

CASE 5525: AMOCO PRODUCTION COMPANY
FOR AMENDMENT OF ORDER NO. R-4983,
SAN JUAN COUNTY, NEW MEXICO

Also see 5434
Case No.

CASE NO.

5525

APPLICATION,
TRANSCRIPTS,
SMALL EXHIBITS,
ETC.

Started injection into
11-7 and # 11-12
on Feb 17 12:30 pm
injected 750 MCF/day
into each well

On Feb 27 Well No. 4
experienced gas
break through.
GOR went from 6000/
to 88000 /

Bart Kiler
Amaco Denver
(303) 820-4585

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

September 13, 1976

C
O
P
Y

Amoco Production Company
Security Life Building
Denver, Colorado 80202

Attn: Mr. R. B. Giles

Re: Extension - Gas Injection
Program, Toci to Dome-Penn
"D" Pool, San Juan County,
New Mexico

Gentlemen:

Reference is made to your letter of August 26, 1976, wherein you detail the performance of your gas injection test program in the Toci to Dome-Pennsylvanian "D" Pool, San Juan County, New Mexico, and request an extension of time in which to conduct further injection for a period of time not to exceed six months beyond August 27, 1976.

We have now received waivers of objection to this extension from all operators in the pool and from the United States Geological Survey. The Oil Conservation Commission concurs in your view that further injection and testing is necessary to evaluate this program as a means of increasing ultimate recovery of oil from this reservoir.

Amoco Production Company is therefore hereby authorized to continue gas injection into its Navajo Tribal "U" Well No. 7, located in Unit J, Section 21, Township 26 North, Range 18 West, NMPM, San Juan County,

New Mexico, at a rate not to exceed 1000 MCF per day until February 27, 1977, provided however, that such injection shall also be subject to the following provisions:

1. Amoco shall notify offset operators, the U. S. G. S., and the Commission immediately of substantially increased gas production from any wells nearby to Tribal "U" Well No. 7.
2. Amoco shall discontinue gas injection if any of its wells or wells belonging to other operators in the Tocito Dome-Pennsylvanian "D" Pool appear to have experienced a premature gas breakthrough.

Very truly yours,

JOE D. RAMEY
Director

cc: MDOCC Aztec
USGS Farmington
Texaco Inc.
P. O. Box 2100
Denver, Colorado 80201 Attn: Mr. J. C. White
Mobil Oil Corporation
Three Greenway Plaza East Suite 800
Houston, Texas Attn: Mr. J. A. Morris
Case File 5525

OIL CONSERVATION COMMISSION

P. O. BOX 2003

SANTA FE, NEW MEXICO 87501

June 23, 1976

C
O
P
Y

Amoco Production Company
Security Life Building
Denver, Colorado 80202

Attn: Mr. R. B. Giles

Re: Extension - Gas Injection
Program, Toci to Dome Penn
"D" Pool, San Juan County,
New Mexico

Gentlemen:

Reference is made to your letter dated May 25, 1976, wherein you detail the performance of your gas injection test program in the Toci to Dome Pennsylvanian "D" Pool, San Juan County, New Mexico, and request an extension of time in which to conduct further injection for a period of three months from May 27, 1976.

We have now received waivers of objection to this extension from all operators in the pool and from the United States Geological Survey. The Oil Conservation Commission concurs in your view that further injection and testing is necessary to evaluate this program as a means of increasing ultimate recovery of oil from this reservoir.

Amoco Production Company is therefore hereby authorized to continue gas injection into its Navajo Tribal "U" Well

No. 7, located in Unit J, Section 21, Township 26 North, Range 18 West, NMPM, San Juan County, New Mexico, until August 27, 1976, provided however, that such injection shall be subject to the provisions of Items 4 and 5 on Page 2 of our letter of January 26, 1976.

Yours very truly,

JOE D. RAMEY
Director

JDR/DSN/fd

cc: MNOCC Astec
USGS Farmington
Texaco Inc.
P. O. Box 2100
Denver, Colorado 80201 Attn: Mr. J. C. White
Mobil Oil Corporation
P. O. Box 633
Midland, Texas 79701 Attn: Mr. J. A. Morris



RECEIVED
MAY 28 1976
CONSERVATION COMM.
Santa Fe

Amoco Production Company

Security Life Building
Denver, Colorado 80202

May 25, 1976

Joe D. Ramey, Secretary-Director (3)
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

File: VDP-602-986.511

Re: Order No. R-4983-A, Limited Gas Injection Test, Tociito Dome
Penn "D" Pool, San Juan County, New Mexico.

This refers to amended Order No. R-4983-A and your letter of January 26, 1976 setting out provisions for continuing the gas injection test at Tociito Dome. The approved pilot test period will expire May 27, 1976. By our letters to you and all affected parties dated March 3 and March 18, 1976, we advised of certain operational changes.

There is no tangible evidence of an adverse nature since the total injection volume was reduced on March 20, 1976 from 1500 MCFD to 750 MCFD concurrent with shutting in one injection well, Navajo Tribal "U" No. 12. Injection has continued into Navajo Tribal "U" No. 7. Producing rates of Navajo Tribal "U" Nos. 5 and 24 are showing moderate improvement since the shutting in of "U" No. 12. Also Navajo Tribal "U" Nos. 13 and 14 appear slightly improved. These wells are all north or northeast of "U" No. 12. Navajo Tribal "U" No. 9, southeast of the only remaining injection well ("U" No. 7), is showing evidence of slight improvement, on the order of 10 BOPD, but is still below the pre-injection level.

In view of the apparent success we are now experiencing in keeping gas in the Penn "D" reservoir that has been injected, and, looking ahead to the indicated large potential reserve increase the field owners may realize from a successful secondary recovery gas injection project, it would seem advisable to continue the project without interruption to obtain more conclusive data to evaluate gas injection as an economical means to increase ultimate oil recovery from the Penn "D" reservoir. We plan to gradually increase the injection rate into "U" No. 7 from the present 750 MCFD level to not more than 1000 MCFD and request your approval to extend the test for a period of time not to exceed three months beyond May 27, 1976.

All offset operators and the United States Geological Survey, since Tribal lands are involved, are being notified of this request by the certified mailing shown in the attached Verification and Affidavit which is made a

part of this application. We ask that each party waive objection to the continuation of this gas injection test by signing in the space provided below, sending one signed copy to you, one to Amoco, and retaining the third copy for their files.

R.B. Giles

R. B. Giles

RBG/cd

cc: A. R. Kendrick, Supervisor, District No. 3, New Mexico Oil Conservation Commission, 1000 Rio Brazos Road, Aztec, New Mexico 87110.

I have no objection to Amoco's request to continue the limited gas injection test, for a period of time not to exceed three months beyond May 27, 1976, by injecting no more than 1000 MCFD into its Navajo Tribal "U" Well No. 7 in the Tocito Dome Field.

TEXACO, INC.

By: _____

Date: _____

MOBIL OIL CORPORATION

By: _____

Date: _____

UNITED STATES GEOLOGICAL SURVEY

By: _____

Date: _____

VERIFICATION AND AFFIDAVIT

STATE OF COLORADO)
 : SS
COUNTY OF DENVER)

R. B. Giles, of lawful age, being first duly sworn on his oath, deposes and says:

That he is employed in an engineering supervisory capacity by Amoco Production Company in its Denver, Colorado office; that the foregoing Application has been prepared under his supervision and direction; that the matters and things therein set forth are true and correct to the best of his knowledge and belief; and that a copy thereof was sent by certified mail from Applicant's Denver, Colorado office on May 25, 1976 to the following parties, at the address shown herein, to wit:

J. C. White
Texaco, Inc.
P. O. Box 2100
Denver, Colorado 80201

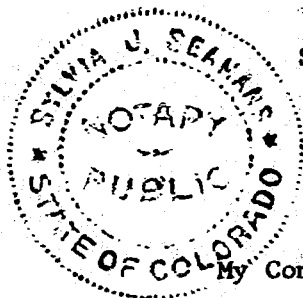
P. T. McGrath
U. S. Geological Survey
P. O. Box 965
Farmington, N. M. 87401

F. S. Wright, Jr.
Mobil Oil Corporation
P. O. Box 633
Midland, Texas 79701

and to the best of his information and knowledge and belief, the above named parties are the only persons to whom notice of such application is required to be given in accordance with Order No. R-4983-A of the Oil Conservation Commission, State of New Mexico.

RB Giles
R. B. GILES

Subscribed and sworn to before me this 25th day of May, 1976.



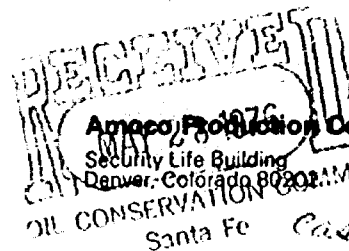
My Commission expires:

My Commission expires Aug. 15, 1976

Sylvia J. Seaman
NOTARY PUBLIC



USGS
waiver



Mutter
Examiner
Case 5525

May 25, 1976

Joe D. Ramey, Secretary-Director (3)
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

RECEIVED

MAY 27 1976

U. S. GEOLOGICAL SURVEY
FARMINGTON, N. M.

File: VDP-602-986.511

Re: Order No. R-4983-A, Limited Gas Injection Test, Tocito Dome
Penn "D" Pool, San Juan County, New Mexico.

This refers to amended Order No. R-4983-A and your letter of January 26, 1976 setting out provisions for continuing the gas injection test at Tocito Dome. The approved pilot test period will expire May 27, 1976. By our letters to you and all affected parties dated March 3 and March 18, 1976, we advised of certain operational changes.

There is no tangible evidence of an adverse nature since the total injection volume was reduced on March 20, 1976 from 1500 MCFD to 750 MCFD concurrent with shutting in one injection well, Navajo Tribal "U" No. 12. Injection has continued into Navajo Tribal "U" No. 7. Producing rates of Navajo Tribal "U" Nos. 5 and 24 are showing moderate improvement since the shutting in of "U" No. 12. Also Navajo Tribal "U" Nos. 13 and 14 appear slightly improved. These wells are all north or northeast of "U" No. 12. Navajo Tribal "U" No. 9, southeast of the only remaining injection well ("U" No. 7), is showing evidence of slight improvement, on the order of 10 BOPD, but is still below the pre-injection level.

In view of the apparent success we are now experiencing in keeping gas in the Penn "D" reservoir that has been injected, and, looking ahead to the indicated large potential reserve increase the field owners may realize from a successful secondary recovery gas injection project, it would seem advisable to continue the project without interruption to obtain more conclusive data to evaluate gas injection as an economical means to increase ultimate oil recovery from the Penn "D" reservoir. We plan to gradually increase the injection rate into "U" No. 7 from the present 750 MCFD level to not more than 1000 MCFD and request your approval to extend the test for a period of time not to exceed three months beyond May 27, 1976.

All offset operators and the United States Geological Survey, since Tribal lands are involved, are being notified of this request by the certified mailing shown in the attached Verification and Affidavit which is made a

part of this application. We ask that each party waive objection to the continuation of this gas injection test by signing in the space provided below, sending one signed copy to you, one to Amoco, and retaining the third copy for their files.

RB Giles

R. B. Giles

RBG/cd

cc: A. R. Kendrick, Supervisor, District No. 3, New Mexico Oil Conservation Commission, 1000 Rio Brazos Road, Aztec, New Mexico 87110.

I have no objection to Amoco's request to continue the limited gas injection test, for a period of time not to exceed three months beyond May 27, 1976, by injecting no more than 1000 MCFD into its Navajo Tribal "U" Well No. 7 in the Tocito Dome Field.

TEXACO, INC.

By: _____

Date: _____

MOBIL OIL CORPORATION

By: _____

Date: _____

UNITED STATES GEOLOGICAL SURVEY

By: *P. J. McPart*

Date: *5-27-76*

VERIFICATION AND AFFIDAVIT

STATE OF COLORADO)
 : SS
COUNTY OF DENVER)

R. B. Giles, of lawful age, being first duly sworn on his oath, deposes and says:

That he is employed in an engineering supervisory capacity by Amoco Production Company in its Denver, Colorado office; that the foregoing Application has been prepared under his supervision and direction; that the matters and things therein set forth are true and correct to the best of his knowledge and belief; and that a copy thereof was sent by certified mail from Applicant's Denver, Colorado office on May 25, 1976 to the following parties, at the address shown herein, to wit:

J. C. White
Texaco, Inc.
P. O. Box 2100
Denver, Colorado 80201

P. T. McGrath
U. S. Geological Survey
P. O. Box 965
Farmington, N. M. 87401

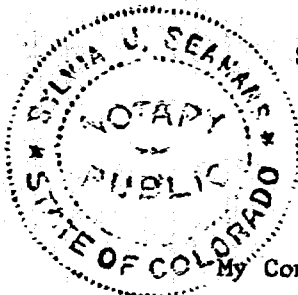
F. S. Wright, Jr.
Mobil Oil Corporation
P. O. Box 633
Midland, Texas 79701

and to the best of his information and knowledge and belief, the above named parties are the only persons to whom notice of such application is required to be given in accordance with Order No. R-4983-A of the Oil Conservation Commission, State of New Mexico.

R B Giles

R. B. GILES

Subscribed and sworn to before me this 25th day of May, 1976.



My Commission expires:

My Commission expires Aug. 15, 1976

Sylvia J. Seaman

NOTARY PUBLIC



RECEIVED
JUN - 3 1976
NEW MEXICO
OIL CONSERVATION COMMISSION
Santa Fe

Amoco Production Company
Security Life Building
Denver, Colorado 80202

Ritter
Examiner

May 25, 1976

Joe D. Ramey, Secretary-Director (3)
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Taylor
Wainer

File: VDP-602-986.511

Re: Order No. R-4983-A, Limited Gas Injection Test, Tocito Dome
Penn "D" Pool, San Juan County, New Mexico.

This refers to amended Order No. R-4983-A and your letter of January 26, 1976 setting out provisions for continuing the gas injection test at Tocito Dome. The approved pilot test period will expire May 27, 1976. By our letters to you and all affected parties dated March 3 and March 18, 1976, we advised of certain operational changes.

There is no tangible evidence of an adverse nature since the total injection volume was reduced on March 20, 1976 from 1500 MCFD to 750 MCFD concurrent with shutting in one injection well, Navajo Tribal "U" No. 12. Injection has continued into Navajo Tribal "U" No. 7. Producing rates of Navajo Tribal "U" Nos. 5 and 24 are showing moderate improvement since the shutting in of "U" No. 12. Also Navajo Tribal "U" Nos. 13 and 14 appear slightly improved. These wells are all north or northeast of "U" No. 12. Navajo Tribal "U" No. 9, southeast of the only remaining injection well ("U" No. 7), is showing evidence of slight improvement, on the order of 10 BOPD, but is still below the pre-injection level.

In view of the apparent success we are now experiencing in keeping gas in the Penn "D" reservoir that has been injected, and, looking ahead to the indicated large potential reserve increase the field owners may realize from a successful secondary recovery gas injection project, it would seem advisable to continue the project without interruption to obtain more conclusive data to evaluate gas injection as an economical means to increase ultimate oil recovery from the Penn "D" reservoir. We plan to gradually increase the injection rate into "U" No. 7 from the present 750 MCFD level to not more than 1000 MCFD and request your approval to extend the test for a period of time not to exceed three months beyond May 27, 1976.

All offset operators and the United States Geological Survey, since Tribal lands are involved, are being notified of this request by the certified mailing shown in the attached Verification and Affidavit which is made a

part of this application. We ask that each party waive objection to the continuation of this gas injection test by signing in the space provided below, sending one signed copy to you, one to Amoco, and retaining the third copy for their files.

RB Giles

R. B. Giles

RBG/cd

cc: A. R. Kendrick, Supervisor, District No. 3, New Mexico Oil Conservation Commission, 1000 Rio Brazos Road, Aztec, New Mexico 87110.

I have no objection to Amoco's request to continue the limited gas injection test, for a period of time not to exceed three months beyond May 27, 1976, by injecting no more than 1000 MCFD into its Navajo Tribal "U" Well No. 7 in the Tocito Dome Field.

TEXACO, INC.

By: *J. C. [signature]*
Date: 5/28/76

MOBIL OIL CORPORATION

By: _____
Date: _____

UNITED STATES GEOLOGICAL SURVEY

By: _____
Date: _____

VERIFICATION AND AFFIDAVIT

STATE OF COLORADO)
 : SS
COUNTY OF DENVER)

R. B. Giles, of lawful age, being first duly sworn on his oath, deposes and says:

That he is employed in an engineering supervisory capacity by Amoco Production Company in its Denver, Colorado office; that the foregoing Application has been prepared under his supervision and direction; that the matters and things therein set forth are true and correct to the best of his knowledge and belief; and that a copy thereof was sent by certified mail from Applicant's Denver, Colorado office on May 25, 1976 to the following parties, at the address shown herein, to wit:

J. C. White
Texaco, Inc.
P. O. Box 2100
Denver, Colorado 80201

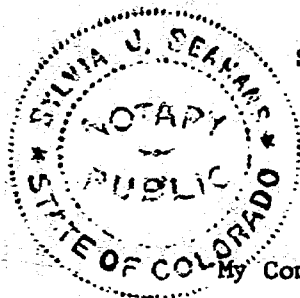
P. T. McGrath
U. S. Geological Survey
P. O. Box 965
Farmington, N. M. 87401

F. S. Wright, Jr.
Mobil Oil Corporation
P. O. Box 633
Midland, Texas 79701

and to the best of his information and knowledge and belief, the above named parties are the only persons to whom notice of such application is required to be given in accordance with Order No. R-4983-A of the Oil Conservation Commission, State of New Mexico.

R B Giles
R. B. GILES

Subscribed and sworn to before me this 25th day of May, 1976.



My Commission expires:

My Commission expires Aug. 15, 1976

Sylvia J. Seannans
NOTARY PUBLIC

Mobil Oil Corporation

P. O. BOX 633
MIDLAND, TEXAS 79701

June 16, 1976

Case 5525

Nutter

Examiner

*Mobil
waiver*

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

Attention: Mr. J. D. Ramey

AMOCO PRODUCTION COMPANY
ORDER NO. R-4983-A
LIMITED GAS INJECTION TEST
TOCITO DOHE PENN "D" POOL
SAN JUAN COUNTY, NEW MEXICO

Gentlemen:

Mobil Oil Corporation has been informed of Amoco's request to extend the gas injection period authorized by amended Order No. R-4983-A for an additional three months beyond the May 27, 1976 expiring date.

Mobil Oil Corporation, as an offset operator to the Amoco Navajo Tribal "U" Lease, does not object to a three month extension of the gas injection period into the Amoco Navajo Tribal "U" Well No. 7, at a rate not to exceed 1000 MCFD; provided, that prompt notification of any gas breakthrough is given and gas injection will be discontinued by the terms of the Commission's January 26, 1976 approval of the subject gas injection test.

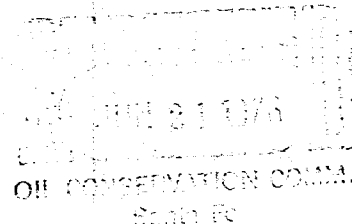
Yours very truly,

J. A. Morris

J. A. Morris
Regulatory Engineering Supervisor

JHSeerey/amb

cc: Amoco, Denver
Texaco, Denver
USGS, Farmington
NMOCC, Aztec





Amoco Production Company

Security Life Building
Denver, Colorado 80202

M. S. Kraemer
Division Production
Manager
A. M. Roney
Division Operations
Superintendent
T. M. Curtis
D. D. Gilliam
Production Coordination
Superintendents

March 18, 1976

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

File: LAD-114-986.511

Order No. R 4983-A: Limited Gas Injection Testing, Tocito
Dome Penn "D" Pool San Juan County, New Mexico

By our letter of March 3, 1976 you were advised that Navajo Tribal 'U' No. 4 was shut in on March 2, 1976, after having experienced a gas rate increase of 1000 MCFD by virtue of gas injection into Tribal 'U' Nos. 7 and 12.

As of March 16, 1976 we had confirmed an approximate 450 MCFD increase at Tribal 'U' No. 5, which is 1800' northeast of Tribal 'U' No. 4. As of March 18 injection was terminated into Tribal 'U' No. 12 but injection is being continued into Tribal 'U' No. 7 at approximately 750 MCFD. Thus far any apparent gas movement has been in the direction of Amoco wells only and we do not believe any operator has been adversely affected. We are continuing injection on the modified basis to obtain the maximum amount of information on directional movement of the gas being injected. We will continue to keep you advised of any unusual occurrences.

R. B. Giles

MOH/dlm

cc: Attachment

A. R. Kendrick
New Mexico Oil Conservation Commission
1000 Rio Brazos Road
Axtec, New Mexico 87110

F. S. Wright, Jr.
Mobil Oil Corporation
Box 633
Midland, Texas 79701

J. C. White
Texaco, Inc.
P. O. Box 2100
Denver, Colorado 80201

P. T. McGrath
United States Geological Survey
P. O. Box 965
Farmington, New Mexico

L. O. Speer, Jr.
Amoco Production Co.
Farmington, New Mexico



Amoco Production Company

Security Life Building
Denver, Colorado 80202

M. S. Kraemer
Division Production
Manager
A. M. Roney
Division Operations
Superintendent
T. M. Curtis
D. D. Gilkham
Production Coordination
Superintendents

March 3, 1976

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

File: LAD-103-986.511

Order No. R-4983-A Limited Gas Injection
Testing, Tocito Dome Penn "D" Pool
San Juan County, New Mexico

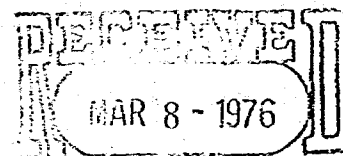
This will refer to amended Order No. R-4983-A and your letter of January 26, 1976 setting out provisions for continuing gas injection tests at Tocito Dome.

Gas injection was resumed on February 17, 1976 at an average total rate of approximately 1500 MCFD (about equally divided) into the two approved injection wells, Navajo Tribal "U" Nos. 7 and 12. On February 27 we experienced a rate increase of approximately 1000 MCFD at the nearest well, Navajo Tribal "U" No. 4 (1900' Northeast of "U" No. 12). Thus far we have not detected any abnormalities at any other wells. With confirmation of the continuing increase of gas, Navajo Tribal "U" No. 4 was shut in on March 2.

We are maintaining a close watch on all wells within one mile of the injection wells. We will keep you advised in the event we detect any unusual occurrences.

RB Files

MOH/dlm



OIL CONSERVATION COMM.
Santa Fe

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

January 26, 1976

Amoco Production Company
Security Life Building
Denver, Colorado 80202

Re: Gas Injection Test
Tocito Dome-Penn "D" Oil Pool
San Juan County, New Mexico

Gentlemen:

Reference is made to your letter dated December 1, 1975, wherein you request authority to modify the gas injection test program approved for your Navajo Tribal Leases in the Tocito Dome-Pennsylvanian "D" Oil Pool, San Juan County, New Mexico, by Commission Order No. R-4983, as amended by Order No. R-4983-A.

The most recent order, No. R-4983-A, authorized the injection of gas for 120 days into the Pennsylvanian "D" formation through your Navajo Tribal "N" Wells Nos. 6 and 12, located in Units G and I, respectively, of Section 17, and your Navajo Tribal "U" Well No. 3, located in Unit M of Section 16, all in Township 26 North, Range 18 West. It is our understanding that no gas injection to date has been made into either the No. 6 or the 12, and gas injection into the No. 3 was discontinued after 20 days due to apparent gas breakthrough into certain nearby wells.

Further, that you now seek authority to inject gas into your Navajo Tribal "U" Wells Nos. 7 and 12 in lieu of Navajo Tribal "N" Wells Nos. 6 and 12, and to permanently discontinue injection into the "U" 3. Said "U" 6 and "U" 12 wells are located in Units J and F, respectively, of Section 21, Township 26 North, Range 18 West.

We are in receipt of waivers of objection from all offset operators and the United States Geological Survey. Your application therefore is hereby approved as follows:

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

Amoco Production Company

-2-

January 26, 1976

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1. There shall be no gas injection into Navajo Tribal "N" Wells Nos. 6 and 12 nor Navajo Tribal "U" Well No. 3 (located in Units G and I of Section 17 and Unit M of Section 16, respectively, Township 26 North, Range 18 West, NMPM, San Juan County, New Mexico).
 2. Injection of gas is authorized into Navajo Tribal "U" Wells Nos. 7 and 12 (located in Units J and F, respectively of Section 21, same township).
 3. Injection of gas into said wells is to be limited to 100 days unless further injection is authorized upon request of Amoco and approval by offsets and the USGS.
 4. Amoco shall notify offset operators, the USGS, and the Commission immediately of substantially increased gas production from any wells nearby to Tribal "U" Wells Nos. 7 and 12.
 5. Amoco shall discontinue gas injection if any of its wells or wells belonging to other operators in the Tocito Dome-Pennsylvanian "D" Oil Pool appear to have experienced a premature gas breakthrough.

Very truly yours,

JOE D. RAMEY
Secretary-Director

JDR/DSN/dr

cc: Oil Conservation Commission - Aztec
U. S. Geological Survey - Farmington



Amoco Production Company

Security Life Building
Denver, Colorado 80202

M. S. Kraemer
Division Production
Manager
A. M. Roney
Division Operations
Superintendent
T. M. Curtis
D. D. Gilliam
Production Coordination
Superintendents

December 1, 1975

Joe D. Ramey,
Secretary-Director (3)
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

File: DGW-215-986-11

Order No. R-4983-A, Limited Gas Injection
Test, Tocito Dome Penn "D" Pool,
San Juan County, New Mexico

Reference is made to case No. 5525, Order No. R-4983-A of
the Oil Conservation Commission. In this Order, Amoco was
given approval to conduct a 120-day gas injection test in
the Tocito Dome Pennsylvanian "D" Oil Pool, San Juan County,
New Mexico. The Commission approved the use of Navajo
Tribal "U" Well No. 3, and Navajo Tribal "N" Wells Nos. 6
and 12 for gas injection.

Gas injections were initiated into Navajo Tribal "U" Well
No. 3 on August 15, 1975 and continued for 20 days before
being terminated on September 5, 1975 due to gas breakthrough.
Our P. B. Giles informed Dan Nutter of the termination of
gas injections that day. The attached memorandum discusses
 pertinent data obtained from the initial 20 days of injection
and presents some apparent conclusions from the test data.
In view of these conclusions, we are requesting administrative
approval to resume gas injection into the Tocito Dome Reservoir
for a 100-day period (the remainder of the original 120-day
test period). To minimize gas breakthrough we will not
resume gas injection into Navajo Tribal "U" Well #3. We do
feel it would be advisable to inject gas into the southern
portion of the reservoir crest. To facilitate this operational
change we are requesting administrative approval to substitute
Navajo Tribal "U" Wells No. 7 and 12 as gas injection wells
to replace Navajo Tribal "N" Wells 6 and 12. This operational
change will allow us to maximize our crestal injection
coverage. Neither of the Navajo Tribal "N" lease wells have
been used for gas injection and both of the proposed "U"
wells are shut-in, due to uneconomic production.

In view of the indicated large potential reserve increase
from a successful secondary recovery gas injection project,
and the minimal, if any, production damage from the initial

Joe D. Ramey
December 1, 1975
Page Two

20 day test, it would be advisable to resume the project with the proposed operational change to obtain more conclusive data to evaluate gas injection as an economical means to increase ultimate recovery from the Tocito Dome Reservoir.

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Yours very truly,

David P. Howell

JKL/dao
282-593

cc: A. R. Kendrik, Supervisor
District No. 3
New Mexico Oil Conservation Commission
1000 Rio Brazos Road
Aztec, New Mexico 87110

I have no objection to Amoco's request to resume gas injection into the Tocito Dome Penn "D" Pool by substituting Amoco's Navajo Tribal "U" Wells No. 7 and 12 for Amoco's Navajo Tribal "N" Wells Nos. 6 and 12 as gas injection wells. Injections into Navajo Tribal "U" Well No. 3 will be discontinued.

Texaco, Inc.

Mobil Oil Corporation

By: _____

By: _____

Date: _____

Date: _____

United States Geological Survey

By: _____

Date: _____

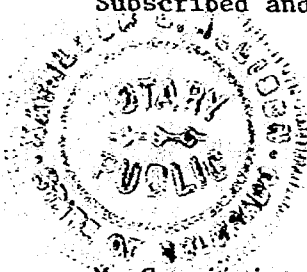
VERIFICATION AND AFFIDAVIT

STATE OF COLORADO)
COUNTY OF DENVER) : SS

D. O. HOWELL, being first duly sworn, upon oath deposes and says that he is employed in an engineering capacity by Amoco Production Company, that the foregoing Application has been prepared under his supervision and direction, that he is familiar with the information contained in the Application and that the matters and the things therein set forth are true and correct to the best of his knowledge and belief.

D. P. Howell
D. P. Howell

Subscribed and sworn to before me this 8th day of December, 1975.



My Commission expires

7/24/78

Kathleen L. Allison
Notary Public



Amoco Production Company
Security Life Building
Denver, Colorado 80202

November 7, 1975

Memorandum

File: DGW-217-986.511

Gas Injection Project
Tocito Dome Field

Introduction: This memorandum discusses the initial results of the gas injection project in the Tocito Dome Pennsylvanian "D" Oil Pool, San Juan County, New Mexico. A gas injection project was proposed for the Tocito Dome Penn "D" Reservoir as a method of secondary recovery. The reservoir characteristics are such that crestal gas injection in the reservoir could possibly improve recovery by retarding the reservoir pressure decline and enhancing gravity drainage effects now believed to be present in the reservoir. Initial calculations indicate an additional recovery of slightly over 3,000,000 barrels of oil could possibly be realized from a successful gas injection program.

Summary: A 120-day test of the gas injection project was initiated on Aug. 15, 1975. Gas was injected in the Amoco Navajo Tribal "U" Well No. 3 for 20 days (see Attachment 3); however, because of significant gas breakthrough it was considered advisable to discontinue gas injection pending a review of the performance data obtained during the initial 20-day gas injection period. Gas breakthrough was experienced in 6 nearby Amoco wells (see Attachment 2) and one Mobil well. Although early gas breakthrough occurred in seven wells, production data from other downdip wells indicates possible favorable response to the gas injection. However, due to the limited time period and volume of gas injected, it is difficult to make an accurate evaluation of downdip response.

Conclusion: Although gas breakthrough occurred during the 20-day test period, this problem may have been compounded by high injection rates into one well in a low pressure area of the reservoir. In view of the magnitude of the possible increase in ultimate recovery from a successful gas injection project and the indications of possible improved response in some downdip producers during the 20-day test period, it is considered advisable to resume the project to obtain more

accurate and conclusive data. Also, an evaluation of production response of the field since discontinuation of the initial gas injection project shows a return to pre-gas injection trends almost immediately and should alleviate any concerns as to a long term loss in rate and reserves with resumption of the gas injection project.

There are two operational changes that will be considered in resuming gas injections. These changes should help eliminate or reduce early gas breakthrough problems. They are (1) maximize crestal coverage by injecting into additional crestal wells, and (2) reduce per well injection rates to evaluate rate sensitivity of gas injection.

Discussion: Gas injection was initiated on Aug. 15, 1975 in the Tocito Dome Penn "D" Reservoir, beginning a proposed 120-day test period. Injection was into the Amoco Navajo Tribal "U" Well No. 3 located on the crest of the reservoir at an average rate of 4720 MCFD and an average wellhead pressure of 916 psia. The average injection rate of 4720 MCFD into one well represents approximately 50% of the total field gas production. Gas breakthrough occurred in downdip offsetting wells "U" No. 13 and "U" No. 14 in 48 hours after initiation of injections. After "U" No. 13 and "U" No. 14 were shut-in four days after the start of gas injection, breakthrough occurred at "U" No. 16, followed shortly by breakthrough in Wells "U" No. 5, "U" No. 8, and "U" No. 24. These four wells were shut-in on Aug. 27 through Aug. 29 and on Aug. 30 breakthrough was recorded on the offsetting Mobil lease at their Well No. 2. This resulted in discontinuation of gas injection on Sept. 5 after only 20 days of operation.

It is important to note that breakthrough did not occur at well "U" No. 4, a southeast offset to the gas injection well. Only one of the seven wells with gas breakthrough is closer to the injection well than "U" No. 4, indicating a definite preferential flow in the northeast direction. This could be expected since the available pressure data indicates that the northeast area, or area of gas breakthrough, has a current lower reservoir pressure than the surrounding area. With this pressure gradient, the gas injections were limited in areal coverage of the crest. This, along with the high injection rates, resulted in the rapid downdip northeastern movement of the gas. It would be advisable in future gas injection tests to maximize crestal coverage by converting additional southern crestal wells to injection.

Attachment #4 is a rate-time curve for Amoco's Tocito Dome Penn "D" production. The curve shows the results of the loss in production with wells being shut-in due to gas breakthrough. As mentioned earlier, with the present pressure gradient in the area of gas injection, this should not be alarming. In time, the production loss could possibly be overshadowed by production gains in downdip wells resulting from maximizing the gravity drainage mechanism. But, with the very limited time of gas injection (20 days) major response in the downdip producers could not be expected since calculations indicate 80% of the total 95,000 MCF of gas injected has been produced. There were several downdip wells though, that show definite possibilities of increased rates due to gas injections (see Attachment 5), although an accurate evaluation is impossible due to the limited time of operation.

One major indication from the rate-time curve for the field is that once gas injection was discontinued and the wells shut-in due to gas breakthrough were returned to production, the producing rate returned to previous trends indicating no loss in rate or reserves as a result of the gas breakthrough. This is a major factor in considering future gas injection tests.

JKL/do

269-139

TOCITO DOME GAS INJECTION PILOT PROJECT
SUMMARY OF EVENTS

<u>Date</u>	<u>Event</u>
8-15-75	Gas injection started.
8-17-75	Breakthrough observed at "U" No. 14 and "U" No. 13.
8-19-75	Shut in "U" No. 13 and "U" No. 14. Breakthrough observed at "U" No. 16.
8-22-75	Breakthrough observed at "U" No. 8 and "U" No. 24.
8-23-75	Breakthrough observed at "U" No. 5.
8-27-75	Shut in "U" No. 8
8-28-75	Shut in "U" No. 5
8-29-75	Shut in "U" No. 16 and "U" No. 24
8-30-75	Breakthrough observed at Mobil.
9-5-75	Gas injection stopped.
9-6-75	"U" No. 16 back on.
9-7-75	"U" No. 24 back on.
9-9-75	"U" No. 8 back on.
9-10-75	"U" No. 5 back on.
9-20-75	"U" No. 14 back on.

PRODUCTION RESPONSE TO GAS BREAKTHROUGH
AMOCO OPERATED WELLS

<u>Well</u>	<u>Product Prior to Gas Inj.</u>	<u>Production @ Shut-in Due to Breakthrough</u>
"U" No. 5	50 BOPD, 105 BWPd, 330 MCFD	10 BOPD, 13 BWPd, 1350 MCFD
"U" No. 8	40 BOPD, 190 BWPd, 300 MCFD	26 BOPD, 155 BWPd, 650 MCFD
"U" No. 13	275 BOPD, 210 BWPd, 650 MCFD	46 BOPD, 72 BWPd, 910 MCFD
"U" No. 14	45 BOPD, 550 BWPd, 200 MCFD	32 BOPD, 580 BWPd, 1300 MCFD
"U" No. 16	210 BOPD, 150 BWPd, 350 MCFD	130 BOPD, 62 BWPd, 1850 MCFD
"U" No. 24	150 BOPD, 65 BWPd, 1000 MCFD	35 BOPD, 13 BWPd, 2350 MCFD

PILOT PROJECT GAS INJECTION WELL DATA
 NAVAJO TRIBAL "U" NO. 3

<u>DATE</u>	<u>GAS INJECTION (MCFD)</u>	<u>CUMULATIVE GAS INJECTION (MCFD)</u>	<u>WELLHEAD PRESSURE (PSI)</u>	<u>COMMENTS</u>
8-15-75				Injection Started
8-16-75	4945	4945	940	
8-17-75	4950	9895	940	
8-18-75	4992	14,887	940	
8-19-75	1759	16,646	780	Comp. #6 Down
8-20-75	5505	22,151	980	
8-21-75	4956	27,107	950	
8-22-75	5039	32,146	940	
8-23-75	5050	37,196	950	
8-24-75	5623	42,819	1000	
8-25-75	5773	48,592	970	
8-26-75	5009	53,601	980	
8-27-75	5505	59,106	920	
8-28-75	5552	64,658	980	
8-29-75	4108	68,766	960	
8-30-75	4350	73,116	860	
8-31-75	4046	77,162	850	
9-1-75	4103	81,265	860	
9-2-75	4344	85,609	850	
9-3-75	4466	90,075	880	
9-4-75	4376	94,451	850	
9-5-75	547	94,998	850	Injection Stopped
Avg.	4720		916	
Min.	1759		780	
Max.	5773		1000	

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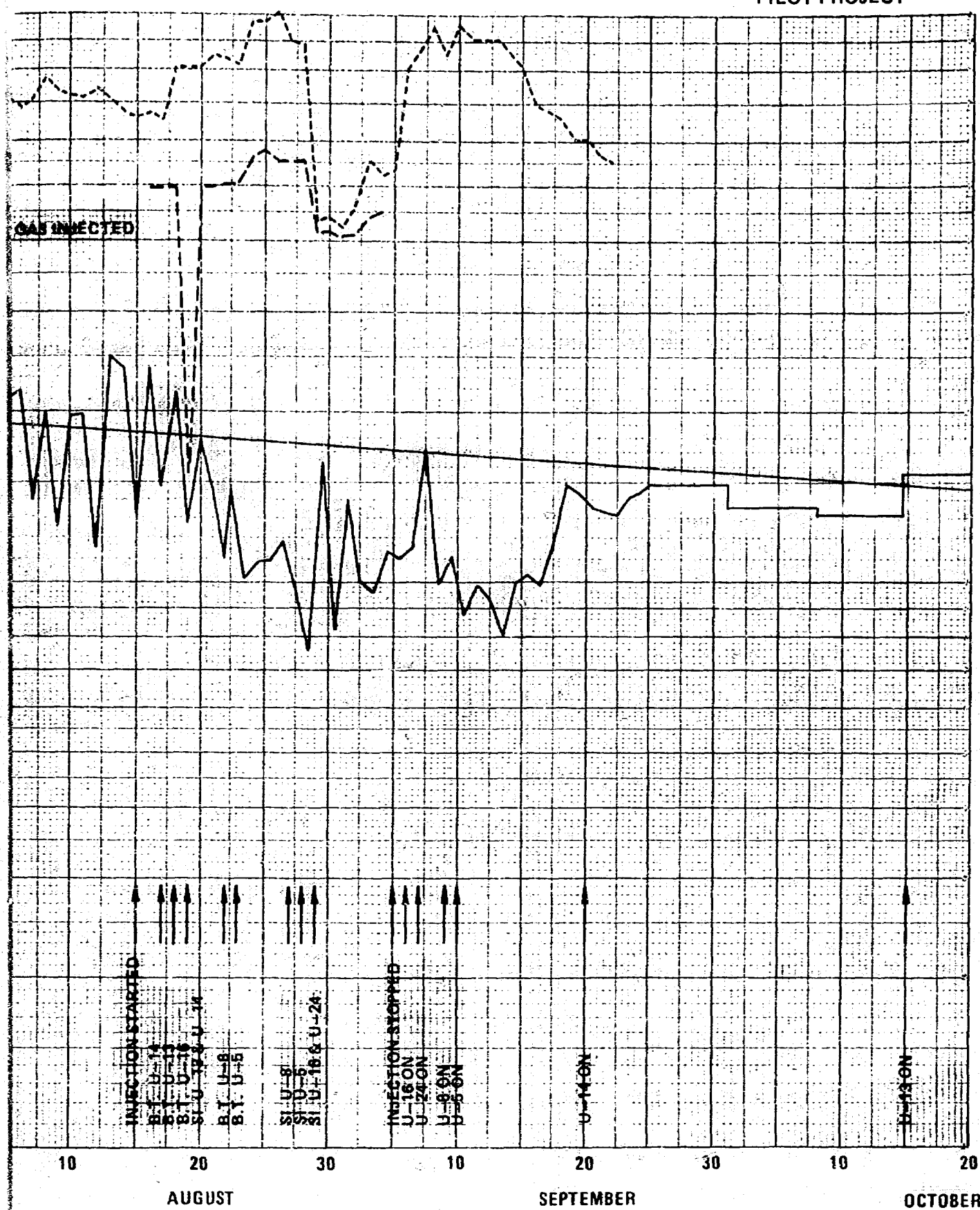
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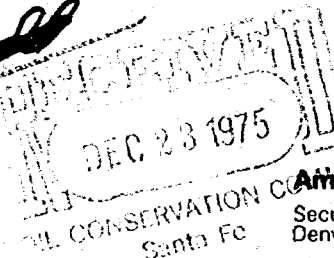
OIL



TOCITO DOME GAS INJECTION
PILOT PROJECT

AMOCO WELLS WITH INDICATED IMPROVED RECOVERY

<u>Well</u>	<u>Production Prior to Gas Inj.</u>	<u>Production @ 10/1/75</u>
"U" No. 4	40 BOPD, 140 BWP, 220 MCFD	110 BOPD, 250 BWP, 250 MCFD
"U" No. 20	35 BOPD, 20 BWP, 260 MCFD	46 BOPD, 27 BOPD, 215 MCFD
"U" No. 26	10 BOPD, 15 BWP, 580 MCFD	45 BOPD, 10 BWP, 540 MCFD



Amoco Production Company
Security Life Building
Denver, Colorado 80202

M. S. Kraemer
Division Production
Manager
A. M. Roney
Division Operations
Superintendent
T. M. Curtis
D. D. Gilliam
Production Coordination
Superintendents

December 1, 1975

Joe D. Ramey,
Secretary-Director (3)
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

File: DGW-215-986.511

RECEIVED

DEC 22 1975

U. S. GEOLOGICAL SURVEY
FARMINGTON, N. M.

RECEIVED

DEC 12 1975

U. S. GEOLOGICAL SURVEY
FARMINGTON, N. M.

Order No. R-4983-A, Limited Gas Injection
Test, Tocito Dome Penn "D" Pool,
San Juan County, New Mexico

Reference is made to Case No. 5525, Order No. R-4983-A of the Oil Conservation Commission. In this Order, Amoco was given approval to conduct a 120-day gas injection test in the Tocito Dome-Pennsylvanian "D" Oil Pool, San Juan County, New Mexico. The Commission approved the use of Navajo Tribal "U" Well No. 3, and Navajo Tribal "N" Wells Nos. 6 and 12 for gas injection.

Gas injections were initiated into Navajo Tribal "U" Well No. 3 on August 15, 1975 and continued for 20 days before being terminated on September 5, 1975 due to gas breakthrough. Our R. B. Giles informed Dan Nutter of the termination of gas injections that day. The attached memorandum discusses pertinent data obtained from the initial 20 days of injection and presents some apparent conclusions from the test data. In view of these conclusions, we are requesting administrative approval to resume gas injection into the Tocito Dome Reservoir for a 100-day period (the remainder of the original 120-day test period). To minimize gas breakthrough we will not resume gas injection into Navajo Tribal "U" Well #3. We do feel it would be advisable to inject gas into the southern portion of the reservoir crest. To facilitate this operational change we are requesting administrative approval to substitute Navajo Tribal "U" Wells No. 7 and 12 as gas injection wells to replace Navajo Tribal "N" Wells 6 and 12. This operational change will allow us to maximize our crestal injection coverage. Neither of the Navajo Tribal "N" lease wells have been used for gas injection and both of the proposed "U" wells are shut-in, due to uneconomic production.

In view of the indicated large potential reserve increase from a successful secondary recovery gas injection project, and the minimal, if any, production damage from the initial

U. S. G. S. Winter

Joe D. Ramey
December 1, 1975
Page Two

20 day test, it would be advisable to resume the project with the proposed operational change to obtain more conclusive data to evaluate gas injection as an economical means to increase ultimate recovery from the Tocito Dome Reservoir.

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Yours very truly,

David P. Howell

JKL/dao
282-593

cc: A. R. Kendrik, Supervisor
District No. 3
New Mexico Oil Conservation Commission
1000 Rio Brazos Road
Aztec, New Mexico 87110

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Texaco, Inc.

By: _____

Date: _____

Mobil Oil Corporation

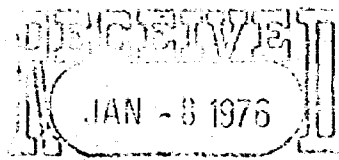
By: _____

Date: _____

United States Geological Survey

By: *P. J. McFarland*

Date: *12-22-75*



OIL CONSERVATION COMM.
Santa Fe

Amoco Production Company

Security Life Building
Denver, Colorado 80202

M. S. Kraemer
Division Production
Manager
A. M. Roney
Division Operations
Superintendent
T. M. Curtis
D. D. Gilliam
Production Coordination
Superintendents

December 1, 1975

Joe D. Ramey,
Secretary-Director (3)
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

*Dan Nutter
Examiner*

File: DGN-215-986.511

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Test, Tocito Dome Penn "D" Pool,
San Juan County, New Mexico

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Tyaco waiver

Joe D. Ramey
December 1, 1975
Page Two

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Yours very truly,

David P. Howell

JKL/dao
262-593

cc: A. R. Kendrik, Supervisor
District No. 3
New Mexico Oil Conservation Commission
1000 Rio Brazos Road
Aztec, New Mexico 87110

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Texaco, Inc.

By: *J. C. White*
Date: 1/5/76

Mobil Oil Corporation

By: _____
Date: _____

United States Geological Survey

By: _____
Date: _____

VERIFICATION AND AFFIDAVIT

STATE OF COLORADO)
COUNTY OF DENVER) : SS

D. O. HOWELL, being first duly sworn, upon oath deposes and says that he is employed in an engineering capacity by Amoco Production Company, that the foregoing Application has been prepared under his supervision and direction, that he is familiar with the information contained in the Application and that the matters and the things therein set forth are true and correct to the best of his knowledge and belief.

D. P. Howell
D. P. Howell

Subscribed and sworn to before me this 8th day of December, 1975.



My Commission expires

7/24/78

Kathleen L. Allison
Notary Public

Mobil Oil Corporation

RECEIVED
JAN 14 1976
BOX 633
MIDLAND, TEXAS 79701
OIL CONSERVATION COMM.
Santa Fe

December 23, 1975

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

Attention: Mr. J. D. Ramey

AMOCO PRODUCTION COMPANY
ORDER NO. R-4983-A
LIMITED GAS INJECTION TEST
TOCITO DOME PENN "D" FIELD
SAN JUAN COUNTY, NEW MEXICO

Gentlemen:

Mobil Oil Corporation has been informed of the application dated December 1, 1975 of Amoco Production Company seeking administrative approval to resume gas injection under the subject order, which requests the substitution of Amoco's Navajo Tribal "U" wells No. 7 and 12 as gas injection wells to replace the previously approved Amoco Navajo Tribal "N" wells No. 6 and 12 and which proposes no further gas injection in the Navajo Tribal "U" well No. 3.

Mobil Oil Corporation, as offset operator to the Amoco Navajo Tribal "U" Lease, hereby conditionally waives objection to this application, subject to the following:

1. Amoco's Navajo Tribal "U" well No. 3 be deleted as an approved gas injection well.
2. Mobil be notified immediately of substantially increased gas production or gas breakthrough in Amoco's Navajo Tribal "U" well No. 16. If "U" No. 16 is not producing, notification on updip wells "U" Nos. 3 and 13 may be substituted.
3. Mobil's request to shut down gas injection operations upon breakthrough in the above well(s) or wells on Mobil's offsetting Navajo lease would be honored as in the previous test.

Yours very truly,

L. A. Davis
L. A. Davis
Area Operations Engineer

REDejmal/cw
cc: Amoco, Denver
Texaco, Denver
U.S.G.S., Farmington
NMOCC, Aztec

Mobil Waiver

*Dan N
Amoco can
accept these
"Conditions of
Approval" of
Mobil's.
RB Giles
1-12-76*

Memo

From

OIL CONSERVATION COMMISSION
1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410

To Joe:

I guess this is
your copy. I kept
one copy for our
file.

I have no objection
to this proposal.

Al

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
July 16, 1975

EXAMINER HEARING

IN THE MATTER OF:

Application of Amoco Production
Company for amendment of Order No.
R-4983, San Juan County, New Mexico.

Case No.
5525

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

A P P E A R A N C E S

**For the New Mexico Oil
Conservation Commission:**

William Carr, Esq.
Legal Counsel for the
Commission
State Land Office Bldg.
Santa Fe, New Mexico

For the Applicant:

Oscar Swan, Esq.
House Counsel
Amoco Production Company
P.O. Box #591
Tulsa, Oklahoma 74102

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STATE-WIDE DEPOSITION NOTARIES
225 JOHNSON STREET
SANTA FE, NEW MEXICO 87501
TEL. (505) 962-0386

I N D E X

	<u>PAGE</u>
BART GILES	
Direct Examination by Mr. Swan	5
Cross Examination by Mr. Nutter	13

E X H I B I T S

	<u>Marked</u>	<u>Admitted</u>
Amoco's Exhibit No. 1	--	6
Amoco's Exhibit No. 2	12	12

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MR. NUTTER: Call Case No. 5525.

MR. CARR: Case 5525. Application of Amoco Production Company for amendment of Order No. R-4983, San Juan County, New Mexico.

MR. THOMPSON: Mr. Examiner, I am R.E. Thompson of Atwood, Malone, Mann & Cooter appearing for Amoco Production Company. The case will be presented by Mr. Oscar Swan, in house Counsel for Amoco.

MR. NUTTER: Are there any other appearances in this case?

MR. SWAN: I don't think there will be; there should be a letter from Mobil, one of the interested parties.

MR. NUTTER: We have a letter from Mobil.

MR. SWAN: Texaco, the other interested party, sent a letter to us instead of to you; don't ask me why, but it said essentially the same thing.

(Witness sworn.)

MR. SWAN: I think perhaps a little explanatory statement before I put on the Witness may help here. Even though we, I think, referred to the operation that Order No. R-4983, authorized as a product-pressure maintenance project, its primary purpose was to see whether

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the equipment we had out there could inject gas. We, of course, welcome reservoir information as well, but until we found that out we really weren't prepared to tell the Commission which way we ought to go, and for that reason 4983 did not authorize any extension of the period of a test by administrative procedure; in fact, it was fully discussed and we said we didn't want to do that; we wanted to come back after we had found out whether our equipment could handle the gas and then tell you where we ought to go from there. It is my understanding that we did find out that the equipment will handle it so we are not faced with ordering compressors and a lot of delay; we are prepared to proceed with a further pressure maintenance, and I think with that I will just ask my Witness to explain a little bit of what the information we got from the previous test showed us. You have been furnished this but I think for the record he should go into that and then tell you what we plan to do from there on.

BART GILES

called as a witness, having been first duly sworn, was examined and testified as follows:

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DIRECT EXAMINATION

BY MR. SWAN:

Q With that, Mr. Giles, do you have an exhibit that we can refer to as you give your testimony?

A Yes, one exhibit which we have labeled Exhibit No. 1.

Q Would you state your name, please?

A R.B. Giles, Amoco Production Company in Denver.

Q You are the same Mr. Giles who testified in the previous hearing in which Order No. R-4983 was granted are you not?

A I am.

Q Mr. Giles, you have testified before this Commission before have you not?

A Yes, sir.

Q And your qualifications have been admitted?

A Yes, sir.

MR. SWAN: May he be admitted?

MR. NUTTER: Yes, he is qualified.

BY MR. SWAN:

Q Now, let's get back to the Exhibit. What is Exhibit No. 1?

A Exhibit No. 1 is the structural contour map on

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SANTA FE, NEW MEXICO 87501
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top of the Penn "D" pay zone in Tocito Dome Field. The contour interval is at 10-foot intervals on this structure map and it shows a fault along the western boundary of the Penn "D" with about a 200-foot displacement and there is a fault also shown on the eastern side of the pool which has a tremendous throw of 2000 feet. We show by heavy dotted lines the boundaries of the different leaseholds in Tocito Dome, Mobil being in the north end of the field, Texaco in the south end, and Amoco essentially through the middle of the field. We show all the wells in the Penn "D" and their present status. Now, if I may I might just briefly --

Q (Interrupting) Before we leave that, was this Exhibit prepared by you or under your supervision?

A Under my supervision.

MR. SWAN: I would like to offer it at this time because I'm afraid I will forget it if I don't.

MR. NUTTER: Okay, Amoco Exhibit No. 1 may be admitted.

(Whereupon, Amoco's Exhibit
No. 1 was admitted into evidence.)

BY MR. SWAN:

Q Okay, proceed.

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SANTA FE, NEW MEXICO 87501
TEL. (505) 982-0386

A On June 13 we furnished Mr. Ramey of the Commission the full results of the 37-day injectivity test that was conducted during the time frame of April 4 to May 14, 1975. The purpose of that injectivity test was to determine the injectivity characteristics of the reservoir and see if the injection capacity of the existing lease-gas compressors was sufficient to allow us to go into a full-scale type of gas-injection program if found advisable in Tocito Dome, and we found both of these characteristics acceptable. The U-3 Well, which is one of the large arrows, it's in the SWSW of Section 16, 26 North, 18 West, was the injection well and it accepted 2-1/2 million cubic feet a day at 810 pounds and 5-1/2 million cubic feet a day at 960 pounds, certainly indicating to us that the wells in the Penn "D" Pool appear capable of accepting rates of gas injection that can be supplied by the existing Sales compression equipment in the field.

It's our desire now to conduct a 120-day gas injection test at Tocito in the Penn "D" Pool using the same well, U-3, also using N-12 to the northwest and also using N-6, if need be, to get the amount of gas that Amoco will have available for injection into the Penn "D" Pool. We will only use N-6 if we have to; we will certainly use

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N-12 and U-3, but we would like approval at this time to use all three wells at our discretion. The reason for this essentially as a four-month test is to observe in a more comprehensive fashion the reservoir-performance effect on adjacent producing wells. The reason for this is that when we had conducted the 37-day injectivity test we had one of our Sales compressors down and therefore we only had one or two wells -- offsetting wells -- on production. Now the Sales compressor has been repaired and we will have all the so-called down-dip wells on production. You will see with the five round dots we've labeled on Exhibit 1 key observation wells during this 120-day gas-injection test. We feel that these will be the critical wells -- that are two and three locations removed from the injection wells -- that will be monitored very closely as to their production and operating characteristics, and we will take at least weekly tests on each one of these key wells to just see what the effects of this four-month gas-injection test will be.

The object of the test is to get as much gas into the ground as possible and keep it there, and hopefully it won't all cycle. We did have some cycling problems on the 37-day test to Well U-14, which I have shown

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with a smaller arrow, as a well experiencing gas break-through. Frankly we are not too concerned with the break-through in the first well offsets; we've got a very permeable reservoir, gas is quite mobile, and we would expect break-through to the first well offsets, but we would expect the gas to stay in the reservoir more fully as it moves down structure, and this is what we are hoping to see at the five marked key wells.

Q Mr. Giles, unlike the previous proceeding before the Commission, we are in this case asking for continuation or modification of your project by administrative approval without a hearing. Would you explain a little bit why you think that is necessary in this case?

A Right. We may find at the end of the four-month gas-injection test period that we do not at that time have conclusive results and would want to continue it, and if that be the case we should like to ask at this time that the order entered as a result of this hearing allow us to come to you for administrative approval without need for a further hearing to extend the 120-day test. Now, as we pointed out in our application letter to you dated June 18th, 1975, only inconclusive test results would be the reason for requesting an extension of this four-month

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test time period. A change in injection wells or any expansion of the scope of this gas-injection test would not be a justifiable reason for requesting administrative approval.

Q Would it be Amoco's position that this administrative approval should only be granted if the other two concerned working-interest owners have no objection to the continuation? In other words, if they don't approve of it they can ask for a hearing.

A Right. At this time they have no objection to our request today to ask for it as part of the order.

Q But they would want to reserve the right at this time to ask for a hearing?

A Surely.

Q I think this may be in the record in previous matters, but the royalty here is all uniform; in other words, there is no problem of royalty owner's correlative rights here is there?

A No. The royalty ownership is solely the Navajo Indian Tribe.

Q And who are the working-interest owners?

A There are three: Mobil in the S/2 of Section 9 with two wells, Amoco in the heart of the field with a

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contiguous block of acreage, and Texaco with a contiguous block of acreage adjoining Amoco to the south of Amoco.

Q A question was asked before you began your testimony as to whether the other working interest owners had entered an appearance. Do you have anything from them; have you consulted with them with respect to this?

A Yes, we have, and we have a letter from Texaco saying that they have no objection to the Amoco request for a 120-day injectivity test -- a letter written to us on July 10 -- but in talking with them they could not justify attending the hearing during the midst of budget problems. You have a letter from Mobil.

MR. SWAN: I believe the Commission ought to have a copy of this in its file even though it is addressed to us. May I offer it at this time?

MR. NUTTER: Yes, sir.

MR. SWAN: We can have a copy made and withdraw it. I'll ask you to ignore Mr. Giles' notes on the margin; I don't know what they mean and I'm not sure that he does.

MR. GILES: They have great meaning.

MR. SWAN: They do?

(Whereupon, a discussion was held off the record.)

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MR. NUTTER: We'll identify it as Exhibit 2 in this case and we will make a copy of it, Mr. Giles, and block out your remarks here.

MR. GILES: No problem.

(Whereupon, Amoco's Exhibit No.

2 is marked for identification.)

MR. NUTTER: Exhibit 2 will be admitted into evidence.

(Whereupon, Amoco's Exhibit No.

2 is admitted into evidence.)

A I might add one thing to our testimony: Only Amoco gas will be injected into those three wells, U-3, N-12, and N-6, at this time, and up to 10-million cubic feet a day is what we anticipate would be injected. That is the gas we have available. We will, if we realize any gas cycling, we shall reinject the cycled gas so that there will be no flaring of gas by Amoco in this field during this test.

Q Mr. Giles, is it too early at this time to talk about the possibility of unitization in the event a full scale pressure maintenance is put in?

A Not really. The operators have had one meeting on unitization and have agreed essentially to begin the

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necessary work to develop unitization parameters to negotiate participation equity in this field. There is no way I can forecast when we might realize a unit here, but at least the spade work is being undertaken.

Q Of course you have no problem on unitizing the royalty; it already is unitized?

A Yes, sir.

Q So you have only the three working-interest owners. That's all I have.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Giles, did this reservoir originally have a primary gas cap in it?

A Yes, it did.

Q And was that gas cap in the vicinity of these injection wells?

A Yes. These three wells would lie on the eastern edge of the original gas cap area.

Q What is the purpose of the gas-injection program; to enhance recovery?

A Yes sir, it would be.

Q What in effect you'll be having would be an expanding gas cap, is that it?

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A That's right.

Q And so you do expect four rows of wells eventually to have experienced the gas break-through and be productive of gas, which you would continue to inject into the top of the structure?

A Yes, we would, exactly.

Q And ultimately then if this experiment is successful you would hope for unitization then of gas-injection programs for the field as a whole, is that right?

A That is correct. Now, it might be that we would come to you for approval of a full-scale gas-injection project a short while before we finally get unitization accomplished.

Q And at the time you had unitization or a full-scale project you would probably be seeking special rules to govern the project?

A Yes, sir, we would.

Q Transfer allowables and this and that?

A That is correct.

Q But at the present time you're not seeking anything except authority to inject gas in the reservoir?

A That's correct.

Q I see.

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MR. NUTTER: Are there any further questions of Mr. Giles? He may be excused. Do you have anything further, Mr. Swan?

MR. SWAN: No, sir.

MR. NUTTER: Does anyone have anything they wish to offer in this case?

MR. CARR: Mr. Examiner, the Oil Conservation Commission has received a letter from L.A. Davis, Area Operations Engineer, Mobil Oil Corporation in Midland. The letter states that "Mobil Oil Corporation as an offset operator of the subject lease and hereby waives any objection to the application of Amoco in Case 5525."

MR. NUTTER: Thank you Mr. Carr. Does anyone else have anything to offer in this case? We will take the case under advisement.

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STATE OF NEW MEXICO)
COUNTY OF SANTA FE) SS.

I, RICHARD L. NYE, Court Reporter, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Richard L. Nye
RICHARD L. NYE, Court Reporter

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 525 heard by me on July 16, 1975.
[Signature] Examiner
New Mexico Oil Conservation Commission

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Dockets Nos. 18-75 and 19-75 are tentatively set for hearing on July 30 and August 13, 1975. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - JULY 16, 1975

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM
STATE LAND OFFICE BUILDING - SANTA FE, NEW MEXICO

The following cases will be heard before Daniel S. Nutter, Examiner, or Richard L. Stamets, Alternate Examiner:

- ALLOWABLE:
- (1) Consideration of the allowable production of gas from seventeen prorated pools in Lea, Eddy, Roosevelt and Chaves Counties, New Mexico, for July, 1975;
 - (2) Consideration of the allowable production of gas from five prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico, for July, 1975.

CASE 5523: Application of Burleson & Huff for an unorthodox gas well location and simultaneous dedication, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to simultaneously dedicate a previously approved non-standard gas proration unit comprising the W/2 SW/4 and SE/4 SW/4 of Section 21, Township 25 South, Range 37 East, Jalmat Gas Pool, Lea County, New Mexico, to its Lanehart Well No. 1, located at a standard location for said unit, and its Well No. 3, located 2310 feet from the South line and 990 feet from the West line of said Section 21.

CASE 5524: Application of El Paso Natural Gas Company for a dual completion, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its San Juan 32-9 Unit Well No. 84, located in Unit N of Section 14, Township 31 North, Range 10 West, San Juan County, New Mexico, to produce gas from an undesignated San Jose pool through the casing-tubing annulus and gas from an undesignated Pictured Cliffs pool through tubing.

CASE 5525: Application of Amoco Production Company for amendment of Order No. R-4983, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Commission Order No. R-4983 to provide for the continuance of its pilot pressure maintenance project for its Navajo Tribal lease Well No. U-3, located in Unit M of Section 16, for a period of 120 days and to expand said project to include its Wells Nos. N-6 and N-12, located, respectively, in Units G and I of Section 17, all in Township 26 North, Range 18 West, Tocito Dome-Pennsylvanian "D" Oil Pool, San Juan County, New Mexico. Applicant further seeks an administrative procedure to extend the 120-day period without notice and hearing.

Mobil Oil Corporation

P.O. BOX 633
MIDLAND, TEXAS 79701

July 9, 1975

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

Attention: Mr. J. D. Ramey

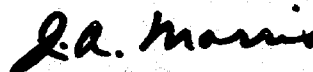
AMOCO PRODUCTION COMPANY
APPLICATION FOR AMENDMENT OF
ORDER NO. R-4983
PILOT PRESSURE MAINTENANCE
TOCITO DOME-PENNSYLVANIAN "D" OIL POOL
SAN JUAN COUNTY, NEW MEXICO

Gentlemen:

Mobil Oil Corporation has been informed of the application of Amoco Production Company, seeking the amendment of Commission Order No. R-4983 to provide for the continuance of its pilot pressure maintenance (by gas injection) project for its Navajo Tribal lease Well No. U-3, located in Unit M of Section 16, for a period of 120 days and to expand said project to include its Wells Nos. N-6 and N-12, located, respectively, in Units G and I of Section 17, all in Township 26 North, Range 18 West, Tocito Dome-Pennsylvanian "D" Oil Pool, San Juan County, New Mexico. Amoco further seeks an administrative procedure to extend the 120-day period without notice and hearing.

Mobil Oil Corporation, as an offset operator to the subject lease, hereby waives objection to this application.

Yours very truly,



L. A. Davis
Area Operations Engineer

REDejmal/1h
cc: Amoco, Denver
Texaco, Denver

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

P. O. BOX 2088 - SANTA FE

87501

August 13, 1975

Mr. Oscar Swan
Amoco Production Company
P. O. Box 591
Tulsa, Oklahoma 74102

Re: CASE NO. 5525
ORDER NO. R-4983-A

Applicant:

Amoco Production Company

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Yours very truly,


JOE D. RAMEY
Secretary-Director

JDR/fd

Copy of order also sent to:

Hobbs OCC	<u> x </u>
Artesia OCC	<u> </u>
Aztec OCC	<u> x </u>

Other R. E. Thompson

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. 5525
Order No. R-4983-A

APPLICATION OF AMOCO PRODUCTION
COMPANY FOR AMENDMENT OF ORDER
NO. R-4983, SAN JUAN COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on July 16, 1975, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 12th day of August, 1975, 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 by Order No. R-4983, dated March 11, 1975, the Commission authorized the applicant, Amoco Production Company, to conduct a limited gas injection test in the Tocito Dome-Pennsylvanian "D" Oil Pool, San Juan County, New Mexico, by the injection of produced gas into its Navajo Tribal "U" Well No. 3 and/or its Navajo Tribal "U" Well No. 8, located in Units M and F, respectively, of Section 16, Township 26 North, Range 18 West, NMPM.
- (3) That subsequent to the issuance of said Order No. R-4983, the applicant did conduct limited gas injectivity tests, in order to determine the injectivity characteristics of the reservoir and the injection capacity of existing lease gas compressors.
- (4) That during said tests, the injectivity characteristics of the reservoir and the capacity of the compressors were both found to be satisfactory.

Case No. 5525
Order No. R-4983-A

(5) That in order to further evaluate the feasibility of large scale gas injection in the subject reservoir, and to determine the reservoir performance effect on adjacent producing wells, the applicant, Amoco Production Company, seeks the amendment of Order No. R-4983 to permit further injectivity tests to be conducted for a period of 120 days, to provide for administrative extension of said 120-day period if necessary without notice and hearing, and to permit injection of gas into the Pennsylvanian "D" formation through two additional wells, applicant's Navajo Tribal "N" Wells Nos. 6 and 12, located in Units G and I, respectively, of Section 17, Township 26 North, Range 18 West, NMPM, as well as into one of the originally authorized gas injection wells, applicant's Navajo Tribal "U" Well No. 3, located in Unit M of Section 16, Township 26 North, Range 18 West, NMPM.

(6) That further gas injectivity testing is in the interest of conservation, might lead to the recovery of otherwise unrecoverable oil thereby preventing waste, will not violate correlative rights, and should be approved.

IT IS THEREFORE ORDERED:

(1) That the applicant, Amoco Production Company, is hereby authorized to conduct gas injectivity tests in the Tocito Dome-Pennsylvanian "D" Oil Pool, San Juan County, New Mexico, by the injection of produced gas into the Pennsylvanian "D" formation through its Navajo Tribal "N" Wells Nos. 6 and 12, located in Units G and I, respectively, of Section 17, Township 26 North, Range 18 West, NMPM and through its Navajo Tribal "U" Well No. 3, located in Unit M of Section 16, Township 26 North, Range 18 West, NMPM.

PROVIDED HOWEVER, that injection into the aforesaid wells shall be permitted only during the 120-day period following commencement of injection into any of said wells after the date of entry of this order.

PROVIDED FURTHER, that injection into each of said wells shall be through 2 7/8-inch tubing under a packer set within one hundred feet of the uppermost perforation, that the annulus shall be loaded with inhibited fluid, and that an approved leak detection device shall be attached to the annulus to determine leakage of the tubing or packer.

(2) That the operator shall notify the Aztec district office of the Commission and all operators in said Tocito Dome-Pennsylvanian "D" Pool of the date and time gas injection is to be commenced into each of the aforesaid wells.

(3) That the Secretary-Director of the Commission is hereby authorized to extend the 120-day injectivity test period for an additional 120 days upon proper showing by the applicant of the need for such extension, and in the absence of objection from any other operator in the Tocito Dome-Pennsylvanian "D" Oil Pool.

-3-

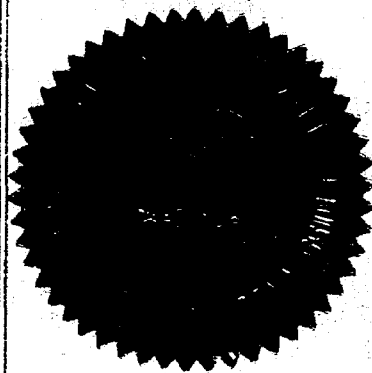
Case No. 5525

Order No. R-4983-A

(4) That upon completion of the gas injectivity tests, the operator shall file with the Aztec and Santa Fe Offices of the Commission a report setting out the pertinent details of the tests, including gas volumes and injection pressures.

(5) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

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



S E A L

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Phil R. Lucero

PHIL R. LUCERO, Member

Joe D. Raney

JOE D. RANEY, Member & Secretary

dr/



PETROLEUM PRODUCTS

PRODUCING DEPARTMENT
ROCKY MOUNTAINS-U.S.
DENVER DIVISION

July 10, 1975

TEXACO INC.
P. O. BOX 2100
DENVER, COLORADO 80201

Mr. V. D. Pierce
Amoco Production Co.
Security Life Building
Denver, Colorado 80202

Dear Mr. Pierce:

Please refer to your letters of June 23 and June 30, 1975 to J. C. White concerning the Tocito Dome Field, Penn "D" Pool, San Juan County, New Mexico.

NMOCC Hearing for 120 Day Gas Injection Test

fy → No objection will be offered at the hearing by Texaco representatives to the Amoco request for a 120 day injectivity test.

g. Fieldwide Unitization - Penn "D" Pool

Texaco representatives are prepared to join with Amoco and Mobil in an Engineering Committee to investigate unitization possibilities; however, any commitment to unitization would ultimately require Management approval which is premature at this stage.

Gas Injection Test Costs

get → We are not prepared at this time to commit to a sharing of the costs involved for the gas injection test.

ording
Matthews

Furnishing Penn "D" Produced Gas for the Injection Test

We are not prepared at this time to commit our Penn "D" produced gas to the 120-day gas injection test.

Ex 2
CA 5525

Mr. V. D. Pierce

-2-

July 10, 1975

Future correspondence regarding gas injection and unitization proposals should be addressed to me rather than Mr. White. ✓

We look forward to working on an Engineering Committee with Amoco and Mobil on the Penn "D" Pool.

Yours very truly,

R. H. Koerner / RSK

R. H. Koerner

AGM-JAH

cc: John D. Howard
Mobil Oil Corporation
Box 633
Midland, Texas 79701



Amoco Production Company

Security Life Building
Denver, Colorado 80202

AUG 30 1976

NEW MEXICO OIL CONSERVATION COMMISSION

August 26, 1976

Joe D. Ramey, Secretary-Director (3)
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

File: VDP-811-986.511

Case 5497 5525

Re: Order No. R-4983-A, Limited Gas Injection Test, Tocito Dome
Penn "D" Pool, San Juan County, New Mexico.

This refers to amended Order No. R-4983-A and your letters of January 26, 1976 and June 23, 1976 setting out provisions for continuing the gas injection test at Tocito Dome. The three months extension of the approved pilot test will expire August 27, 1976.

There continues to be no discernible evidence of an adverse nature since the total injection volume was reduced on March 20, 1976 from 1500 MCFD to 750 MCFD concurrent with shutting in one injection well, Navajo Tribal "U" No. 12. Injection has continued into Navajo Tribal "U" No. 7 at a rate since the end of May, 1976 not exceeding 1000 MCFD. So far, we are not able to see any measurable improvement in the performance of surrounding wells although we would like to think we may be seeing a leveling tendency the past couple of months in Amoco's total Navajo Tribal production decline curve. Additional time is needed under the current mode of operation to be sure, one way or another.

Where we are able to keep the gas in the Penn "D" reservoir that has been injected, and, in the expectation that the pilot gas injection program could lead to a successful secondary recovery gas injection project, it would seem prudent to continue the project without interruption to obtain more conclusive data to evaluate gas injection as an economical means to increase ultimate oil recovery from the Penn "D" reservoir. We plan to maintain the injection rate into the one injector, "U" No. 7, at a level not to exceed 1000 MCFD. Since no change has been observed in performance of the reservoir the past three months, we respectfully request your approval to extend the test for a period of time not to exceed six months beyond August 27, 1976.

All offset operators and the United States Geological Survey, since Tribal lands are involved, are being notified of this request by the certified mailing shown in the attached Verification and Affidavit

which is made a part of this application. We ask that each party waive objection to a six months continuation of this gas injection test by signing in the space provided below, sending one signed copy to you, one to Amoco, and retaining the third copy for their files. I ask that each party give this letter your earliest attention so that NMOCC approval can be provided within the next week or not too far into the requested extension period. Last time, the NMOCC was delayed for a month before all necessary waivers were received by them.

RB Giles

R. B. Giles

RBG/cd

cc: A. R. Kendrick, Supervisor, District No. 3, New Mexico Oil Conservation Commission, 1000 Rio Brazos Road, Aztec, New Mexico 87110.

I have no objection to Amoco's request to continue the limited gas injection test, for a period of time not to exceed six months beyond August 27, 1976, by injecting no more than 1000 MCFD into its Navajo Tribal "U" Well No. 7 in the Tocito Dome Field.

TEXACO, INC.

By: _____

Date: _____

MOBIL OIL CORPORATION

By: _____

Date: _____

UNITED STATES GEOLOGICAL SURVEY

By: _____

Date: _____

VERIFICATION AND AFFIDAVIT

STATE OF COLORADO)
 : SS
COUNTY OF DENVER)

R. B. Giles, of lawful age, being first duly sworn on his oath, deposes and says:

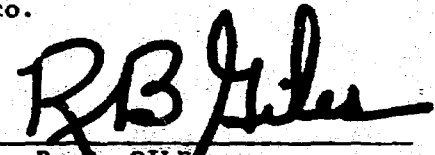
That he is employed in an engineering supervisory capacity by Amoco Production Company in its Denver, Colorado office; that the foregoing Application has been prepared under his supervision and direction; that the matters and things therein set forth are true and correct to the best of his knowledge and belief; and that a copy thereof was sent by certified mail from Applicant's Denver, Colorado office on August 26, 1976 to the following parties, at the address shown herein, to wit:

J. C. White
Texaco, Inc.
P. O. Box 2100
Denver, Colorado 80201

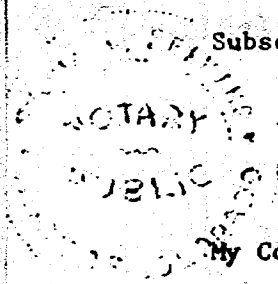
P. T. McGrath
U. S. Geological Survey
P. O. Box 965
Farmington, N. M. 87401

F. S. Wright, Jr.
Mobil Oil Corporation
P. O. Box 633
Midland, Texas 79701

and to the best of his information, knowledge and belief, the above named parties are the only persons to whom notice of such application is required to be given in accordance with Order No. R-4983-A of the Oil Conservation Commission, State of New Mexico.


R. B. GILES

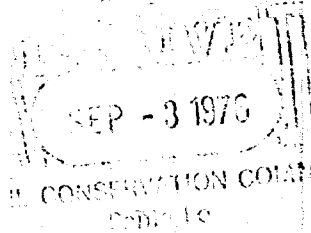
Subscribed and sworn to before me this 26th day of August, 1976.




NOTARY PUBLIC

My Commission expires:

My Commission Expires Aug. 15, 1980



Amoco Production Company
Security Life Building
Denver, Colorado 80202

August 26, 1976

Joe D. Ramey, Secretary-Director (3)
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

RECEIVED

SEP 1 1976

U. S. GEOLOGICAL SURVEY
FARMINGTON, N. M.

File: VDP-811-986.511

Re: Order No. R-4983-A, Limited Gas Injection Test, Tocito Dome
Penn "D" Pool, San Juan County, New Mexico.

This refers to amended Order No. R-4983-A and your letters of January 26, 1976 and June 23, 1976 setting out provisions for continuing the gas injection test at Tocito Dome. The three months extension of the approved pilot test will expire August 27, 1976.

There continues to be no discernible evidence of an adverse nature since the total injection volume was reduced on March 20, 1976 from 1500 MCFD to 750 MCFD concurrent with shutting in one injection well, Navajo Tribal "U" No. 12. Injection has continued into Navajo Tribal "U" No. 7 at a rate since the end of May, 1976 not exceeding 1000 MCFD. So far, we are not able to see any measurable improvement in the performance of surrounding wells although we would like to think we may be seeing a leveling tendency the past couple of months in Amoco's total Navajo Tribal production decline curve. Additional time is needed under the current mode of operation to be sure, one way or another.

Where we are able to keep the gas in the Penn "D" reservoir that has been injected, and, in the expectation that the pilot gas injection program could lead to a successful secondary recovery gas injection project, it would seem prudent to continue the project without interruption to obtain more conclusive data to evaluate gas injection as an economical means to increase ultimate oil recovery from the Penn "D" reservoir. We plan to maintain the injection rate into the one injector, "U" No. 7, at a level not to exceed 1000 MCFD. Since no change has been observed in performance of the reservoir the past three months, we respectfully request your approval to extend the test for a period of time not to exceed six months beyond August 27, 1976.

All offset operators and the United States Geological Survey, since Tribal lands are involved, are being notified of this request by the certified mailing shown in the attached Verification and Affidavit

USGS waiver

which is made a part of this application. We ask that each party waive objection to a six months continuation of this gas injection test by signing in the space provided below, sending one signed copy to you, one to Amoco, and retaining the third copy for their files. I ask that each party give this letter your earliest attention so that NMOCC approval can be provided within the next week or not too far into the requested extension period. Last time, the NMOCC was delayed for a month before all necessary waivers were received by them.

RB Giles

R. B. Giles

RBG/cd

cc: A. R. Kendrick, Supervisor, District No. 3, New Mexico Oil Conservation Commission, 1000 Rio Brazos Road, Aztec, New Mexico 87110.

I have no objection to Amoco's request to continue the limited gas injection test, for a period of time not to exceed six months beyond August 27, 1976, by injecting no more than 1000 MCFD into its Navajo Tribal "U" Well No. 7 in the Tociito Dome Field.

TEXACO, INC.

By: _____

Date: _____

MOBIL OIL CORPORATION

By: _____

Date: _____

UNITED STATES GEOLOGICAL SURVEY

By: *P. J. McLaughlin*

Date: *8-2-76*

VERIFICATION AND AFFIDAVIT

STATE OF COLORADO)
 : SS
COUNTY OF DENVER)

R. B. Giles, of lawful age, being first duly sworn on his oath, deposes and says:

That he is employed in an engineering supervisory capacity by Amoco Production Company in its Denver, Colorado office; that the foregoing Application has been prepared under his supervision and direction; that the matters and things therein set forth are true and correct to the best of his knowledge and belief; and that a copy thereof was sent by certified mail from Applicant's Denver, Colorado office on August 26, 1976 to the following parties, at the address shown herein, to wit:

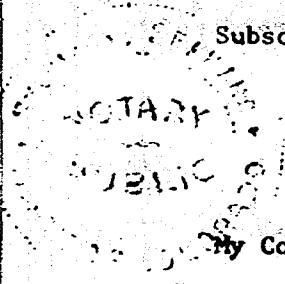
J. C. White	P. T. McGrath	F. S. Wright, Jr.
Texaco, Inc.	U. S. Geological Survey	Mobil Oil Corporation
P. O. Box 2100	P. O. Box 965	P. O. Box 633
Denver, Colorado 80201	Farmington, N. M. 87401	Midland, Texas 79701

and to the best of his information, knowledge and belief, the above named parties are the only persons to whom notice of such application is required to be given in accordance with Order No. R-4983-A of the Oil Conservation Commission, State of New Mexico.

RB Giles

R. B. GILES

Subscribed and sworn to before me this 26th day of August, 1976.



[Signature]

NOTARY PUBLIC

My Commission expires:

My Commission Expires Aug. 15, 1980

Mobil Oil Corporation

SEP 10 1976
THREE GREENWAY PLAZA EAST - SUITE 800
HOUSTON, TEXAS 77046
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe

September 7, 1976

*Examiner
Rutter*

Case 5525

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

Attn: Mr. J. D. Ramey

AMOCO PRODUCTION COMPANY
ORDER NO. R-4983-A
LIMITED GAS INJECTION TEST
TOCITO DOME PENN "D" POOL
SAN JUAN COUNTY, NEW MEXICO

Gentlemen:

Mobil Oil Corporation has been informed of Amoco's August 26th request to extend the gas injection period authorized by amended Order No. R-4983-A for an additional six months beyond the August 27, 1976 expiring date.

Mobil Oil Corporation, as an offset operator to the Amoco Navajo Tribal "U" Lease, does not object to a six month extension of the gas injection period into the Amoco Navajo Tribal "U" Well No. 7, at a rate not to exceed 1000 MCFD; provided, that prompt notification of any gas breakthrough is given and gas injection will be discontinued by the terms of the Commission's January 26, 1976 approval of the subject gas injection test.

Yours very truly,

J. A. Morris

J. A. Morris
Regulatory Engineering Supervisor

JAM: to

cc: Amoco, Denver
Texaco, Denver
USGS, Farmington
NMOCC, Aztec

Mobil waiver



Amoco Production Company

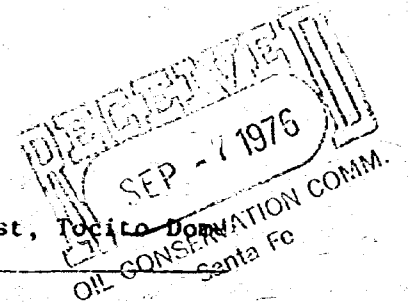
Security Life Building
Denver, Colorado 80202

August 26, 1976

Joe D. Ramey, Secretary-Director (3)
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

File: VDP-811-986.511

Re: Order No. R-4983-A, Limited Gas Injection Test, Tocito Dome
Penn "D" Pool, San Juan County, New Mexico.



This refers to amended Order No. R-4983-A and your letters of January 26, 1976 and June 23, 1976 setting out provisions for continuing the gas injection test at Tocito Dome. The three months extension of the approved pilot test will expire August 27, 1976.

There continues to be no discernible evidence of an adverse nature since the total injection volume was reduced on March 20, 1976 from 1500 MCFD to 750 MCFD concurrent with shutting in one injection well, Navajo Tribal "U" No. 12. Injection has continued into Navajo Tribal "U" No. 7 at a rate since the end of May, 1976 not exceeding 1000 MCFD. So far, we are not able to see any measurable improvement in the performance of surrounding wells although we would like to think we may be seeing a leveling tendency the past couple of months in Amoco's total Navajo Tribal production decline curve. Additional time is needed under the current mode of operation to be sure, one way or another.

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All offset operators and the United States Geological Survey, since Tribal lands are involved, are being notified of this request by the certified mailing shown in the attached Verification and Affidavit

Texaco waiver

which is made a part of this application. We ask that each party waive objection to a six months continuation of this gas injection test by signing in the space provided below, sending one signed copy to you, one to Amoco, and retaining the third copy for their files. I ask that each party give this letter your earliest attention so that NMOCC approval can be provided within the next week or not too far into the requested extension period. Last time, the NMOCC was delayed for a month before all necessary waivers were received by them.

RB Giles

R. B. Giles

RBG/cd

cc: A. R. Kendrick, Supervisor, District No. 3, New Mexico Oil Conservation Commission, 1000 Rio Brazos Road, Aztec, New Mexico 87110.

I have no objection to Amoco's request to continue the limited gas injection test, for a period of time not to exceed six months beyond August 27, 1976, by injecting no more than 1000 MCFD into its Navajo Tribal "U" Well No. 7 in the Tocito Dome Field.

TEXACO, INC.

By: *J. C. Anderson*
Date: *9/11/76*

MOBIL OIL CORPORATION

By: _____
Date: _____

UNITED STATES GEOLOGICAL SURVEY

By: _____
Date: _____

VERIFICATION AND AFFIDAVIT

STATE OF COLORADO)
 : SS
COUNTY OF DENVER)

R. B. Giles, of lawful age, being first duly sworn on his oath, deposes and says:

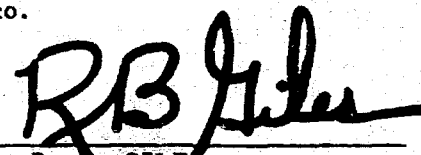
That he is employed in an engineering supervisory capacity by Amoco Production Company in its Denver, Colorado office; that the foregoing Application has been prepared under his supervision and direction; that the matters and things therein set forth are true and correct to the best of his knowledge and belief; and that a copy thereof was sent by certified mail from Applicant's Denver, Colorado office on August 26, 1976 to the following parties, at the address shown herein, to wit:

J. C. White
Texaco, Inc.
P. O. Box 2100
Denver, Colorado 80201

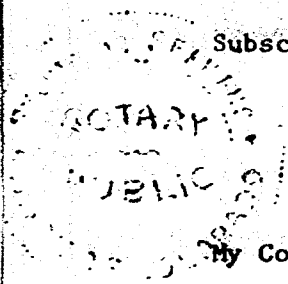
P. T. McGrath
U. S. Geological Survey
P. O. Box 965
Farmington, N. M. 87401

F. S. Wright, Jr.
Mobil Oil Corporation
P. O. Box 633
Midland, Texas 79701

and to the best of his information, knowledge and belief, the above named parties are the only persons to whom notice of such application is required to be given in accordance with Order No. R-4983-A of the Oil Conservation Commission, State of New Mexico.


R. B. GILES

Subscribed and sworn to before me this 26th day of August, 1976.




NOTARY PUBLIC

My Commission expires:

My Commission Expires Aug. 15, 1980

DRAFT

dr/ DSN

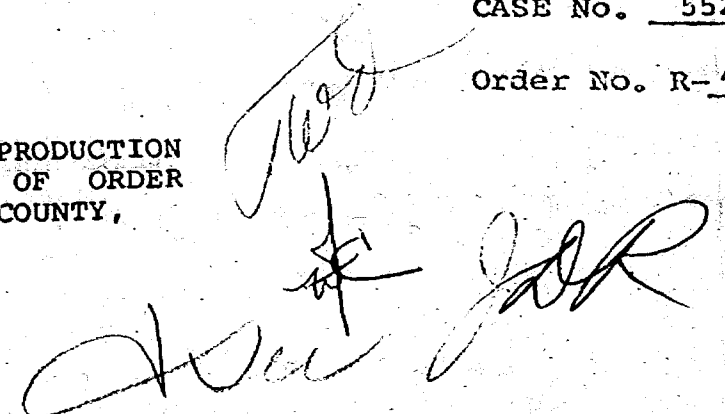
BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 5525

Order No. R-4983-A

APPLICATION OF AMOCO PRODUCTION
COMPANY FOR AMENDMENT OF ORDER
NO. R-4983, SAN JUAN COUNTY,
NEW MEXICO.


ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on July 16, 1975,
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this day of August, 1975, 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 by Order No. R-4983, dated March 11, 1975, the
Commission authorized the applicant, Amoco Production Company,
to conduct a limited gas injection test in the Tocito Dome-
Pennsylvanian "D" Oil Pool, San Juan County, New Mexico, by the
injection of produced gas into its Navajo Tribal "U" Well No. 3
and/or its Navajo Tribal "U" Well No. 8, located in Units M and F,

-2-
Case No. 5525
Order No. R-4983-A

respectively, of Section 16, Township 26 North, Range 18 West, NMPM.

(3) That subsequent to the issuance of said Order No. R-4983, the applicant did conduct limited gas injectivity tests, in order to determine the injectivity characteristics of the reservoir and the injection capacity of existing lease gas compressors.

(4) That during said tests, the injectivity characteristics of the reservoir and the capacity of the compressors were both found to be satisfactory.

(5) That in order to further evaluate the feasibility of large scale gas injection in the subject reservoir, and to determine the reservoir performance effect on adjacent producing wells, the applicant, Amoco Production Company, seeks the amendment of Order No. R-4983 to permit further injectivity tests to be conducted for a period of 120 days, to provide for administrative extension of said 120-day period if necessary without notice and hearing, and to permit injection of gas into the Pennsylvanian "D" formation through two additional wells, applicant's Navajo Tribal "N" Wells Nos. 6 and 12, located in Units G and I, respectively, of Section 17, Township 26 North, Range 18 West, NMPM, as well as into one of the originally authorized gas injection wells, applicant's Navajo Tribal "U" Well No. 3, located in Unit M of Section 16, Township 26 North, Range 18 West, NMPM.

(6) That further gas injectivity testing is in the interest of conservation, might lead to the recovery of otherwise unrecoverable oil thereby preventing waste, will not violate correlative rights, and should be approved.

IT IS THEREFORE ORDERED:

(1) That the applicant, Amoco Production Company, is hereby authorized to conduct gas injectivity tests in the Tocito Dome-Pennsylvanian "D" Oil Pool, San Juan County, New Mexico, by the injection of produced gas into the Pennsylvanian "D" formation through its Navajo Tribal "N" Wells Nos. 6 and 12, located in Units G and I, respectively, of Section 17, Township 26 North, Range 18 West, NMPM and through its Navajo Tribal "U" Well No. 3, located in Unit M of Section 16, Township 26 North, Range 18 West, NMPM.

PROVIDED HOWEVER, that injection into the aforesaid wells shall be permitted only during the 120-day period following commencement of injection into any of said wells after the date of entry of this order.

PROVIDED FURTHER, that injection into each of said wells shall be through 2 7/8-inch tubing under a packer set within one hundred feet of the uppermost perforation, that the annulus shall be loaded with inhibited fluid, and that an approved leak detection device shall be attached to the annulus to determine leakage of the tubing or packer.

(2) That the operator shall notify the Aztec district office of the Commission and all operators in said Tocito Dome-Pennsylvanian "D" Pool of the date and time gas injection is to be commenced into each of the aforesaid wells.

(3) That the Secretary-Director of the Commission is hereby authorized to extend the 120-day injectivity test period for an additional 120 days upon proper showing by the applicant of the need for such extension, and in the absence of objection from any other operator in the Tocito Dome-Pennsylvanian "D" Oil Pool.

(4) That upon completion of the gas injectivity tests, the operator shall file with the Aztec and Santa Fe Offices of the Commission a report setting out the pertinent details of the tests, including gas volumes and injection pressures.

(5) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe - - - - -