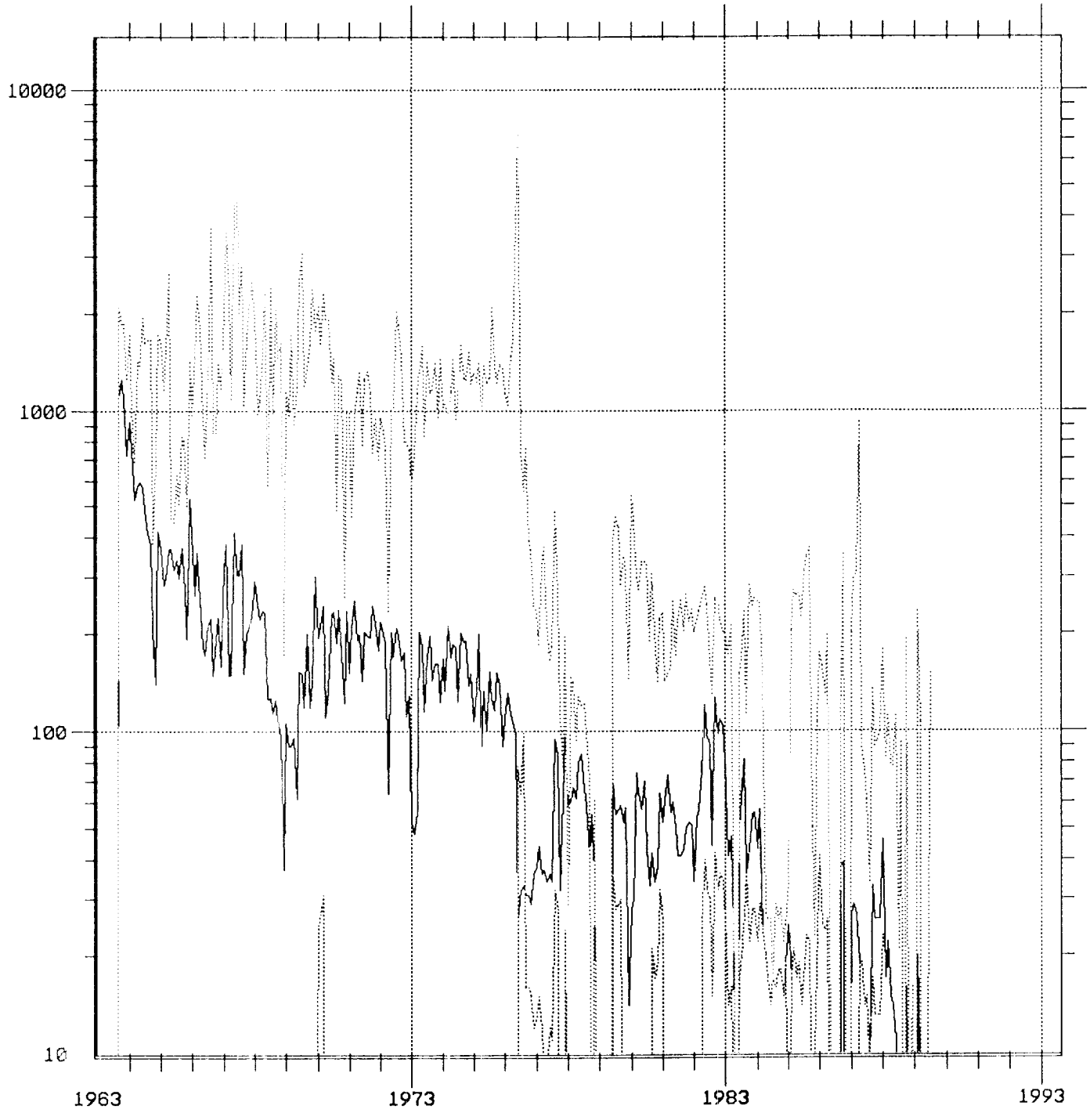
Operator & Well	Location	3 Month Average Production* BOPD + BWPD + MCFD	Cum. Prod. 1-1-91 BO + MCF
Conoco - NE Haynes #5	E-22-24N-5W	SI Since 8/89	42,228 + 250,320
Conoco - NE Haynes #9	A-21-24N-5W	0.8 0.2 20.7	41,265 + 268,863
Conoco - NE Haynes #10	G-21-24N-5W	1.0 -0- 23.5	38,180 + 268,312
Dugan - Jicarilla Otero #1	K-21-24N-5W	1.8 0.3 7.4	7,136 + 14,781
Dugan - Jicarilla Otero #5	C-28-24N-5W	3.4 0.5 11.4	41,326 + 103,570
Dugan - Jicarilla Otero #2	G-28-24N-5W	5.1 1.0 8.9	9,574 + 13,275
Dugan - Jicarilla Otero #4	D-27-24N-5W	9.7 1.0 40.0	32,848 + 88,246
Amerada - Jicarilla C #2	B-27-24N-5W	P&A Upon Comp.	0 0
7 Well Average		3.1 0.14 16.0	30,365 + 143,910

* -Most recent 3 months available - Conoco's is October, November & December 1990; Dugan Production's is December 1990, January & February 1991. Complete production history presented on attached plots for each well.

Conoco, Inc.
Production Rate vs Time
BBl/Mo or Mcf/Mo vs Months
Northest Haynes #5
For the Period 01/1963 to 12/1990

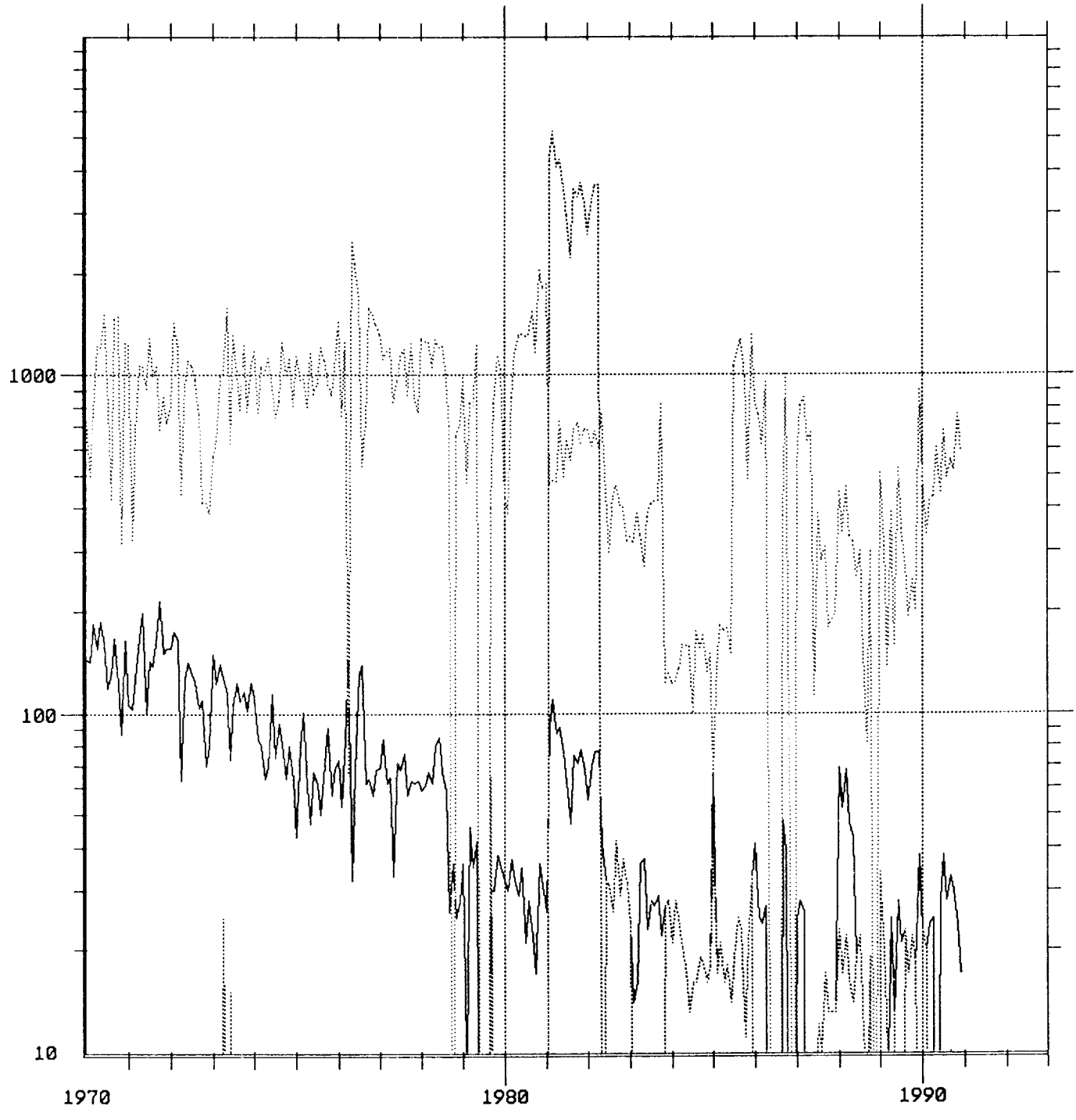
Production
Oil
Gas
Water

OTERO GALLUP OIL POOL
E-22-24N-5W



Conoco, Inc.
Production Rate vs Time
BBl/Mo or Mcf/Mo vs Months
Northeast Haynes #9
For the Period 01/1970 to 12/1990

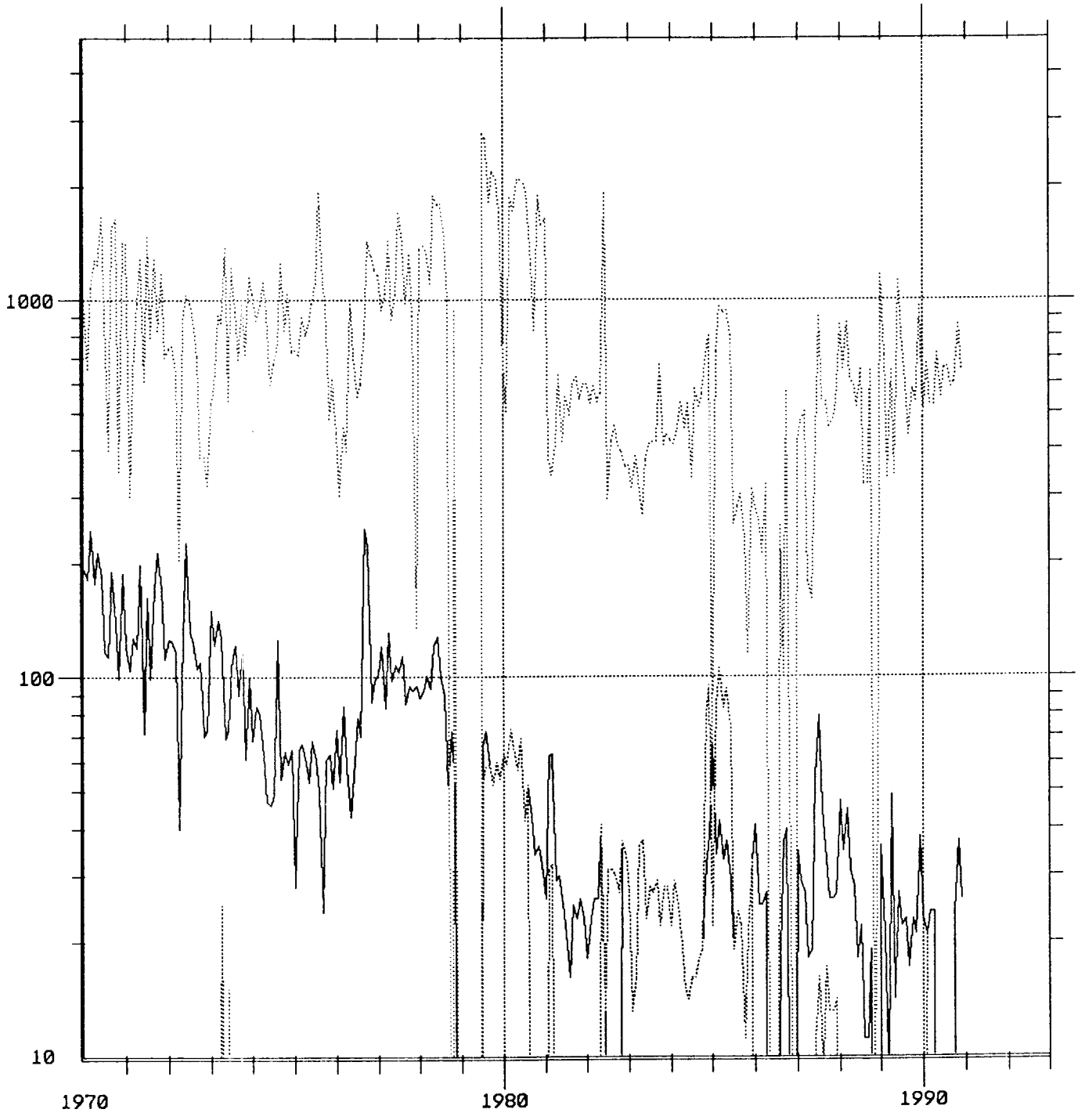
OTERO GALLUP OIL POOL
A-21-24N-5W



Conoco, Inc.
Production Rate vs Time
BBl/Mo or Mcf/Mo vs Months
Northeast Haynes #10
For the Period 01/1970 to 12/1990

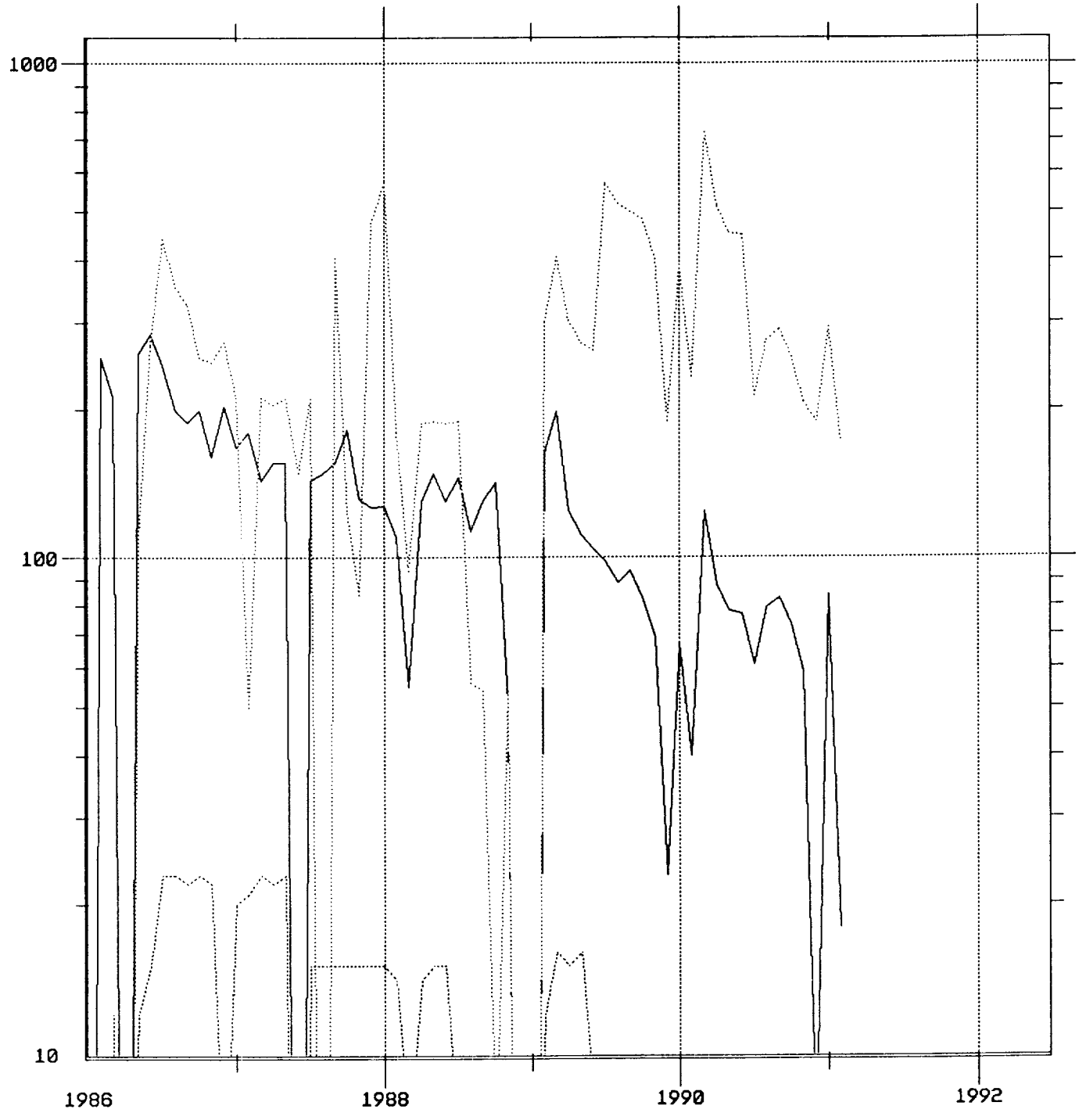
Production
Oil
Gas
Water

OTERO GALLUP OIL POOL
G-21-24N-5W



Dugan Production Corp.
Production Rate vs Time
BBl/Mo or Mcf/Mo vs Months
Jicarilla Otero #1
For the Period 01/1986 to 12/1991

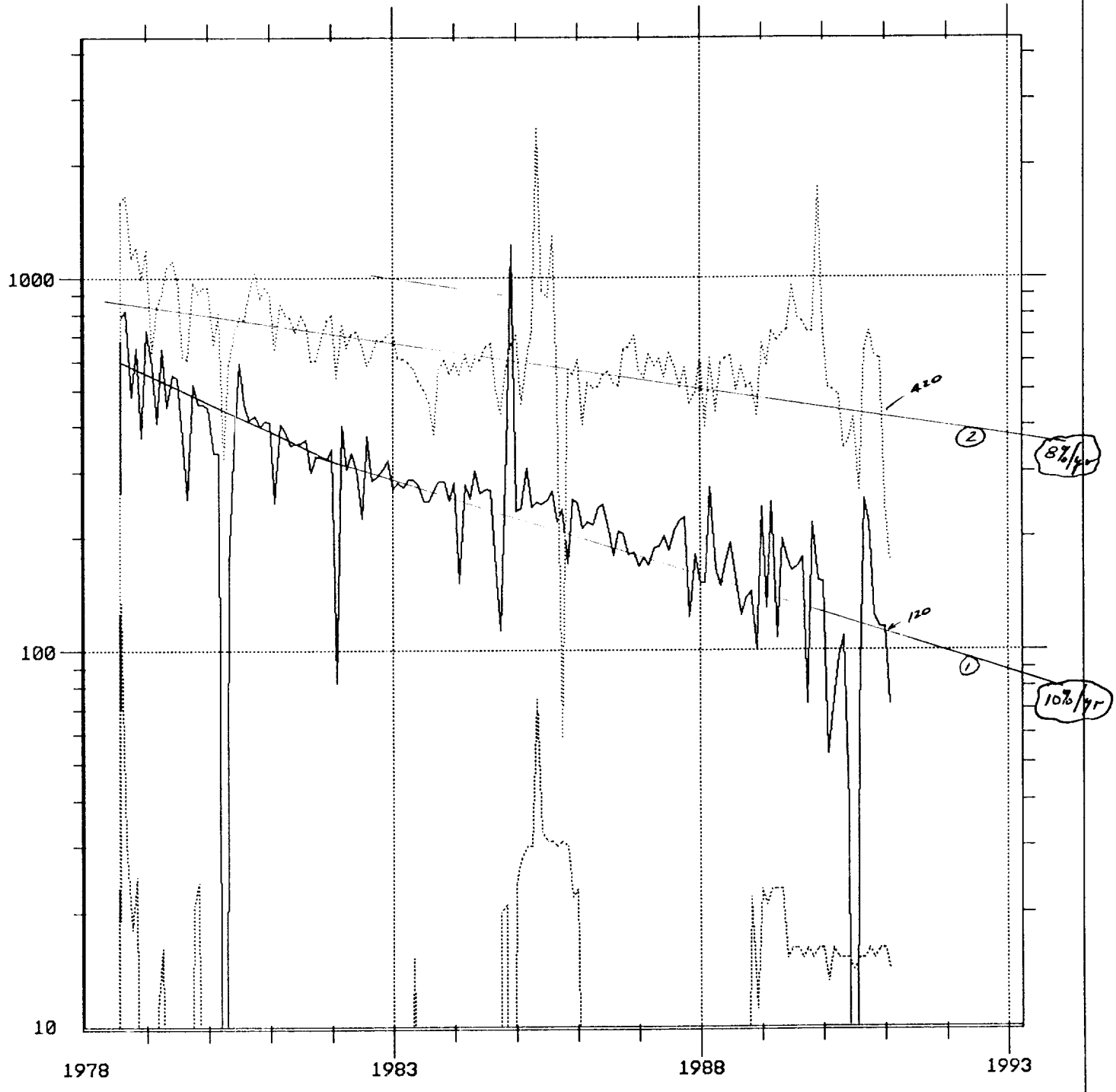
OTERO GALLUP OIL POOL
K-21-24N-5W



Dugan Production Corp.
Production Rate vs Time
BBl/Mo or Mcf/Mo vs Months
Jicarilla Otero #5
For the Period 01/1978 to 12/1991

Production
Oil
Gas
Water

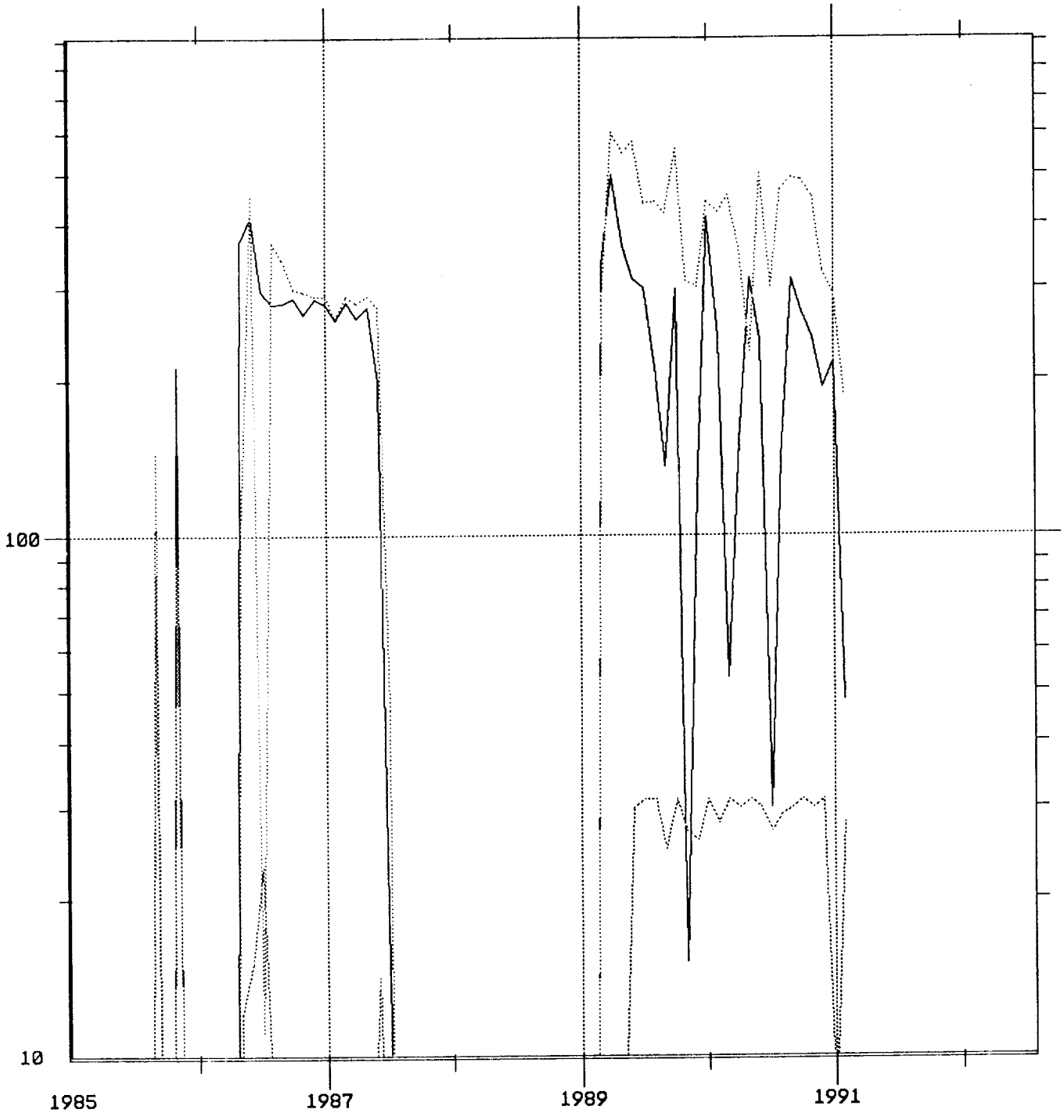
OTERO GALLUP OIL POOL
C-28-24N-5W



Dugan Production Corp.
Production Rate vs Time
BBl/Mo or Mcf/Mo vs Months
Jicarilla Otero #2
For the Period 01/1985 to 12/1991

Production
Oil
Gas
Water

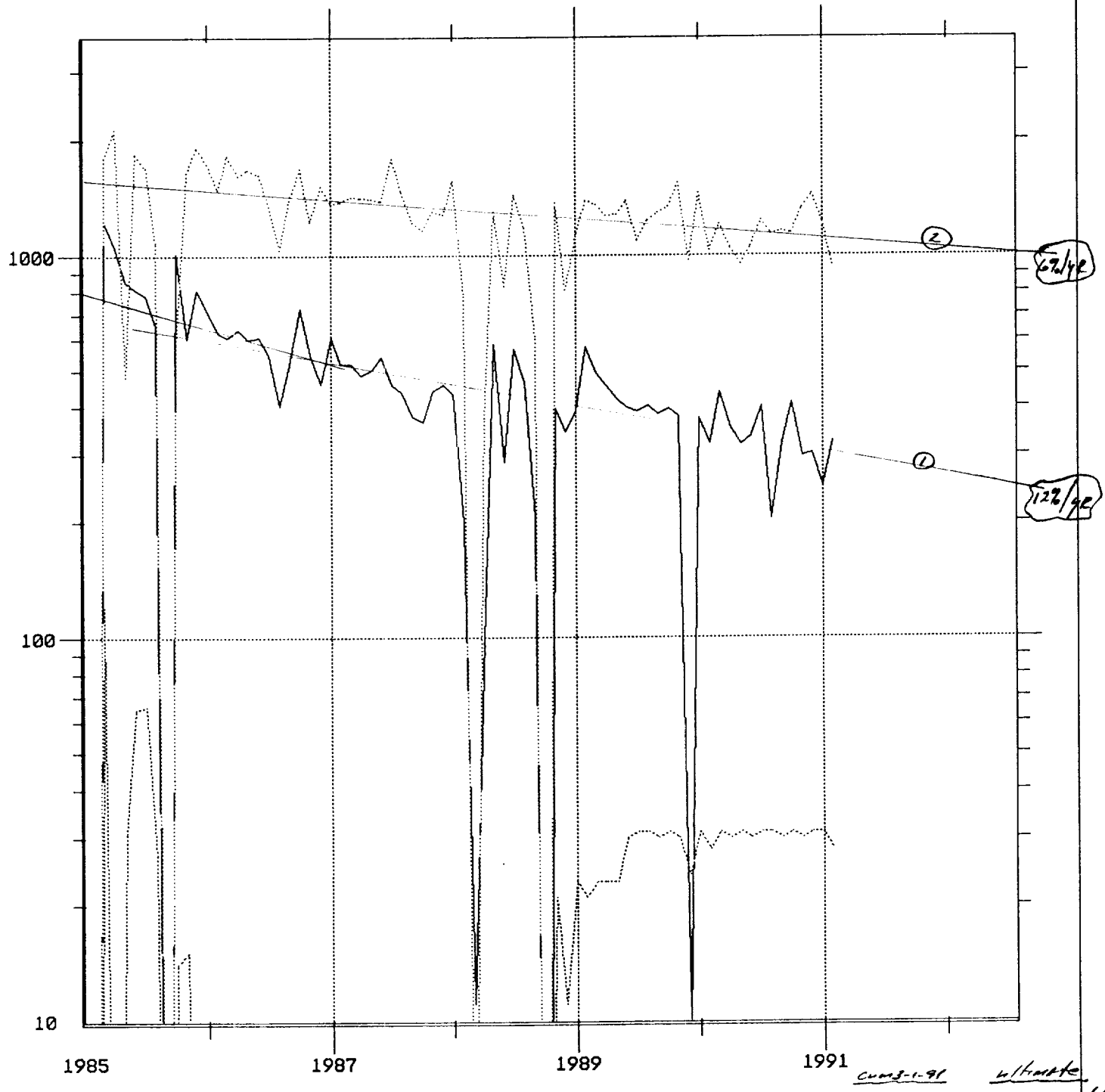
OTERO GALLUP OIL POOL
G-28-24N-5W



Dugan Production Corp.
Production Rate vs Time
BBl/Mo or Mcf/Mo vs Months
Jicarilla Otero #4
For the Period 01/1985 to 12/1991

Production
Oil
Gas
Water

OTERO GALLUP OIL POOL
D-27-24N-5W



cum 3-1-91 w/remarks

Curve #1 - Rsrv 3-1-91 = (320 - 120) 93.9 = 18,800 bbl + 32,848 = 51,600 bbl

Curve #2 - Rsrv 3-1-91 = (1150 - 420) 194 = 141,620 mcf + 88,246 = 230,000 mcf

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION OF NEW MEXICO FOR THE PURPOSE OF CONSIDERING:

CASE NO. 5652
Order No. R-5205

APPLICATION OF CONTINENTAL OIL COMPANY FOR DUALHOLE COMMINGLING, RIO ARRIBA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on April 14, 1976, at Santa Fe, New Mexico, before Examiner, Daniel S. Nutter.

Now, on this 27th day of April, 1976, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Continental Oil Company, is the owner and operator of the following wells on its Northeast Haynes Lease in Township 24 North, Range 5 West, NMPM, Rio Arriba County, New Mexico:

No. 1 in Unit L of Section 9
No. 2 in Unit D of Section 16
No. 3 in Unit P of Section 16
No. 4 in Unit E of Section 21
No. 5 in Unit E of Section 22
No. 6 in Unit D of Section 15
No. 7 in Unit L of Section 10
No. 8 in Unit P of Section 15

(3) That the applicant seeks authority to commingle Basin-Dakota gas and Otero-Gallup oil production within the wellbore of the above-described wells.

(4) That from the Basin-Dakota zone, the subject wells are capable of low marginal production only.

(5) That from the Otero-Gallup zone, the subject wells are capable of low marginal production only.

(6) That the proposed commingling may result in the recovery of additional hydrocarbons from each of the subject pools, thereby preventing waste, and will not violate correlative rights.

(7) That the reservoir characteristics of each of the subject zones are such that underground waste would not be caused by the proposed commingling provided that the wells are not shut-in for an extended period.

(8) That to afford the Commission the opportunity to assess the potential for waste and to expeditiously order appropriate remedial action, the operator should notify the Aztec district office of the Commission any time the subject wells are shut-in for 7 consecutive days.

(9) That in order to allocate the commingled production to each of the commingled zones in each of the subject wells, 75 percent of the commingled oil production and 15 percent of the commingled gas production should be allocated to the Gallup zone, and 25 percent of the commingled oil production and 85 percent of the commingled gas production to the Dakota zone.

IT IS THEREFORE ORDERED:

(1) That the applicant, Continental Oil Company, is hereby authorized to commingle Basin-Dakota gas and Otero-Gallup oil production within the wellbore of the following wells on its Northeast Haynes Lease in Township 24 North, Range 5 West, NMPM, Rio Arriba County, New Mexico:

No. 1 in Unit L of Section 9
No. 2 in Unit D of Section 16
No. 3 in Unit P of Section 16
No. 4 in Unit E of Section 21
No. 5 in Unit E of Section 22
No. 6 in Unit D of Section 15
No. 7 in Unit L of Section 10
No. 8 in Unit P of Section 15

(2) That in each of the aforesaid wells, 75 percent of the commingled oil production and 15 percent of the commingled gas production shall be allocated to the Gallup zone and 25 percent of the commingled oil production and 85 percent of the commingled gas production shall be allocated to the Dakota zone.

(3) That the operator of the subject wells shall immediate notify the Commission's Aztec district office any time the wells have been shut-in for 7 consecutive days and shall concurrently present, to the Commission a plan for remedial action.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessar

Attachment D

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

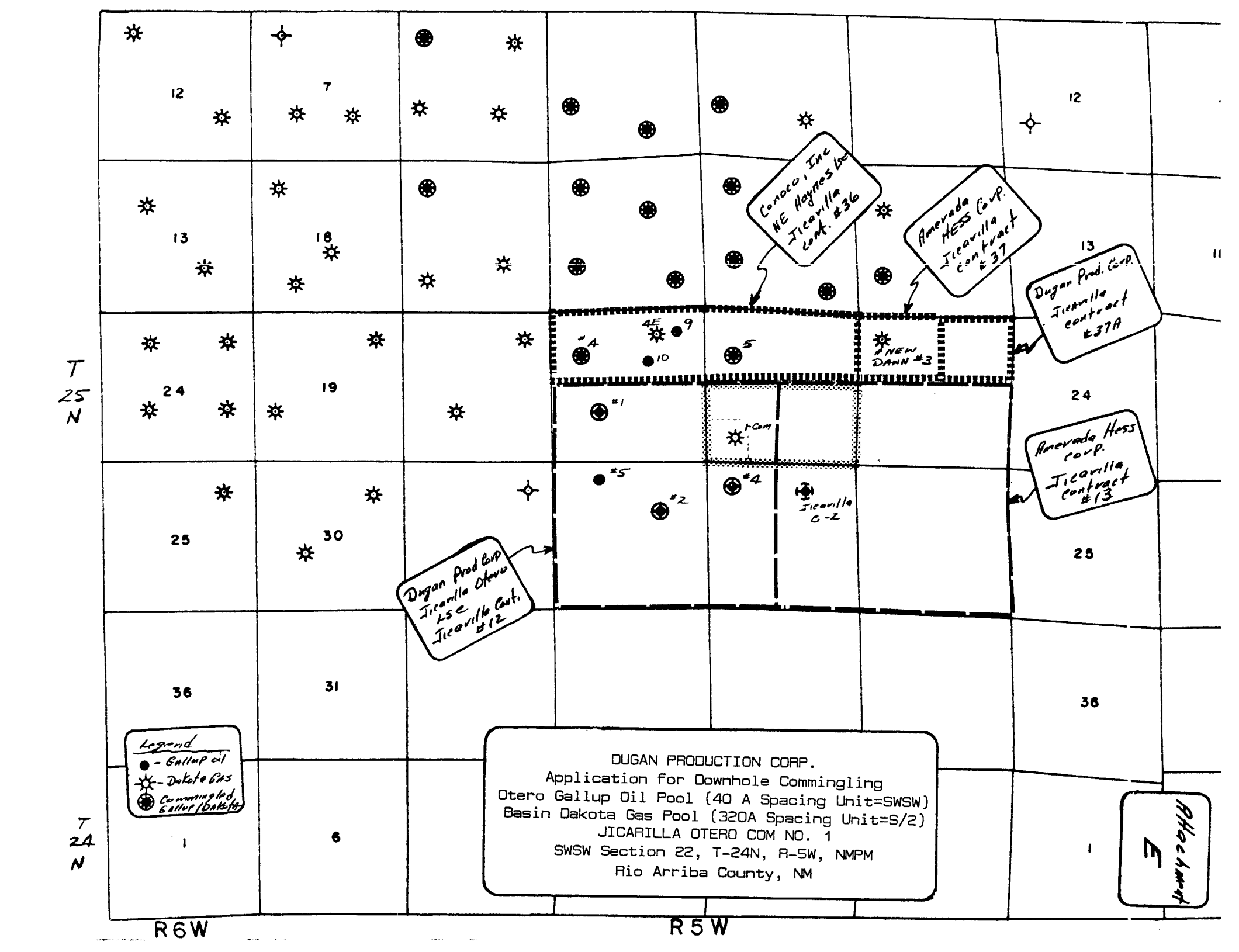
PHIL R. LUCERO, Chairman

EMERY C. ARNOLD, Member

JOE D. RAMEY, Member & Secretary

S E A L

jr/


Conoco, Inc
NE Haynes Lse
Jicarilla
Cont. #36
Amerada
HESS Corp.
Jicarilla
contract
#37
Dugan Prod. Corp.
Jicarilla
contract
#37A
Amerada Hess
corp.
Jicarilla
contract
#13
Dugan Prod Corp
Jicarilla Otero
Lse
Jicarilla Cont.
#12
NEW
DAWN #3
#4
#9
#10
#5
#1
#Com
#5
#2
#4
Jicarilla
G-2
12
7
12
13
18
13
24
19
24
25
30
25
36
31
36
1
6
1
T
25
N
T
24
N
R6W
R5W
Legend
- Gallup oil
- Dakota Gas
Commingled
Gallup/Dakota
DUGAN PRODUCTION CORP.
Application for Downhole Commingling
Otero Gallup Oil Pool (40 A Spacing Unit=SWSW)
Basin Dakota Gas Pool (320A Spacing Unit=S/2)
JICARILLA OTERO COM NO. 1
SWSW Section 22, T-24N, R-5W, NMPM
Rio Arriba County, NM
Attachment
E