Case Number 6011

Application

Transcripts.

Small Exhibits

ETC.

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
31 August 1977

EXAMINER HEARING

IN THE MATTER OF:

Application of Tenneco Oil Company for downhole commingling, Rio Arriba County, New Mexico.

CASE 6011

BEFORE: Daniel S. Nutter.

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the New Mexico Oil Conservation Commission: Lynn Teschendorf, Esq.
Legal Counsel for the Commission
State Land Office Building
Santa Fe, New Mexico

For the Applicant: W. Thomas Kellahin, Esq.
KELLAHIN & FOX
500 Don Gaspar
Santa Fe, New Mexico

I N D E X

TOM BOYCE

E X H I B I T S

MR. NUTTER: We'll call next Case Number 6011.

MS. TESCHENDORF: Case 6011. Application of Tenneco Oil Company for downhole commingling, Rio Arriba County, New Mexico.

MR. KELLAHIN: Tom Kellahin of Kellahin and Fox, appearing on behalf of the Applicant, and I have one witness to be sworn.

(Witness sworn.)

TOM BOYCE

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Would you please state your name, by whom you're employed, and in what capacity?

A. My name is John Thomas Boyce. I'm employed by Tenneco Oil Company in Denver as a Production Engineer.

Q. Mr. Boyce, have you previously testified before the Commission?

A. No, sir, I haven't.

Q. Would you briefly summarize for the Examiner when and where you obtained your degree?

A. Yes, sir, I got my degree in mechanical engineering

from University of Arizona in Tucson.

Q. In what year?

A. 1974.

Q. Since graduation where and when have you been employed and in what capacity?

A. I worked for Texaco for approximately two and a half years in California as Production Engineer. I then was hired by Tenneco Oil Company and I've been working in the San Juan Basin area for the year that I've been employed with them.

Q. Is the subject matter of the present application on behalf of Tenneco within your area of expertise and responsibility?

A. Yes, sir, I believe it is.

Q. And have you made a study of the facts surrounding this particular application?

A. Yes, I have.

MR. KELLAHIN: If the Examiner please, are the witness' qualifications acceptable?

MR. NUTTER: Yes, they are.

Q. Mr. Boyce, would you refer to what we have marked as Exhibit Number 1 and identify it?

A. Yes, sir. This is a map of the -- showing Dakota and Mesaverde completions in the area surrounding Tenneco's producing acreage. Tenneco's acreage is enclosed by cross

hatched lines. The wells spotted in yellow -- there should be seven of them -- are the wells that this case concerns.

Q. Would you on a well-by-well basis at this point identify for me those wells in which the Commission records reflect the dual completion numbers?

A. Yes, sir. There's our Jicarilla A No. 1 Well in Section 18, Unit L, Township 26 North, 5 West, was authorized to be dually completed by Commission Order Number MC-1135.

Our Jicarilla B No. 8 Well in Section 15, Township 26 North, Range 5 West, Unit B, was authorized to be dually completed by Order Number MC-1773.

Our Jicarilla C-4 Well, Section 24, Township 26 North, Range 5 West, Unit F, was authorized for dual completion, Number MC-1744.

Our Jicarilla C-5 Well does not reflect a Commission commingling order number.

MR. NUTTER: Was that dual completion?

A. That's correct. The Jicarilla 6 Well, C-6 Well, in Section 14, 26 North, 5 West, Unit F, was authorized to be dually completed by Order MC-1758.

We could not find a Commission order number authorizing dual completion in our Jicarilla C No. 7 Well. It's located in Section 13, Township 26 North, Range 5 West, Unit M.

Our Jicarilla C No. 8 Well, located in Section 13,

Township 26 North, 5 West, Unit E, was authorized to be dually completed by Order Number MC-1756.

Q. All those wells indicated on Exhibit 1 and identified by the yellow code, you are seeking authority to downhole commingle which two zones?

A. The Basin Dakota Formation and the Blanco-Mesaverde.

Q. All right. Would you please refer to what we have marked as Exhibit Number 2 and identify it?

A. Yes, sir, this is a downhole schematic of each of the wells in question. You can see here that they're all completed very similarly with a packer and a single string of tubing. In each case the Dakota produces up the 2-3/8ths inch tubing and the Mesaverde produces up the casing tubing annulus.

Q. What is your reason for seeking permission to downhole commingle these two zones?

A. In this area, the Mesaverde seems to be fairly wet. It produces a relatively large amount of oil and some condensate. The problem that has developed is that as the production rate has declined the wells can no longer unload fluid satisfactorily from the annulus.

We're requesting permission to open a sliding sleeve located just above the packer in the tubing string and commingle the gas streams up the tubing, hoping to increase the fluid removal effectiveness.

Q. Would you please refer to what we've marked Exhibit Number 3 and identify it?

A. Yes, these are production curves on the wells by zone. In each case the Mesaverde is the first production shown followed by the Basin Dakota.

The solid line is gas production; the dashed line is condensate production.

Q. Would you select one of these particular production curves for a specific well and indicate to the Examiner what will be the effect if downhole commingling is not approved?

A. Yes. Mr. Examiner, if you will refer to the last curve and that's on Jicarilla C No. 8 Well to the Blanco Mesaverde curve. You'll see that production was declining at a fairly steady rate for about three years after the well was completed and then we began seeing further and further variations in the production rate due to the well beginning to load up and choking down, then unloading itself and going ahead and producing.

Well, this problem has become more and more acute as our production level has decreased. Currently we've dropped way down on our production. It's been almost a stepwise drop that we saw in 1973 where -- I think we got to the point where we were holding a steady fluid level above the perforations that could not be unloaded.

MR. NUTTER: I want to be sure I understand what

volumes you're talking about here. These are monthly totals of McF.

A. That's correct.

MR. NUTTER: So we'll take this well right here and during January of 1977 it appears it produced 20,000 McF, is that correct?

A. Sir, that would be 2000.

MR. NUTTER: 2000, 2000 McF, okay. We're talking the same figures, then.

A. Yeah.

Q. To continue, Mr. Boyce, will approval of this application result in the recovery of additional production that might otherwise be left?

A. Yes, sir. What we have done is extended our present production decline rate to dual production. In each case we've assumed that the Dakota will continue to make the well economic and it will take Mesaverde production as we can get it.

The -- what we have done to derive a number to assign for reserves is draw a line through the peaks of the production, which would represent the well in a relatively unloaded state as compared with a line through the central part of the production curve that would indicate our present decline rate. Then on that we based reserve figures.

Q. All right, let me ask you one further question

about Exhibit Number 3.

Is the exhibit for the Jicarilla C - 8 typical of the other six wells for which you've asked downhole commingling?

A. Yes, sir, it is. The Jicarilla B No. 8 Well is not quite as severely affected by fluid loading as the others are but I feel that it's a matter of time that it will soon develop the same sort of problems. It is presently producing oil in its present state but I'm sure I don't know how long that will continue to be the case.

Q. Now, you've mentioned your estimates of reserves, calculations that you have demonstrated from Exhibit Number 3. Would you refer now to Exhibit Number 4 and identify that?

A. Yes, it's a tabulation of the reserves we derived from this method of extrapolating production in the Mesaverde.

MR. NUTTER: This is all Mesaverde, now, Exhibit 4.

A. That's correct, yes, sir.

Q. What conclusion do you reach based upon this exhibit?

Q. Well, I conclude that we will be wasting somewhere in the neighborhood of 350-million cubic feet of gas unless we are allowed to unload the Mesaverde by commingling.

Q. Please refer to Exhibit Number 5 and identify that.

A. Yes, sir, this is a summary of shut-in pressures from the State Deliverability Tests for each formation and each well since it was completed.

Q. And what conclusion do you reach from this exhibit?

A. I conclude that the formation pressures are relatively the same. In some cases there has been a difference larger than 250 pounds shown as a surface shut-in, but I attribute this mainly to a depression of the Mesaverde Formation pressure by fluid loading.

Q. Is it your opinion that the pressure difference between the two zones is variable but in most general circumstances does not exceed 200 pounds?

A. Yes, sir, that would be correct.

Q. In your opinion, Mr. Boyce, will there be any cross flow between the two zones?

A. No, I don't feel that there will be. The zones will be producing into a pipeline of significantly lower pressure than the formation pressure in either zone. The wells should not be shut-in for any appreciable length of time and they should be produced to depletion in this commingled form.

Q. Please refer to what we've marked as Exhibit Number 6 and identify it.

A. Yes, sir, this is an analysis of compatibility of the produced water from each formation. You can see here the summary of findings I think could be pretty well covered in the last statement on the bottom of the first page. The waters were mixed in various ratios and were -- had a stability index run on them to indicate whether they were -- had scaling tendencies and in this case they all showed negative scaling tendencies, which would indicate they are more corrosive than scaling. They were watched for a period of six days after being mixed. There was no precipative formed.

Q. Please refer to Exhibit Number 7 and identify it.

A. Yes, sir, it is a gas analysis from Basin Dakota and Blanco Mesaverde Pools in a well nearby which did have a similar gas composition. As you can see, they are quite similar. Currently the gas is commingled in a pipeline after metering. I don't think there's a significant difference in the hydrocarbons to warrant any concern about commingling.

Q. What pipeline takes this gas?

A. Northwest Pipeline takes gas from all except for our Jicarilla A No. 1 Well, which is sold to Gas Company of New Mexico.

Q. Does the pipeline, to your knowledge, commingle the Mesaverde and the Dakota gas in the pipeline?

A. Yes, it does.

Q. Please refer to Exhibit Number 8 and identify it.

A. Yes. This is what we propose as a production split between the two zones based on past production performance. We have extrapolated the production curve to September of 1977, taken that rate in each case for the Mesaverde and Dakota and based our split on that ratio of rates. The Mesaverde Formation, by the way, is what we estimate it will produce in an unloaded state.

The Jicarilla C No. 4 and C No. 5 Wells are not currently producing from the Mesaverde. The C - 4 produced approximately a year loaded up and could not be unloaded.

The C-5 never produced commercially and was never even hooked to the pipeline.

For these wells we propose commingling and basing our production split on our known Dakota production and the incremental production that we see after commingling.

MR. NUTTER: Are they both producing from the Dakota at the present time?

A. Yes, they are, sir.

Q. Do you have a recommendation as to what percentage split ought to be made between the Dakota and Mesaverde for all these wells? Is there a uniform percentage you can recommend?

A. I think probably on the order of 30 to 70 percent would be roughly adequate, although in some -- in a couple

of the wells I don't believe that would be accurate. I'd propose that we split each well individually.

Q. In accordance with the recommendations made on Exhibit 8?

A. That's correct.

Q. All right, sir. In fact, that won't make any difference, will it, if the ownership is the same in them both?

A. That's true.

Q. Would you refer to Exhibit Number 9 and identify it?

A. Yes, Exhibit 9 is a tabulation of the working interests in the two zones; a statement that there is no overriding royalty on either zone; and a -- in the extreme righthand column we list the purchaser. In each case the purchaser from each zone for a given well is the same.

Q. And would you identify Exhibit Number 10?

A. Yes. This is an individual well test on each formation showing gas rate, water production, and oil production.

Q. In your opinion, Mr. Boyce, will approval of this application be in the best interests of conservation, the prevention of waste, and the protection of correlative rights?

A. Yes, it would.

Q. And were Exhibits 1 through 10 prepared by you directly or compiled under your direction and supervision?

A Yes, they were.

MR. KELLAHIN: I would move the introduction of Exhibits 1 through 10.

MR. NUTTER: Tenneco Exhibits 1 through 10 will be admitted in evidence.

MR. KELLAHIN: That concludes our examination.

CROSS EXAMINATION

BY MR. NUTTER:

Q. Mr. Boyce, looking at your last exhibit here, Number 10, it appears that when you tested the Blanco-Mesaverde in each case you had zero oil and just a small amount of water, and yet the tests on the Basin Dakota the wells all made considerably more water than the Mesaverde, and also some oil. So there were a lot more liquids produced from the Basin Dakota than there are from the Mesaverde, is that right?

A. Yes, that is what appears at the surface. I would -- I believe is happening here and we have run fluid level shots and seen approximately 1000 foot of fluid in the annulus, and I believe we just don't have sufficient gas rate to -- to lift the fluids. It's mainly just laying there in the annulus and the gas is bubbling through it bringing a lightness to the surface.

Q. In other words, what our problem is here is a

dual completion in which the upper zone is producing through the annulus and the annulus is not a very efficient flowing medium for any gas that has any liquids in it. Is that really what is going on here?

A. That's correct. It has low friction, of course, because it's a large cross sectional area but it just does not effectively lift fluids, not at the low production rates that we're seeing in these wells.

Q. And this Mesaverde would be more efficiently produced if it had a string of tubing in it, wouldn't it?

A. Yes, the problem with that is that these wells are all completed with a small casing --

Q. I can see that, yeah, so you've got yourself into a bind here by saving so much money on pipe, it looks like.

A. Sort of looks that way.

Q. Now, in making your estimates for determining the production from each of these two zones if you were to commingle them, you have taken these curves here and extrapolated through 1977, is that right?

A. Yes, sir, I have.

Q. You haven't taken them to the economic limit?

A. I took them to economic limit to come up with my reserve figures. I -- the through 1977 was how I derived my production split. I took the current -- I would take -- I took the extrapolated rate in September of '77 for each

formation and --

Q. Well, our production split would be good for 1977 then but it wouldn't be good for the life of the well.

A. They -- both zones are declining albeit at a different rate, slightly. About the only way a constant ratio could be applied would be, I suppose, to take a point midway along in the production decline between present production and economic limit and base our split on -- on --

Q. Now, Exhibit Number 4 was an estimate of reserves in the Mesaverde but you didn't have any similar exhibit for the Dakota, so we don't have any way of comparing reserves in Dakota with reserves in Mesaverde to get a split on the basis of reserves, do you?

A. Well, our -- I have spoken with our reservoir engineering department and the way that they derived -- or the way they feel is most reliable for reserves in each formation is based on production decline curve extrapolated out to economic limit, so I ran it out under both cases and they were similar, splitting either by reserves based on production decline or by rate based on production decline.

Q. Could you when you get home prepare a chart similar to what is shown here on Exhibit 4 and show us what the estimated reserves for the Basin Dakota zone would be?

A. Yes, sir, I could.

Q. Now you'll have that on all seven wells, whereas

you have the reserves for the Mesaverde only on -- we've got six wells. You depended on one, I think.

A. Right.

Q. That first well that produced only a year and has been shut in.

A. Yeah, we would still be in question on the C - 5 Well, which never produced commercially and the C - 4 Well which died so quickly that I would wonder if how really correct we would be.

Q. Okay, well, if you could get that information for us, we'd appreciate it.

A. Okay.

Q. Now on these shut-in pressures that you show on Exhibit 5, these are deliverability shut-in pressures, and those were taken after seven days of shut-in, were they?

A. That's correct.

Q. And the Mesaverde had had a chance to load up with fluids in that period of time.

A. Yes, it had, if it wasn't loaded up already.

Q. And you attribute the difference or the differential of pressure in some cases to the fluids in the wellbore, then.

A. Yes, sir, I do.

Q. How can you tell if there is a differential whether it's coming from differential in reservoir or formation

pressures or a differential resulting from fluids in the wellbore?

A. I suppose we could run a sonic fluid level shot in each well. We didn't do that at the time of these shut-in pressures. Of course, this was just a summary of our deliverability shut-ins. The Aztec Office advised us that that would be sufficient for this case.

Q. Well, I'm not sure if it is. When we have a substantial differential, it's hard to determine what that differential is resulting from.

We have this A - 1 pressure on one zone 571 compared to 829; the B - 8 is similar; C - 4 has a differential of 495 to 738; C - 5 is similar; the C - 6 is just about 100 pounds, a little less than 100. You have a 300 pound differential on the C - 7 and 253 pound differential on the C - 8. How much of the differential we can attribute to fluids, how much may be an actual formation differential.

Are there any further questions of this witness?

He may be excused. Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: No, sir.

MR. NUTTER: Does anyone have anything they wish to offer in Case 6011?

We'll take the case under advisement and the hearing is adjourned.

REPORTER'S CERTIFICATE

I, SIDNEY F. MORRISH, a Certified Shorthand 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.

Sidney F. Morrish, C.S.R.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 6011, heard by me on 8/31, 1977.

New Mexico Oil Conservation Commission, Examiner

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
17 August, 1977

EXAMINER HEARING

IN THE MATTER OF:

Application of Tenneco Oil Company For downhole commingling, Rio Arriba County, New Mexico.

CASE 6011

BEFORE: Richard L. Stamets.

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the New Mexico Oil Conservation Commission: Lynn Teschendorf, Esq.
Legal Counsel for the Commission
State Land Office Building
Santa Fe, New Mexico

For the Applicant: W. Thomas Kellahin, Esq.
KELLAHIN & FOX
500 Don Gaspar
Santa Fe, New Mexico

MR. STAMETS: Call next Case 6011.

MS. TESCHENDORF: Case 6011. Application of Tenneco Oil Company for downhole commingling, Rio Arriba County, New Mexico.

MR. KELLAHIN: Tom Kellahin of Kellahin & Fox, appearing on behalf of the Applicant, and we'd also like this case continued to the Examiner Hearing on August 31st.

MR. STAMETS: Case 6011 will be so continued.

(Hearing concluded.)

REPORTER'S CERTIFICATE

I, SIDNEY F. MORRISH, a Certified Shorthand 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.

Sidney F. Morrish, C.S.R.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 6011, heard by me on 8-12, 1977.

Richard L. Stamets, Examiner
New Mexico Oil Conservation Commission

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

JERRY APODACA
GOVERNOR

NICK FRANKLIN
SECRETARY

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

December 4, 1978

Case 6011

Mr. O. D. Myers
Tenneco Oil Company
720 South Colorado Blvd.
Denver, Colorado 80222

File
Case 6011

Re: Order R-5707, Downhole Commingling
Jicarilla C #5
I-24-26N-5W

Dear Mr. Myers:

We hereby agree to the production split for the above well as follows:

60% gas - Dakota
40% gas - Mesaverde
100% Oil - Dakota

If you have any questions, please contact this office.

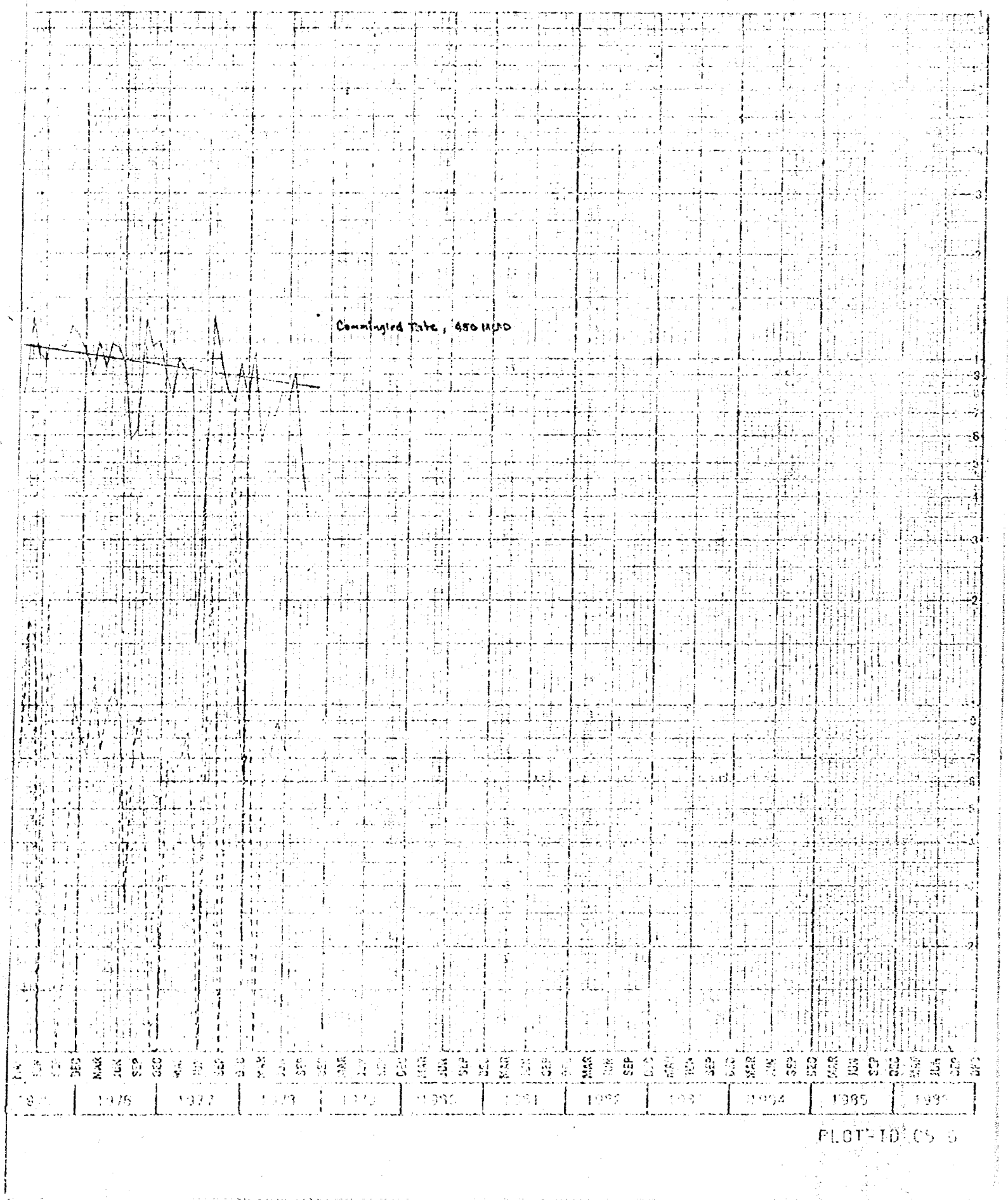
Yours truly,

Frank T. Chavez
Deputy Inspector

xc: Oil Conservation Division, Santa Fe
Northwest Pipeline Corporation
Plateau, Inc.

FTC:no

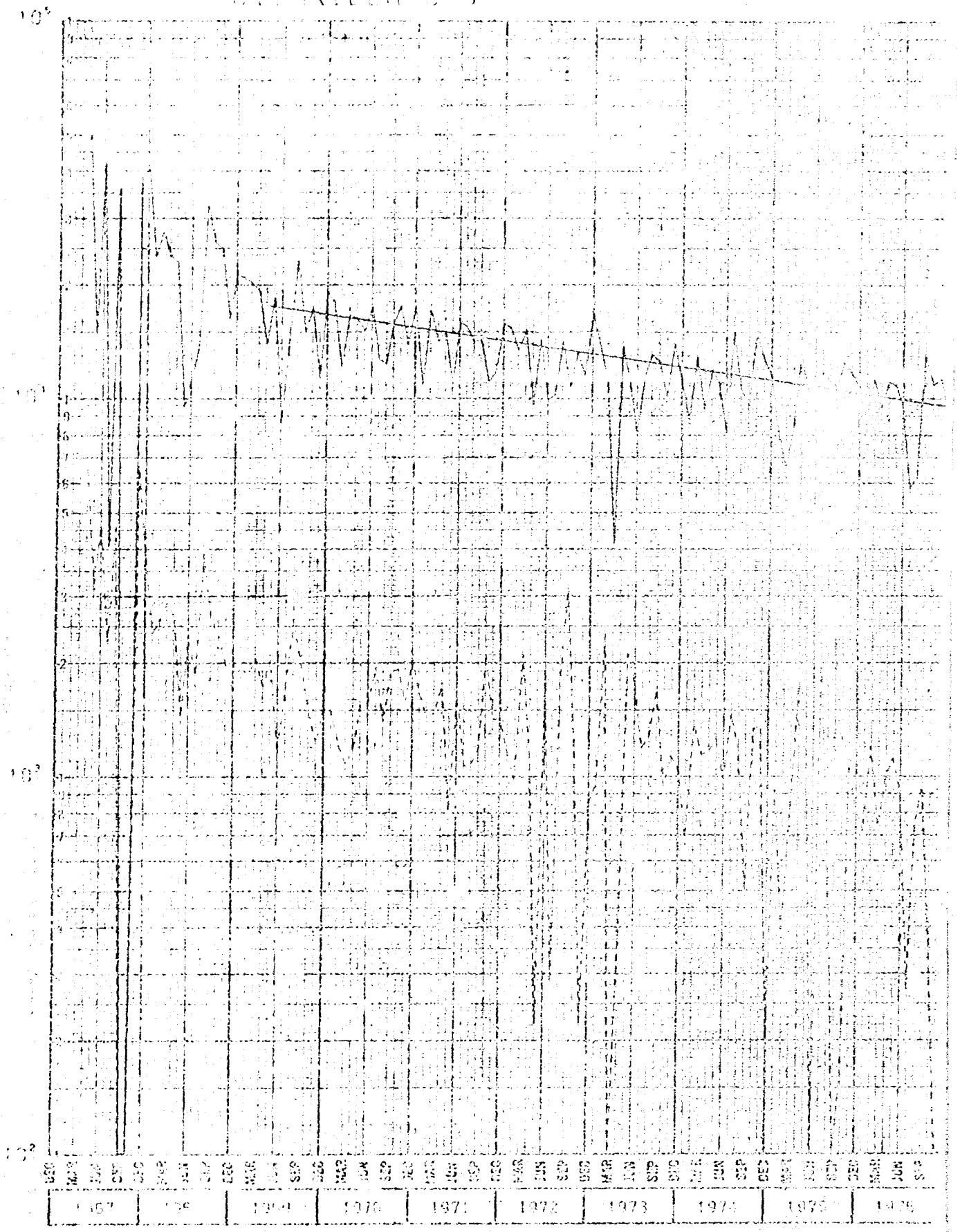
ENNEGO OIL CO



PLOT-ID: CS 6

BASIN DAKOTA

TENNECO



OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 · SANTA FE
87501

DIRECTOR
JOE D. RAMEY

LAND COMMISSIONER
PHIL R. LUCERO

STATE GEOLOGIST
EMERY C. ARNOLD

April 19, 1978

Mr. Tom Kellahin
Kellahin & Fox
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

Re: CASE NO. 6011
ORDER NO. R-5707

Applicant:

Tenneco Oil 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
Director

JDR/fd

Copy of order also sent to:

Hobbs OCC x
Artesia OCC x
Aztec OCC x

Other

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. 6011
Order No. R-5707

APPLICATION OF TENNECO OIL COMPANY
FOR DOWNHOLE COMMINGLING,
RIO ARRIBA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on August 31, 1977, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 18th day of April, 1978, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Tenneco Oil Company, is the owner and operator of the Jicarilla "A" Well No. 1 in Unit L of Section 18, "B" Well No. 8 in Unit B of Section 15, "C" Wells Nos. 4, 5, 6, 7, and 8, located, respectively, in Units F and I of Section 24, F of Section 14, and M and E of Section 13, all in Township 26 North, Range 5 West, NMPM, Rio Arriba County, New Mexico.

(3) That the applicant seeks authority to commingle Blanco Mesaverde and Basin-Dakota production within the wellbore of the above-described wells.

(4) That of the aforesaid wells, the Jicarilla "A" Well No. 1, "B" Well No. 8, and "C" Wells Nos. 6, 7, and 8 are of low productivity in either one or both of the aforesaid Blanco Mesaverde and Basin-Dakota Pools.

(5) That the Jicarilla "C" Wells Nos. 4 and 5 are at present producing from the Basin-Dakota Pool only, but are expected to be of low productivity in the Blanco Mesaverde Pool.

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

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

(8) That to afford the Oil Conservation Division of the New Mexico Energy and Minerals Department the opportunity to assess the potential for waste and to expeditiously order appropriate remedial action, the operator should notify the Aztec office of the Division any time the subject wells are shut-in for 7 consecutive days.

(9) That in order to allocate the commingled production to each of the commingled zones in the subject wells, 98 percent of the gas production in Well No. A-1, 35 percent of the production in Well No. B-8, 40 percent of the production in Well No. C-6, and 80 percent of the production in both Well No. C-7 and Well No. C-8 should be attributed to the Dakota formation, and the remainder of the gas production in each well should be attributed to the Mesaverde formation. All liquid hydrocarbons should be attributed to the Dakota formation in each well.

(10) That during completion operations on Wells Nos. C-4 and C-5, the applicant should conduct productivity and pressure tests of each of the zones to be commingled, and should consult with the supervisor of the Division's Aztec office to determine an allocation formula for each of said wells.

(11) That the Division Director should have the authority to rescind the commingling authority herein granted for said Wells Nos. C-4 and C-5 in the event said productivity tests indicate non-marginal production from either or both of the commingled zones in said wells, or in the event the pressure differential between the commingled zones is of such magnitude as to possibly cause waste.

IT IS THEREFORE ORDERED:

(1) That the applicant, Tenneco Oil Company, is hereby authorized to commingle Blanco Mesaverde and Basin-Dakota production within the wellbores of the Jicarilla "A" Well No. 1 in Unit L of Section 18, "B" Well No. 8 in Unit B of Section 15, "C" Wells Nos. 4, 5, 6, 7 and 8, located, respectively, in Units F and I of Section 24, F of Section 14, and M and E of Section 13, all in Township 26 North, Range 5 West, NMPM, Rio Arriba County, New Mexico.

(2) That 98 percent of the gas production in Well No. A-1, 35 percent of the production in Well No. B-8, 40 percent of the production in Well No. C-6, and 80 percent of the production in both Well No. C-7 and Well No. C-8 shall be attributed to the Dakota formation, and the remainder of the gas production in each well shall be attributed to the Mesaverde formation. All liquid hydrocarbon production shall be attributed to the Dakota formation in each well.

(3) That during completion operations on Wells Nos. C-4 and C-5, the applicant shall conduct productivity tests and pressure tests on each of the zones to be commingled, and shall consult with the supervisor of the Division's Aztec office to determine an allocation formula for each of said wells.

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

(5) That the Division Director shall have the authority to rescind the commingling authority herein granted for Wells Nos. C-4 and C-5 in the event the productivity tests on said wells indicate that either or both of the commingled zones in said wells are of non-marginal character, or in the event that the pressure tests on said wells indicate a pressure differential between the zones to be commingled of such magnitude as may cause waste.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

PHIL R. LUCERO, Chairman

EMERY C. ARNOLD, Member

JOE D. RAMEY, Member & Division Director

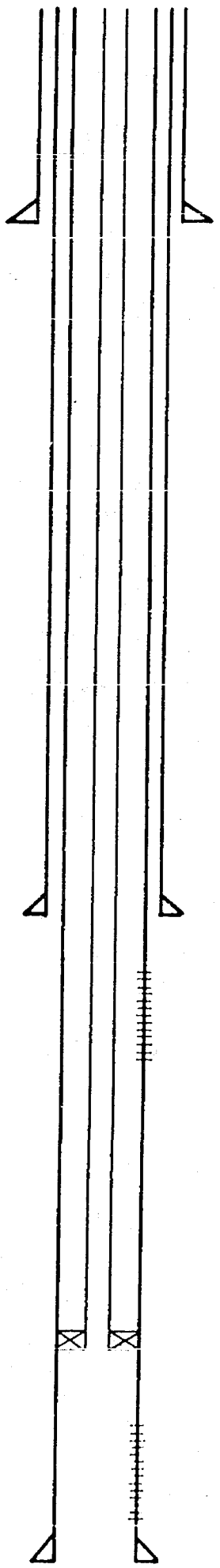
S E A L

jr/

Jicarilla A-1

Sec. 18 T26N R5W Unit L

Rio Arriba County, New Mexico



10 3/4" @ 213'
Cmt. to surface

7 5/8" 26# @ 3350'
300 SX "A"

Mesa Verde Perfs
5152-5312

Dakota Perfs
7266'-7549'

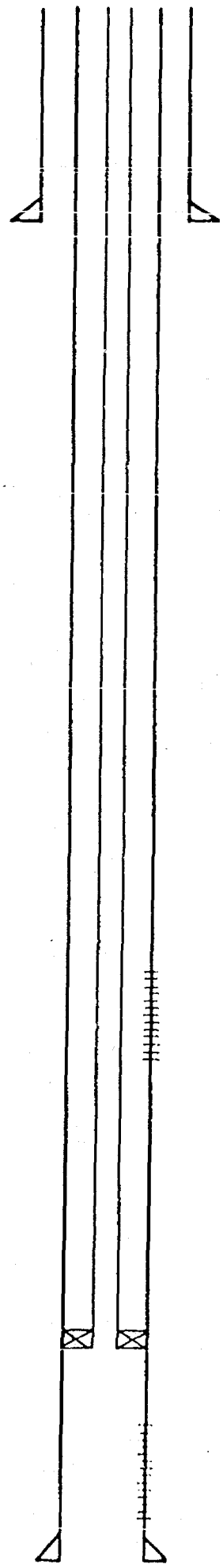
5½" @ 7588'
265 SX "A"
PBTD 7555'

Completion History
Dakota:
Ran temp log after cementing, found top at
4750'. Spotted 500 gal. acid, perf'd
7473-7549 w/136 holes. Fraced w/57,500#
20-40 sand AIR: 37 BPM @ 2900#
Set BP@ 7468'. Perf'd 7396'-7449' (100 holes).
Fraced w/80,000# 20-40 sand AIR 41 BPM @
2800 psi ISIP: 2000 psi.
Set BP @ 7380'. Perf'd 7266'-7309' and fraced
w/50,000# 20-40 sand. AIR: 41 BPM @ 2700 psi,
ISIP 2050 psi.
Mesa Verde:
Set Baker "D" w/push-out plug at 7212'
Perf'd 5152-5312. Fraced w/100,000# 20-40 sand.
AIR: 50 BPM @ 2450 psi. ISIP: 1050 psi
Tubing:
Set Baker model N-1 packer at 7180'. Landed
232 jts. 2 3/8" EUE tubing with 6 blast joints,
"F" nipple @ 7178', and sliding sleeve @ 7170'.

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
TENNECO EXHIBIT NO. 3
CASE NO. 6011

(2)

Jicarilla B-8
Sec. 15 T26N R5W Unit B
Rio Arriba County, New Mexico



8 5/8" @ 329'
Cmt. to Surf.

3rd Stg. @ 3401'
200 SX "C"

Mesa Verde Perfs
4990'-5424'

2nd Stg. @ 5763'
240 SX "C"

Dakota Perfs:
7443'-7650'

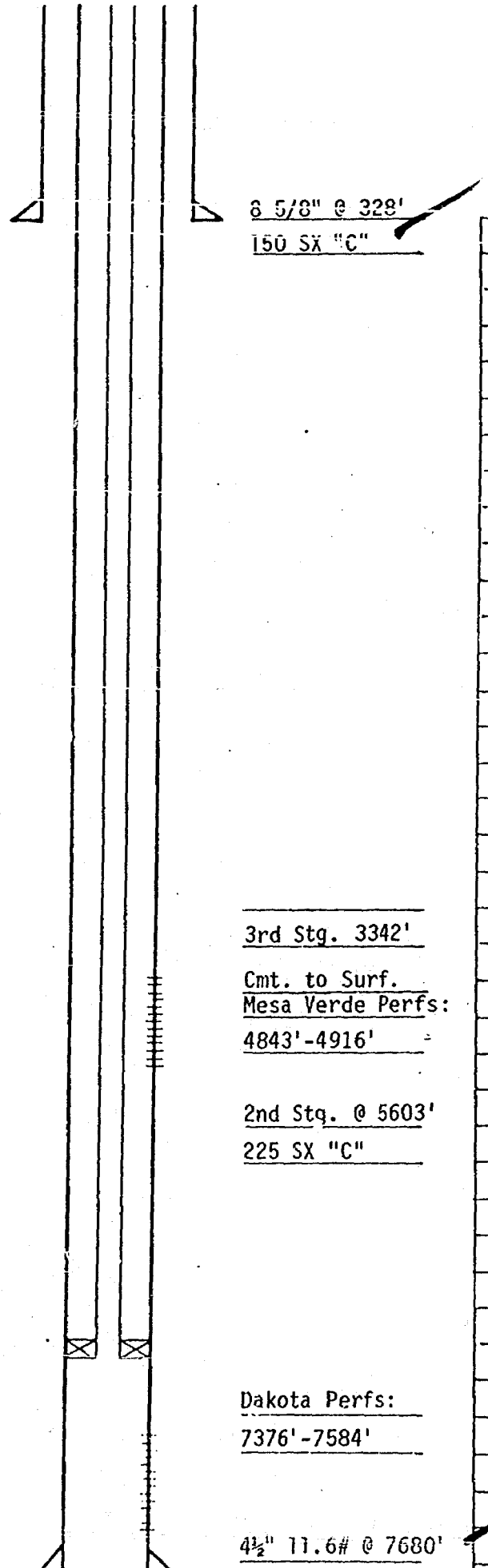
4½" @ 7731
330 SX "C"
PBTD 7696'

Completion History
Dakota:
Ran CBL and spotted 300 gal. 7½% acid. Perf'd
22 holes 7565'-7650'. Acidized perfs in 2
stages and established rate. Fraced w/60,000#
20-40 sand. AIR: 59 BPM @ 3700 psi.
Set BP @ 7552', perf'd 28 holes 7443'-7581'.
Fraced w/56,000# 20-40 sand. AIR: 55 BPM @
3850 psi. ISIP: 2000 psi.
Mesa Verde:
Set BP @ 5480'. Perf'd 5395' and 4980';
Sqzd. w/75 SX "C". Drilled out and ran CBL,
good bond across zone. Spotted 400 gal. 7½%
acid, perf'd 4990'-5424'. Treated w/500 gal.
15% acid & balls. Fraced w/50,000# 10-20 and
20,000# 8-12 sand. AIR: 68 BPM @ 2600#.
ISIP: 1000#
Tubing:
Ran Baker "D" and set at 7406'. Ran 235 jts.
2 3/8" EUE, "F" Nipple and Sliding Sleeve.

Jicarilla C-4

Sec. 24 T26N R5W Unit F

Rio Arriba County, New Mexico



8 5/8" @ 328'
150 SX "C"

3rd Stg. 3342'

Cmt. to Surf.

Mesa Verde Perfs:
4843'-4916'

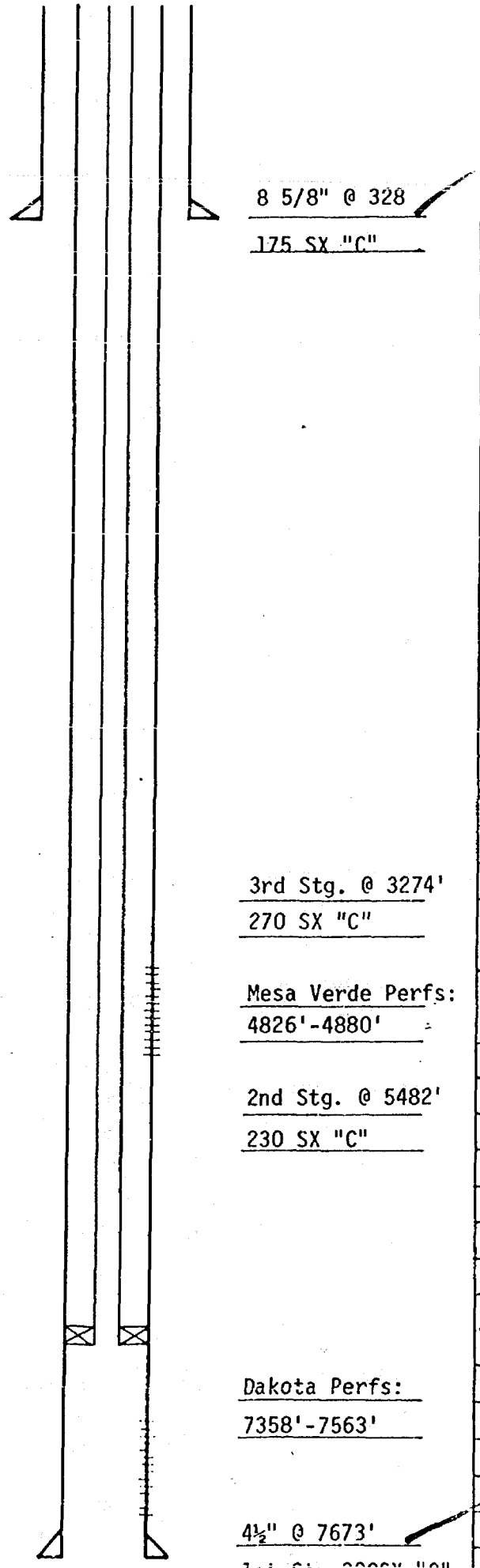
2nd Stg. @ 5603'
225 SX "C"

Dakota Perfs:
7376'-7584'

4½" 11.6# @ 7680'
275 SX "C"
PBTD 7640'

Completion History
Dakota:
Perf'd. 28 holes 7529'-7584'. Treated w/acid
and balls. Fraced w/40,000# 20-40 sand.
AIR: 60 BPM @ 3850 psi. ISIP: 2000 psi
Set BP @ 7510'. Perf'd 28 holes 7376'-7496',
treated w/acid & balls. Fraced w/80,000#
20-40 sand. AIR: 40 BPM @ 4000 psi. ISIP:
2000 psi.
Mesa Verde:
Set BP @ 5320'. Squeezed w/125 SX "C" at
5305'. Resqueezed w/150 SX @ 4920'. Drilled
out & ran CBL, found cmt. top at 4820'.
Perf'd 28 holes 4843' to 4916'. Treated w/balls
& acid. Fraced w/60,000# 20-40 sand.
AIR: 65 BPM @ 2400 psi.
Tubing:
Set Baker "D" packer at 6809'. Ran 212 jts.
2 1/16" IJ Tbg. with Baker "L" Sleeve and "F"
nipple.

Jicarilla C-5
Sec. 24 T26N R5W Unit I
Rio Arriba County, New Mexico



8 5/8" @ 328
175 SX "C"

3rd Stg. @ 3274'
270 SX "C"

Mesa Verde Perfs:
4826'-4880'

2nd Stg. @ 5482'
230 SX "C"

Dakota Perfs:
7358'-7563'

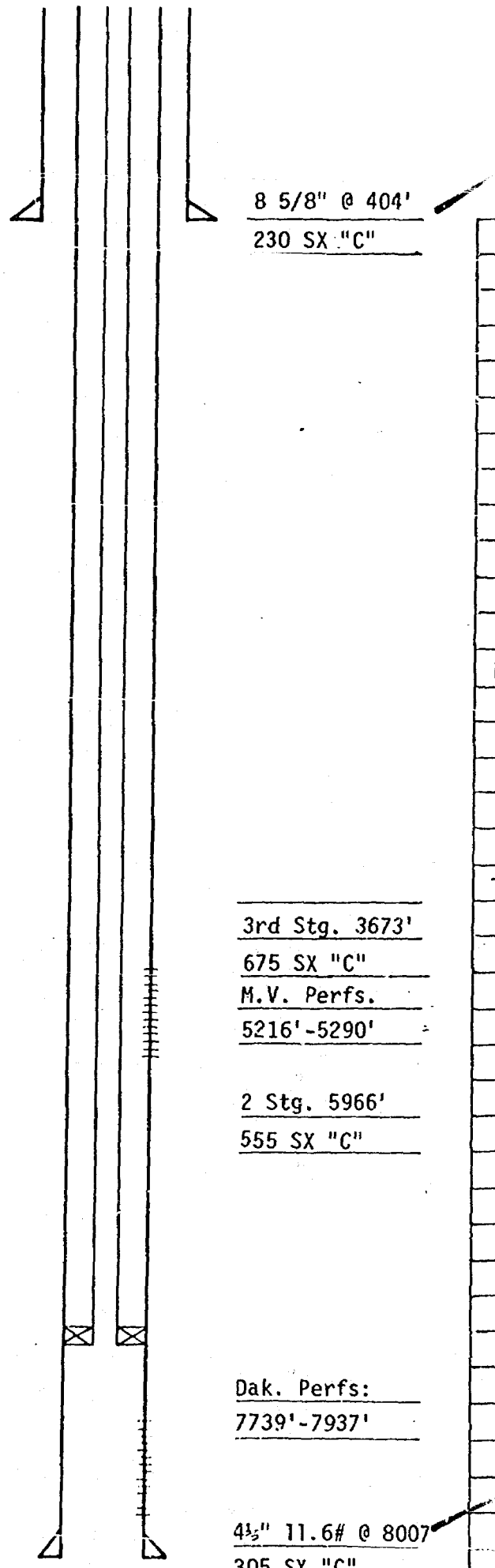
4½" @ 7673'
1st Stg. 390SX "C"
PBTD @ 7600'

Completion History
Dakota:
Ran CBL and found cmt. tops at 4500' and 6340'.
Perf'd 30 holes 7469'-7563'. Treated w/acid &
balls. Fraced w/75,000# 20-40 sand. AIR:
64 BPM @ 3500 psi.
Set BP @ 7427'. Perf'd 36 holes 7358'-67'.
Broke down w/1000 gal. acid, fraced w/75,000#
20-40 sand. AIR: 62 BPM @ 3300 psi.
Mesa Verde:
Set BP @ 4927'. Perf'd 20 holes 4826'-4880'.
Fraced w/60,000# 20-40 sand. AIR: 72 BPM @
2700 psi.
Tubing:
230 jts. 2 3/8 EUE landed @ 7289' in Baker
Model "D" packer

Jicarilla C-6

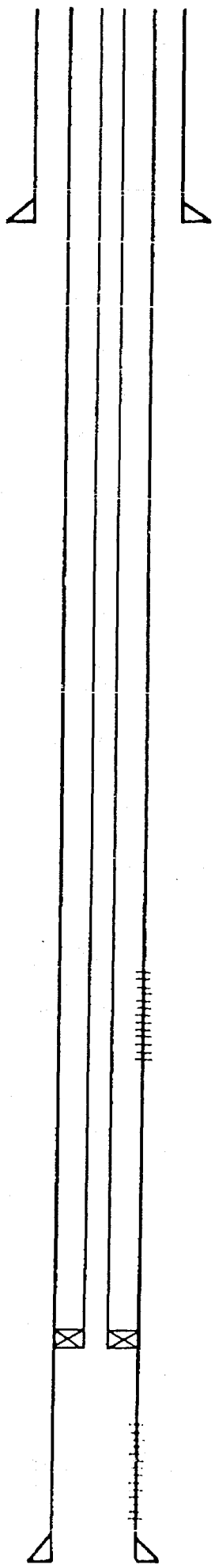
Sec. 14 T26N R5W Unit F

Rio Arriba County, New Mexico



Completion History
Dakota:
Ran CBL and found cmt. tops at 5090' and 6785'
Perf'd. 7925'-37'. Broke down w/acid & balls,
fraced w/46000# 20-40 sand, sanded out.
AIR: 49 BPM @ 4150 psi. ISIP: 2400 psi.
Perf'd. 20 holes 7844'-50', 7739'-43', treated
w/500 gal. acid. Fraced w/60,000# 20-40 sand.
AIR: 42 BPM @ 4200 psi. ISIP: 2500 psi.
Mesa Verde:
Set BP @ 5350', perf'd. 28 holes 5216'-5290'.
Pump 500 gal. acid, frac w/50,000# 20-40 and
20,000# 8-12 sand. AIR: 74 BPM @ 3400 psi.
ISIP: 100 psi.
Tubing:
Set Baker prod. packer at 6770'. Ran 212 jts.
2 3/8" EUE w/Sliding Sleeve @ 6738' and landing
nipple @ 6797'.

Jicarilla C-7
Sec. 13 T26N R5W Unit M
Rio Arriba County, New Mexico



8 5/8" 24# @ 408'
200 SX "C" N.R.

Mesa Verde Perfs:
4052'-5270'

Stage Collar @3393'
275 SX "C",15% gel

Dakota Perfs:
7486'-7687'

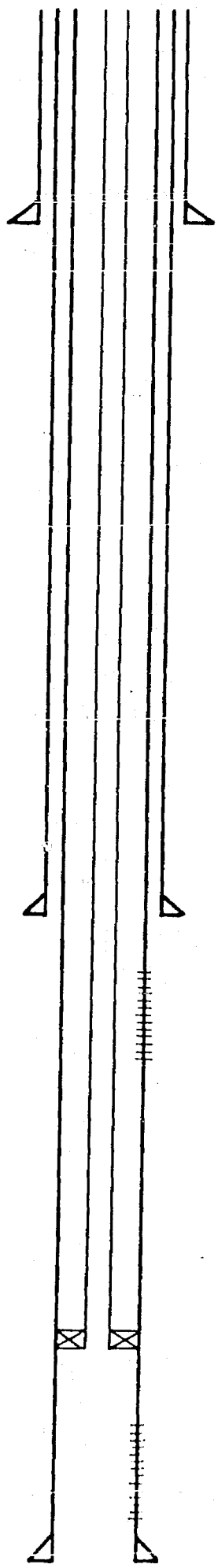
4½" 11.6# @ 7774'
590 SX "C"
PBTD @ 7720'

Completion History
Dakota:
Perf'd. 20 holes 7682'-87'. Broke down and
balled off w/500 gal. mud acid. Spearheaded
250 gal. mud acid, fraced w/24,000# 20-40 sand.
AIR: 38 BPM @ 3900 psi.
Set BP & perf'd. 20 holes 7598'-7608'. Treated
w/750 gal. 15% acid, fraced w/26,000# 20-40 sand
and 19,000# 12-20 glass beads. AIR: 44 BPM @
3800 psi.
Set BP & perf'd. 28 holes 7486'-7499'. Treated
w/500 gal. acid, no ball action. Fraced
w/35,000# 20-40 sand. AIR: 42 BPM @ 3900 psi
ISIP: 2300 psi
Mesa Verde:
Set BP @ 5425, retainer @ 5300'. Perf'd holes
@ 5320' and 4928'. Circulated 80 SX, pulled
to 4930' and spotted 40 SX. Reversed out at
4450' braden head squeezed to 400 psi. Drilled
out, ran CBL and resqueezed 50 SX 5015.
Drilled out, CBL top @ 4940'.
Perf'd 24 holes 4952'-5270'. Broke down &
balled off w/500 gal. 15% acid. Fraced w/
50,000# 10-20 and 20,000# 8-12 sand. AIR: 60 BPM
@ 2400 psi. ISIP: 1300 psi
Tubing:
Set packer @ 7430'. Ran 255 jts. 2 3/8" EUE
tubing, Model "F" nipple and Model "L" Sleeve.

Jicarilla C-8

Sec. 13 T26N R5W Unit E

Rio Arriba County, New Mexico



10 3/4" @ 433
Cmt. to Surf.

7 5/8" 26# @ 4000'
325 SX "C"

Mesa Verde Perfs:
6103'-5465'

Stg. Collar @6268'
265 SX "C"

Dakota Perfs:
8144'-8012'

4½" 11.6# @ 8261'
220 SX "C"
PBTD @ 8230'

Completion History
Dakota:
Log cmt. top @ 6710'. Perf. 28 holes
8144'-8234'. Broke down & balled off to 6500 psi
w/500 gal. mud acid. Fraced w/20,000# 80-100 and
50,000# 20-40 sand. AIR: 54 BPM @ 3500 psi,
ISIP: 2200 psi
Perf'd. 28 holes 8057'-8012'. Broke down &
established rate. Spearhead 500 gal. mud acid,
fraced w/20,000# 80-100 and 50,000# 20-40 sand.
AIR: 64 BPM @ 3700 psi, ISIP: 2300 psi
Mesa Verde:
Sqzd. w/50 SX @ 5553' ran CBL, resqueezed
w/200 SX @ 5462' and 5497'. Drilled out and
perf'd 26 holes 5465'-6103'. Fraced w/50,000#
10-20 and 20,000# 8-12 sand.
AIR: 70 BPM @ 2900 psi
Tubing:
Set Baker "D" @ 7925'. Ran 252 jts. 2 3/8" EUE
w/Baker "L" Sleeve @ 7919' and Baker "F" nipple
@ 7922'.

Mesaverde Incremental Reserves

--- Reserves, MMCF*---

Well Name	Current Completion	Commingled	Increment, MMCF
Jicarilla A-1	12.8	17.2	4.4
Jicarilla B-8	765.8	949.8	193
Jicarilla C-4	0	61.1	61.1
Jicarilla C-6	211.2	262.8	51.6
Jicarilla C-7	11.1	15.0	3.9
Jicarilla C-8	90.5	129.2	38.7
		Total	352.7

*Remaining reserves based on production decline. No reserves attributed to C-5 due to lack of production history.

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
TENNECO EXHIBIT NO. 4
CASE NO. 6011

(4)

DELIVERABILITY SHUT-IN PRESSURES

Jicarilla A-1

Mesa Verde

4/65	-	1514 PSI
10/66	-	1374
1/68	-	1016
10/69	-	948
7/72	-	1158
9/73	-	912
1/75	-	571

diff = 258

Dakota

3/67	-	1431 PSI
6/68	-	1413
6/69	-	1282
6/70	-	1122
7/71	-	1109
6/72	-	858
9/73	-	752
8/75	-	829

Jicarilla B-8

Mesa Verde

12/67	-	1159 PSI
1/69	-	1200
9/69	-	1085
10/70	-	1004
4/71	-	994
6/72	-	928
5/73	-	936
9/76	-	889

diff = 38

Dakota

4/67	-	1846 PSI
2/68	-	1116
9/69	-	1245
10/70	-	1242
4/71	-	1222
6/72	-	1030
5/73	-	1010
6/75	-	927

Jicarilla C-4

Mesa Verde

4/67	-	1448 PSI
7/77	-	495

diff = 243

Dakota

4/67	-	2025
2/68	-	1512
9/69	-	1168
10/70	-	1073
4/71	-	1015
6/72	-	914
5/73	-	852
6/75	-	738

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Tenneco EXHIBIT NO. 5
CASE NO. 6011

(5)

Jicarilla C-5

Mesa Verde			Dakota		
7/77	-	745 PSI	4/67	-	2068 PSI
			2/68	-	1419
			6/67	-	1162
			5/70	-	1090
			7/71	-	964
			6/72	-	866
			8/73	-	933
			6/77	-	744

diff = -1

Jicarilla C-6

Mesa Verde			Dakota		
7/67	-	1414 PSI	6/67	-	2301 PSI
4/68	-	939	4/68	-	1833
6/69	-	906	6/69	-	1465
6/70	-	907	6/70	-	1297
5/71	-	875	5/71	-	1260
6/72	-	836	6/72	-	1006
6/73	-	756	6/73	-	1070
8/76	-	743	6/75	-	777
			6/77	-	817

diff = 74

Jicarilla C-7

Mesa Verde			Dakota		
9/67	-	1036 PSI	9/67	-	1998 PSI
10/67	-	989	2/68	-	1796
2/68	-	972	9/69	-	1482
10/70	-	943	10/70	-	1353
4/71	-	955	4/71	-	1330
6/72	-	855	6/72	-	1171
5/73	-	790	5/73	-	1069
7/74	-	790	6/75	-	894
7/76	-	597			

diff = 297

Jicarilla C-8

Mesa Verde			Dakota		
7/67	-	1030 PSI	6/67	-	2259 PSI
10/68	-	816	10/68	-	1269
5/69	-	867	6/69	-	1249
6/70	-	872	6/70	-	1164
5/71	-	889	5/71	-	1102
6/72	-	1050	6/72	-	932
7/74	-	740	6/73	-	960
			6/75	-	993

diff = 253

ECOLOGY AUDITS, INC.
Subsidiary of Core Laboratories, Inc.
11061 Shady Trail · Dallas, Texas 75229
(214) 350-7893

July 28, 1977

Mr. Tom Boyce
Tenneco Oil Company
1860 Lincoln Blvd., Suite 1010
Denver, CO 80295

Dear Tom:

Attached are the analyses of two samples of water from the Jicarilla C-8 well completed in both the Mesa Verde and Dakota formations.

These two waters were blended in volume percentage proportions and observed for a period of approximately 144 hours (6 days) to determine any precipitate or deposit that might form from a comingling of these formation waters. At the same time a Stability Index was calculated on each water and on each blend. As we discussed in our telephone conversation, there is no indication of any precipitate other than hydrated iron oxide, $Fe(OH)_3$.

The Stability Index is used to determine the directional tendency or driving force of a water to lay down or dissolve calcium carbonate scale. It is only an indication and in no way is it to be taken as a quantitative value. With equilibrium at the zero point, a positive index indicates oversaturation with regards to calcium carbonate and a tendency to be scale forming. A negative index indicates undersaturation with regards to calcium carbonate and a tendency toward corrosion. This Index is used as a guideline and is subject to variation by three primary factors: pH, temperature and dissolved solids constituency. These calculated results were based on the solids present, the measured pH of the individual waters and the measured pH of the blends, all at 25°C (77°F).

	Definition	Total Dissolved Solids	Stability Index 25°C
1	C-8 Mesa Verde	10635 mg/l	-1.43
2	C-8 Dakota	15936 mg/l	-0.10
20% #1 + 80% #2		14876 mg/l	-0.54
40% #1 + 60% #2		13816 mg/l	-0.83
60% #1 + 40% #2		12755 mg/l	-1.04
80% #1 + 20% #2		11695 mg/l	-1.25

The negative index throughout indicates undersaturation with regards to calcium carbonate and a corrosive tendency. Therefore, there will be no $CaCO_3$ scale formation in these waters.

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Tenneco EXHIBIT NO. 6
CASE NO. 6011

(6)

Barium ion is absent in both waters. Therefore, no precipitation will occur from barium sulfate.

Though the sulfate ion is high in the Dakota water, the calcium ion is low in both the Dakota and Mesa Verde waters. Regardless of percentage blend, the calcium sulfate will remain below solubility level and no deposit will form.

There is a considerable amount of iron present in both samples. Much of that iron is present in the suspended material in the containers and was filtered out before the analyses and compatibility blends were made. (These iron figures are indicated on the analysis forms.) The remaining soluble iron on contact with air becomes oxidized and will precipitate as hydrated iron oxide. As the pH increases, more of this iron will precipitate. If an air-free system such as a gas blanket is employed to negate oxygen entry, a precipitation of iron oxide should be absent or at least greatly reduced.

We thank you for this opportunity to be of service and trust this information will be of benefit to you.

Very truly yours,

ECOLOGY AUDITS, INC.

Ralph A. Law
Chief Chemist

RAL/vjr

Enclosures (4)
EA 776-130

ECOLOGY AUDITS, INC.
MEASUREMENT OF
AIR AND WATER QUALITY

11061 SHADY TRAIL, DALLAS, TEXAS 75229
(214) 350-7893
SUBSIDIARY OF CORE LABORATORIES, INC.

WATER ANALYSIS

File EA 776-130

Company Tenneco Oil Company Well Name JIC C-8 Sample No. 2

Formation Dakota Depth _____ Sampled From _____

Location SEC13 T26N R5W Field Jicarilla County Rio Arriba State New Mexico

Date Sampled _____ Date Analyzed July 21, 1977 Analyst R. A. Law

---

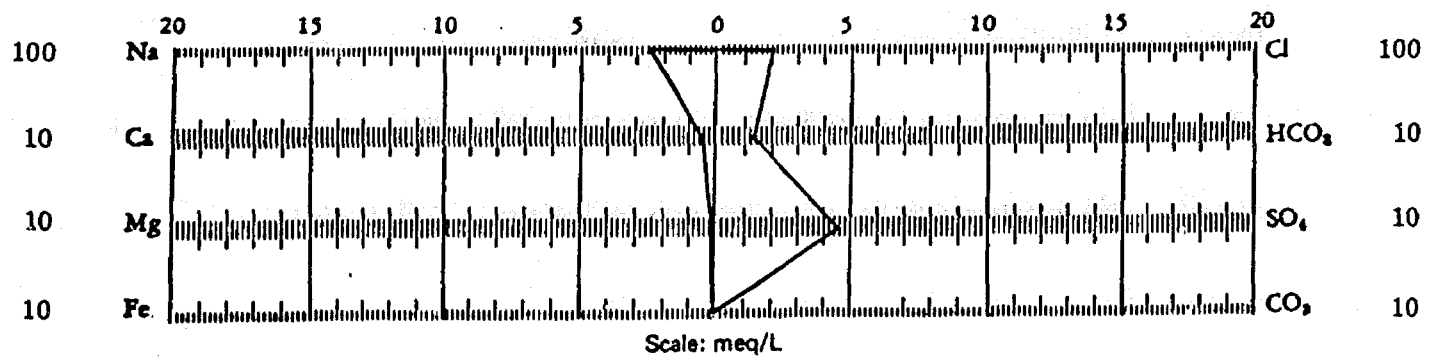
Total Dissolved Solids 15936 mg/L calculated Sp. Gr. 1.0091 @ 77 °F

Resistivity 0.4068 ohm-meters @ 77 °F measured 1.0102 @ 20 °C (68°F)

Hydrogen Sulfide Absent

pH 7.26 @ 77 °F

Constituents	meq/L	mg/L	Constituents	meq/L	mg/L
Sodium	250.47	5758	Chloride	197.98	7018
Calcium	4.98	99.8	Bicarbonate	14.05	857
Magnesium	1.14	13.8	*Sulfate	45.20	2171
Iron	0.64	17.9	Carbonate	0.0	0.0
*Barium	0.0	0.0	Hydroxide	0.0	0.0



Scale: meq/L

Total Iron 380 mg/l
Dissolved Iron 17.9 mg/l
Suspended Iron 362.1 mg/l

* Gravimetric Analysis

ECOLOGY AUDITS, INC.
MEASUREMENT OF
AIR AND WATER QUALITY

11061 SHADY TRAIL, DALLAS, TEXAS 75229
(214) 350-7893
SUBSIDIARY OF CORE LABORATORIES, INC.

WATER ANALYSIS

File EA 776-130

Company Tenneco Oil Company Well Name JIC C-8 Sample No. 1

Formation Mesa Verde Depth _____ Sampled From _____

Location SEC13 T26N R5W Field Jicarilla County Rio Arriba State New Mexico

Date Sampled _____ Date Analyzed July 22, 1977 Analyst R. A. Law

---

Total Dissolved Solids 10635 mg/L calculated

Sp. Gr. 1.0060 @ 76 °F

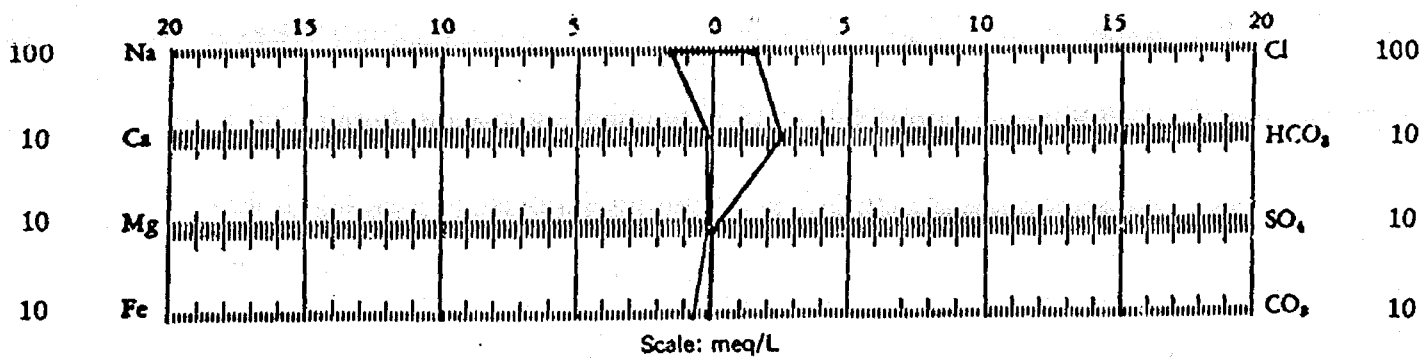
Resistivity 0.5765 ohm-meters @ 76 °F measured

1.0070 @ 20 °C (68°F)

Hydrogen Sulfide Absent

pH 5.91 @ 77 °F

Constituents	meq/L	mg/L	Constituents	meq/L	mg/L
Sodium	162.72	3741	Chloride	145.11	5144
Calcium	1.58	31.7	Bicarbonate	24.62	1502
Magnesium	0.69	8.4	*Sulfate	0.99	47.7
Iron	5.73	160	Carbonate	0.0	0.0
*Barium	0.0	0.0	Hydroxide	0.0	0.0



Scale: meq/L

Total Iron 705 mg/l
Dissolved Iron 160 mg/l
Suspended Iron 545 mg/l

* Gravimetric Analysis

EL PASO NATURAL GAS COMPANY

RPT-ASL 134 CHROMATOGRAPHIC GAS ANALYSIS REPORT

RPT DATE 07 21 77
ANAL DATE 07 18 77

METER STATION NAME
DAWSON A #1

METER STA 75656
OPER 2720

TYPE CODE	SAMPLE DATE	EFF. DATE	USE HOS.	SCALE	H2S GRAINS	LOCATION
01	07 12 77	07 21 77	06	1	0000*	4 F 10

	NORMAL MOL%	GPM
C O 2	00.49	0.000
H 2 S	00.00*	0.000
N2	00.39	0.000
METHANE	76.06	0.000
ETHANE	12.60	3.368
PROPANE	06.74	1.854
ISO-BUTANE	00.93	0.304
NORM-BUTANE	01.67	0.526
ISO-PENTANE	00.41	0.150
NORM-PENTANE	00.33	0.120
HEXANE PLUS	00.38	0.166
TOTALS	100.00	6.488

SPECIFIC GRAVITY 0.751

MIXTURE HEATING VALUE
(BTU/CF @ 14.73 PSIA,60 DEGREES,DRY) 1302

RATIO OF SPECIFIC HEATS 1.272

* NO TEST SECURED FOR DETERMINATION H2S CONTENT.

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 2
CASE NO. Gas Pennco

Mesa Verde Analysis Sampled 7/12/77

(7)

EL PASO NATURAL GAS COMPANY

RPT-ASL 135 CHROMATOGRAPHIC GAS ANALYSIS REPORT

RPT DATE 07 21 77
ANAL DATE 07 18 77

METER STATION NAME
DAWSON A #1 DK

METER STA 75696
OPER 8720

TYPE CODE	SAMPLE DATE	EFF. DATE	USE MOS.	SCALE	H2S GRAINS	LOCATION
CC	07 12 77	07 21 77	06	1	0000*	4 F 10

	NORMAL MOL%	GPM
C O 2	01.00	0.000
H 2 S	00.00*	0.000
N2	00.29	0.000
METHANE	79.68	0.000
ETHANE	11.32	3.026
PROPANE	04.50	1.238
ISO-BUTANE	00.90	0.294
NORM-BUTANE	01.15	0.362
ISO-PENTANE	00.48	0.176
NORM-PENTANE	00.27	0.098
HEXANE PLUS	00.41	0.179
TOTALS	100.00	5.373

SPECIFIC GRAVITY 0.721

MIXTURE HEATING VALUE
(BTU/CF @ 14.73 PSIA, 60 DEGREES, DRY) 1243

RATIO OF SPECIFIC HEATS 1.280

* NO TEST SECURED FOR DETERMINATION H2S CONTENT.

Dakota Analysis Sampled 7/12/77

Proposed Production Split

Well	Extrapolated 9/77 Prod Mesa Verde	Dakota	Proposed Split, % Mesa Verde	Dakota
Jicarilla A-1	168	7400	2	98
Jicarilla B-8	6200	3450	65	35
Jicarilla C-6	2750	2850	50	50
Jicarilla C-7	490	1450	25	75
Jicarilla C-8	1700	4850	25	75

The Jicarilla C-4 and C-5 Mesa Verde wells have been shut in for a number of years. It is proposed that these wells be tested after the annulus is unloaded to determine production split.

8

Working Interest, Royalty and Purchaser
Jicarilla A, B, and C Leases

Basin Dakota:

Well	Working Interest TOC	Conoco	Arco	Override	Purchaser
A-1	1/4	1/4	1/2	None	Gas Company of New Mexico
B-8	1/4	1/4	1/2	None	Northwest Pipeline
C-4	1/4	1/4	1/2	None	Northwest Pipeline
C-5	1/4	1/4	1/2	None	Northwest Pipeline
C-6	1/4	1/4	1/2	None	Northwest Pipeline
C-7	1/4	1/4	1/2	None	Northwest Pipeline
C-8	1/4	1/4	1/2	None	Northwest Pipeline

Blanco Mesa Verde:

Well	Working Interest TOC	Conoco	Arco	Override	Purchaser
A-1	1/4	1/4	1/2	None	Gas Company of New Mexico
B-8	1/4	1/4	1/2	None	Northwest Pipeline
C-4	1/4	1/4	1/2	None	Northwest Pipeline
C-5	1/4	1/4	1/2	None	Northwest Pipeline
C-6	1/4	1/4	1/2	None	Northwest Pipeline
C-7	1/4	1/4	1/2	None	Northwest Pipeline
C-8	1/4	1/4	1/2	None	Northwest Pipeline

A 16 2/3% royalty is paid to the Jicarilla Apache tribe on both zones on all leases.

(9)

NEW MEXICO OIL CONSERVATION COMMISSION
GAS - OIL RATIO TESTS

C-116
Revised 1-1-65

Operator: Tenneco Oil Company | Pool: Blanco Mesa Verde | County: Rio Arriba

Address: 1860 Lincoln, Suite 1200, Denver, Colorado 80295 | TYPE OF TEST - (X): Scheduled [ ] Completion [ ] Special [XX]

LEASE NAME	WELL NO.	LOCATION U	S	T	R	DATE OF TEST	STATUS	CHOKE SIZE	TBG. PRESS.	DAILY ALLOWABLE	LENGTH OF TEST HOURS	PROD. DURING TEST WATER BBLS.	GRAV. OIL	OIL BBLS.	GAS M.C.F.	GAS - OIL RATIO CU.FT/BBL
Jicarilla "A"	1	L	18	26N	5W	8-17-77	F	none	197		24	0	0	0	8	
"B"	8	B	15	26N	5W	8-17-77	F	none	242		24	.2	0	0	189	
"C"	4	F	24	26N	5W		SI	none								
"C"	5	I	24	26N	5W		SI	none								
"C"	6	F	14	26N	5W	8-17-77	F	none	220		24	0	0	0	56	
"C"	7	M	13	26N	5W	8-21-77	F	none	450		24	.3	0	0	44	
"C"	8	E	13	26N	5W	8-1-77	F	none	315		24	0	0	0	40	

Tenneco Ex 10
Case 6011

No well will be assigned an allowable greater than the amount of oil produced on the official test.

During gas-oil ratio test, each well shall be produced at a rate not exceeding the top unit allowable for the pool in which well is located by more than 25 percent. Operator is encouraged to take advantage of this 25 percent tolerance in order that well can be assigned increased allowables when authorized by the Commission.

Gas volumes must be reported in MCF measured at a pressure base of 15.025 psia and a temperature of 60° F. Specific gravity base will be 0.60.

Report casing pressure in lieu of tubing pressure for any well producing through casing.

Mail original and one copy of this report to the district office of the New Mexico Oil Conservation Commission in accordance with Rule 301 and appropriate pool rules.

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

J. F. Boyce
(Signature)

Production Engineer
(Title)

8/23/77
(Date)

NEW MEXICO OIL CONSERVATION COMMISSION
GAS - OIL RATIO TESTS

C-116
Revised 1-1-65

Operator: Tenneco Oil Company | Pool: Basin Dakota | County: Rio Arriba

Address: 1860 Lincoln, Suite 1200, Denver, Colorado 80295

TYPE OF TEST - (X): Scheduled [ ] Completion [ ] Special [XX]

LEASE NAME	WELL NO.	LOCATION U	S	T	R	DATE OF TEST	STATUS	CHOKE SIZE	TBG. PRESS.	DAILY ALLOWABLE	LENGTH OF TEST HOURS	PROD. DURING TEST WATER BBLS.	GRAV. OIL	OIL BBLS.	GAS M.C.F.	GAS - OIL RATIO CU.FT/BB
Jicarilla "A"	1	L	18	26N	5W	8-15-77	F	none	253		24	1.6	53	3.3	426	129,091
"B"	8	B	15	26N	5W	8-15-77	F	none	225		24	1.5		0	236	
"C"	4	F	24	26N	5W	8-19-77	F	none	305		24	1	53	2.33	191	81,974
"C"	5	I	24	26N	5W	8-19-77	F	none	330		24	.1	53	5	330	66,000
"C"	6	F	14	26N	5W	8-15-77	F	none	215		24	0		0	154	
"C"	7	M	13	26N	5W	8-19-77	F	none	215		24	2.5		0	92	
"C"	8	E	13	26N	5W	7-30-77	F	none	220		24	2.5	53	.5	170	340,000

No well will be assigned an allowable greater than the amount of oil produced on the official test.

During gas-oil ratio test, each well shall be produced at a rate not exceeding the top unit allowable for the pool in which well is located by more than 25 percent. Operator is encouraged to take advantage of this 25 percent tolerance in order that well can be assigned increased allowables when authorized by the Commission.

Gas volumes must be reported in MCF measured at a pressure base of 15.025 psia and a temperature of 60° F. Specific gravity base will be 0.60.

Report casing pressure in lieu of tubing pressure for any well producing through casing.

Mail original and one copy of this report to the district office of the New Mexico Oil Conservation Commission in accordance with Rule 301 and appropriate pool rules.

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

J. T. Boyd
(Signature)

Production Engineer
(Title)

8/23/77
(Date)

Latest Tests on Wells (all 24 hours)

name of well	MV Date	MV MCF	MV liq	MV tbg pres	DK Date	DK MCF	DK liq.	DK tbg press
A-1	8-17	8	0	197	8-15	426	3.3	253
B-8	8-17	189	.2	242	8-15	236	0	225
C-4					8-19	191	2.35	305
C-5					8-19	330	5.0	330
C-6	8-17	56	0	220	8-15	154	0	215
C-7	8-21	44	.3	450	8-19	92	0	215
C-8	8-1	40	0	315	7-30	170	.5	220

Latest Surface Pressure Tests (all 7-day SI)

	Latest MV Date	Latest MV pres (A)	MV Tests Date	DK pres (B)	Differential Probably Hi-Low *	Ratio of A to B	B/A
A-1 ✓	1-76	571	8-75	829	Low	.69	1.45
B-8 ✓	9-76	889	6-75	927	High	.96	1.04
C-4 ✓	7-77	495	6-75	738	High	.67	1.49
C-5 ✓	7-77	745	6-77	744	no chg	1.00	1.00
C-6 ✓	8-76	743	6-77	817	Low	.91	1.10
C-7 ✓	7-76	597	6-75	894	High	.67	1.50
C-8 ✓	7-74	740	6-75	993	Low	.75	1.34

* based on expected chg in pressure of the zone where the pressure was taken a year or so before the other one was.

Tenneco Oil
A Tenneco Company

Lincoln Tower Building
1860 Lincoln Street • Suite 1200
Denver, Colorado 80203
(303) 292-9920

November 3, 1977

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

ATTN: Daniel Nutter

RE: NMOCC Case #6011

Dear Mr. Nutter:

During your phone conversation of October 25 with J. T. Boyce, you expressed concern over the difference in wellhead shut in pressure between the Mesa Verde and Dakota formations in the wells we propose to commingle. We feel this difference in surface shut in pressure is not indicative of reservoir conditions, and not detrimental to commingling.

The Mesa Verde formation in these wells is affected by severe fluid loading. This condition manifests itself in the wide variation of Mesa Verde surface shut in pressure through the life of these wells. The effect is particularly noticeable in wells with low Mesa Verde wellhead shut in pressure. We feel the actual difference in reservoir pressure is much smaller than indicated by wellhead measurements.

Both zones in the commingled configuration will produce to a wellbore pressure much lower than either reservoir pressure. Flowing wellhead pressure in this area averages 240 psi, and does not exceed 300 psi. This pressure is approximately 200 psi lower than the lowest recorded Mesa Verde surface shut in pressure. Crossflow between formations could not occur under these conditions. These wells are not shut in during normal operations, except to perform State deliverability and packer leakage tests. This shut in time is insignificant compared to production time, and appreciable crossflow should not occur. Ownership and royalty interest in both zones is identical, and the small amount of crossflow which could occur would not violate the interests of these parties. Should shut in of the wells be required for a significant period of time, we will take whatever action necessary to separate the zones.

Sincerely yours,
TENNECO OIL COMPANY

D. D. Myers
Division Production Manager

DDM:B:cam

JASON W. KELLAHIN
ROBERT E. FOX
W. THOMAS KELLAHIN

KELLAHIN and FOX
ATTORNEYS AT LAW
500 DON GASPAR AVENUE
P. O. BOX 1769
SANTA FE, NEW MEXICO 87501

TELEPHONE 982-4315
AREA CODE 505

September 6, 1977

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

Re: Tenneco
NMOCC Case No. 6011
August 31, 1977

Dear Dan:

Please find enclosed the requested production split for the above referenced case.

Please advise me if you desire any further information.

Very truly yours,

Tom Kellahin

W. Thomas Kellahin

CC: Mr. Tom Boyce

Enclosure

Proposed Production Split
Reserves, MMCF

Well	Dakota	Mesa Verde	Production Split % Dakota	Mesa Verde
Jicarilla A-1	1014.6	17.2	2	98
Jicarilla B-8	471.3	949.8	67	33
Jicarilla C-4	768.8	61.1	7	93
Jicarilla C-6	181.1	262.8	59	41
Jicarilla C-7	59.1	15	20	80
Jicarilla C-8	495.4	129.2	21	79

The above production split is based on Dakota reserves and projected Mesa Verde reserves after unloading. These figures compare reasonably well with the split shown on exhibit 8, based on projected production rate after commingling. A production split was not derived for the C#5 well, due to lack of Mesa Verde production history. It is proposed that a split be derived for this well by ratio of total production rate after commingling and Dakota production rate before commingling.

Exhibit 8A

	Basin GHM A-1	Dakota NPC B-8	C-4	C-5	C-6	C-7	C-8
Jan-Mar	24387	11268	21235	26419	11020	4597	14850
Apr-Dec	77338	32805	63356	71706	28968	13969	24927
1977 total	101725	44073	84591	98125	39988	18566	39777

	Blanco GNM A-1	MV B-8	C-4	C-5	C-6	C-7	C-8
Jan-Mar	690	16276	×	×	9238	2293	5172
Apr-Dec	1502	45790	×	×	12482	12969	59844
1977 total	2192	62066			21720	15262	65016

( ) = ave daily, Dec 78

		DK	MV	
A1	74	125327	1151	
	75	99018	2039	
	76	97844	1674	
	77	101725 (104)	2192 (83)	
		423914	7056	430970
		.984 (98)		

		DK	MV	
B-8	74	55344	90121	
	75	46473	82707	
	76	44425	69401	
	77	44073 (103)	62066 (127)	
		190315	304295	494610
		.385 (35)		

		DK	MV
C-4	74	116852	-
	75	108466	-
	76	96954	-
	77	84591 (164)	-
		406,867	

		DK	MV	
C-5	74	133830	-	
	75	124262	-	
	76	117339	-	
	77	98125 (205)	-	
		473,556		

		DK	MV	
C-6	74	99935	53888	
	75	85755	38981	
	76	51665	23489	
	77	39988 (112)	21720 (36)	
		277343	138078	415421
		.668 (50)		

		DK	MV	
C-7	74	66273	29878	
	75	49401	14834	
	76	21147	6751	
	77	18566 (38)	15262 (19)	
		155387	66725	222112
		.700 (75)		

		DK	MV	
C-8	74	68674	34634	
	75	56907	18012	
	76	67605	16341	
	77	39777 (217)	65016	
		232,963	134,003	366,966
		.635 (75)		

Production

	DK 74 oil	DK 74 gas	MV 74 oil	MV 74 gas	DK 75 oil	DK 75 gas	MV 75 oil	MV 75 gas
A-1	937	125327	50	1151	835	99018	368	2039
B-8	147	55344	23	90121	105	46473	115	82707
C-4	1311	116856			926	108466		
C-5	1333	133830			955	124262		
C-6	1162	99935	554	53888	572	85755	427	38981
C-7	288	66273	165	29878	260	49401	28	14834
C-8	380	68674	182	34634	341	52907	206	18012

DK		MV	
76 oil	76 gas	76 oil	76 gas
637	97844	296	1674
83	14425	133	69401
777	96954		
872	117339		
385	51665	98	23489
55	21147	30	6751
248	67605	141	16341

DK		MV	
77 oil	77 gas	77 oil	77 gas
	101725		2192
	44073		62066
	84591		
	98125		
	39988		21720
	18576		15262
	39777		65016

Dockets Nos. 27-77 and 28-77 are tentatively set for hearing on August 31 and September 14, 1977. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - AUGUST 17, 1977

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

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

ALLOWABLE: (1) Consideration of the allowable production of gas for September, 1977, from fifteen prorated pools in Lea, Eddy, Chaves, and Roosevelt Counties, New Mexico.

(2) Consideration of the allowable production of gas for September, 1977, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.

CASE 6001: (Continued from August 3, 1977, Examiner Hearing)

Application of Mesa Petroleum Co. for an exception to Order No. R-5459, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an exception to the provisions of Order No. R-5459 to exclude its Primo Well No. 1-A located in Unit D of Section 6, Township 31 North, Range 10 West, San Juan County, New Mexico, from the vertical limits of the Blanco-Mesaverde Pool as defined by said order.

CASE 6007: Application of Gulf Energy and Minerals Company for a non-standard proration unit, simultaneous dedication and unorthodox locations, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for a 600-acre non-standard proration unit comprising all of Section 4 except the NE/4 NW/4 thereof, Township 22 South, Range 36 East, Jalmat Gas Pool, Lea County, New Mexico, to be simultaneously dedicated to its J. F. Janda Wells Nos. 7 located in Unit K and Nos. 12 and 13, at unorthodox locations in Units O and P, respectively, of said Section 4.

CASE 6008: Application of Texaco Inc. for a pressure maintenance project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project on its Central Vacuum Unit Area, Vacuum Grayburg-San Andres Pool, Lea County, New Mexico, by the injection of water into the Grayburg-San Andres formation through 55 wells.

CASE 6009: Application of Morris R. Antweil for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests underlying the S/2 of Section 29, Township 18 South, Range 25 East, Eddy County, New Mexico, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 5992: (Readvertised)

Application of Burleson & Huff for compulsory pooling, a non-standard unit, and an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests underlying the SE/4 NW/4 of Section 14, Township 24 South, Range 36 East, Jalmat Gas Pool, Lea County, New Mexico, to form a non-standard 40-acre gas proration unit to be dedicated to applicant's Cooper Well No. 1 at an unorthodox location 2310 feet from the North and West lines of said Section 14, or in the alternative to drill another well at a standard location. Also to be considered will be the cost of recompletion or of drilling and completing the unit well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in recompleting or drilling said well.

CASE 6010: Application of Manana Gas Inc. for compulsory pooling and an unorthodox location, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Dakota formation underlying the W/2 of Section 13, Township 30 North, Range 12 West, Basin-Dakota Pool, San Juan County, New Mexico, to be dedicated to a well to be drilled at an unorthodox location 840 feet from the South line and 1400 feet from the West line of said Section 13. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6011: Application of Tenneco Oil Company for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Blanco Mesaverde and Basin Dakota production in the wellbores of its Jicarilla "A" Well No. 1 in Unit L of Section 18, "B" Well No. 8 in Unit B of Section 15, "C" Wells Nos. 4, 5, 6, 7, and 8, located, respectively, in Units F and I of Section 24, F of Section 14, and M and E of Section 13, all in Township 26 North, Range 5 West, Rio Arriba County, New Mexico.

CASE 6012: Application of Tenneco Oil Company for salt water disposal, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Strawn formation through the perforated interval from 11,174 feet to 11,236 feet in its Jones Federal Well No. 1, located in Unit K of Section 23, Township 19 South, Range 31 East, Eddy County, New Mexico.

CASE 6013: Application of HNG Oil Company for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pennsylvanian formation underlying the S/2 of Section 9, Township 24 South, Range 28 East, Eddy County, New Mexico, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6014: Application of Atlantic Richfield Company for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a well to be drilled 1980 feet from the South line and 330 feet from the West line of Section 6, Township 21 South, Range 27 East, Burton Flat-Morrow Gas Pool, Eddy County, New Mexico, the W/2 of said Section 6 to be dedicated to the well.

CASE 6015: Application of Atlantic Richfield Company for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a well to be drilled 1980 feet from the South line and 660 feet from the East line of Section 32, Township 20 South, Range 27 East, Avalon-Morrow Gas Pool, Eddy County, New Mexico, the S/2 of said Section 32 to be dedicated to the well.

Docket No. 27-77

Dockets Nos. 28-77 and 29-77 are tentatively set for hearing on September 14 and 28, 1977. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - AUGUST 31, 1977

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:

CASE 6016: In the matter of the hearing called by the Oil Conservation Commission on its own motion to permit Inexco Oil Company, American Employers' Insurance Company, and all other interested parties to appear and show cause why the Dwyer Well No. 1 located in Unit D of Section 23, Township 14 South, Range 29 East, Chaves County, New Mexico, should not be plugged and abandoned in accordance with a Commission-approved plugging program.

CASE 6017: Application of E. L. Bethel, Jr. and Ray C. Barton, Jr., for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests underlying the E/2 NE/4 of Section 20, Township 9 South, Range 33 East, Flying M-San Andres Pool, Lea County, New Mexico, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6018: Application of Walter Duncan for salt water disposal, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Dakota formation through the open-hole interval from 697 feet to 706 feet in his North Hogback 3 Well No. 24 located in Unit G of Section 1, Township 29 North, Range 17 West, and from 691 feet to 702 in his North Hogback 6 Well No. 3 in Unit L of Section 6, Township 29 North, Range 16 West, Blickrock-Dakota Pool, San Juan County, New Mexico.

CASE 6019: Application of Gulf Oil Corporation for a dual completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its Littlefield "BM" Federal Com. Well No. 1 located in Unit J of Section 20, Township 18 South, Range 31 East, Eddy County, New Mexico, to produce gas from undesignated Atoka and Morrow gas pools.

CASE 6020: Application of Yates Petroleum Corporation for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Blevins "I-K" Well No. 1 to be drilled 660 feet from the North and West lines of Section 35, Township 17 South, Range 26 East, Eddy County, New Mexico, to test the Morrow formation, the N/2 of said Section 35 to be dedicated to the well.

CASE 6021: Application of Yates Petroleum Corporation for salt water disposal, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the San Andres formation in the interval from 962 feet to 1249 feet in its Federal HJ Well No. 1 located in Unit A of Section 31, Township 6 South, Range 26 East, Lindo-San Andres Pool, Chaves County, New Mexico.

CASE 6022: Application of Continental Oil Company for an unorthodox gas well location, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Conoco 29-4 Well No. 8 to be drilled 2265 feet from the South line and 1635 feet from the West line of Section 20, Township 29 North, Range 4 West, Gobernador-Pictured Cliffs Pool, Rio Arriba County, New Mexico, the SW/4 of said Section to be dedicated to the well.

CASE 6023: Application of Inexco Oil Company for downhole commingling and a tubing exception, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority for the downhole commingling of Upper Penn and Strawn production in the wellbore of its Federal 10 State Com Well No. 1 located in Unit L of Section 10, Township 21 South, Range 26 East, Avalon Gas Field, Eddy County, New Mexico. Applicant further seeks an exception to Commission Rule 107(d) to permit setting tubing 370 feet above the uppermost perforation in said well.

CASE 5997: (Continued from July 6, 1977, Examiner Hearing)

Application of Belco Petroleum Corporation for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Morrow formation underlying all of Section 8 and in the other Pennsylvanian formations underlying the E/2 of said Section 8, Township 24 South, Range 34 East, Cinta Roja-Morrow Gas Pool, Lea County, New Mexico, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6779: (Continued from August 17, 1977, Examiner Hearing)

Application of [illegible] for [illegible], Eddy County, New Mexico. Applicant, in the above-styled cause, seeks [illegible] in the Undesignated [illegible] Pool, Eddy County, New Mexico, being [illegible] to be drilled at an unorthodox location 820 feet [illegible] line and 1650 feet from the East line of said Section 13. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6811: (Continued from August 17, 1977, Examiner Hearing)

Application of Jerome Oil Company for dual completion, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion of Blanco Mesaverde and Otero Gallup production in the wellbores of its Jicarilla "A" Well No. 2 in Unit L of Section 23, "B" Well No. 3 in Unit B of Section 15, "C" Twin No. 4, 5, 6, 7, and 8, located, respectively, in Units I and J of Section 24, F of Section 17, and K and L of Section 13, all in Township 26 North, Range 5 West, Rio Arriba County, New Mexico.

JASON W. KELLAHIN
ROBERT E. FOX
W. THOMAS KELLAHIN

KELLAHIN and FOX
ATTORNEYS AT LAW
500 DON GASPAR AVENUE
P. O. BOX 1769
SANTA FE, NEW MEXICO 87501

TELEPHONE 982-4315
AREA CODE 505

July 27, 1977

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

Re: Tenneco Oil Company

Dear Dan:

Please find enclosed our application on behalf of Tenneco Oil Company for downhole commingling of certain gas wells, Rio Arriba County, New Mexico.

We would like this matter set for hearing before an examiner at the first hearing in September which I believe will be September 7, 1977. Please advise if that is not correct.

I have been unable to find the number of the NMOCC Order which approved the dual completion for these wells. I would appreciate your assistance in supplying me with that information.

Very truly yours,

W. Thomas Kellahin

CC: Mr. Millard Carr

WTK:kfm

Enclosure

BEFORE THE

NEW MEXICO OIL CONSERVATION COMMISSION

Case 6011

IN THE MATTER OF THE APPLICATION OF TENNECO OIL COMPANY FOR DOWN-HOLE COMMINGLING, RIO ARRIBA COUNTY, NEW MEXICO

A P P L I C A T I O N

COMES NOW, TENNECO OIL COMPANY, and applies to the Oil Conservation Commission of New Mexico for approval to down-hole commingle production from the Mesaverde and Dakota formation in the Basin Dakota and Blanco Mesaverde Pools, Rio Arriba County, New Mexico, and in support thereof would show the Commission:

1. Applicant is the operator of the subject wells.

2. Applicant seeks permission to downhole commingle production from the Dakota and Mesaverde formations in the following wells:

Jicarilla "A" #1 well, Unit L, Sec 18, T26N, R5W, NMPM

Jicarilla "B" #8 well, Unit B, Sec 15, T26N, R5W, NMPM

Jicarilla "C" #4 well, Unit F, Sec 24, T26N, R5W, NMPM

Jicarilla "C" #5 well, Unit I, Sec 24, T26N, R5W, NMPM

Jicarilla "C" #6 well, Unit F, Sec 14, T26N, R5W, NMPM

Jicarilla "C" #7 well, Unit M. Sec 13, T26N, R5W, NMPM

Jicarilla "C" #8 well, Unit E, Sec 13, T26N, R5W, NMPM

All in Rio Arriba County, New Mexico.

3. That approval of this application will conform to the requirements of New Mexico Oil Conservation Commission, will result in the production of hydrocarbons that would not otherwise be produced, will prevent waste, and will not cause any

damage to either the Mesaverde or Dakota formations. Correlative rights including those of offset operators will not be impaired.

WHEREFORE applicant prays that this application be set for hearing before the Commission or the Commission's duly appointed examiner, and that after notice and hearing as provided by law, the Commission enter its order approving commingling as prayed for.

Respectfully submitted,

TENNECO OIL COMPANY

By W. T. Kellahin

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P. O. Box 1769
Santa Fe, New Mexico 87501

Attorneys for Applicant

DRAFT

dr/

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. 6011

Order No. R- 5707

APPLICATION OF TENNECO OIL COMPANY
FOR DOWNHOLE COMMINGLING, RIO ARRIBA
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on August ~~27~~ 31, 19 77, at Santa Fe, New Mexico, before Examiner ~~Richard L. Stamets~~ D. S. N.

NOW, on this _____ day of ~~August~~ April, 19 78, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Tenneco Oil Company, is the owner and operator of the Jicarilla "A" Well No. 1 in Unit L of Section 18, "B" Well No. 8 in Unit B of Section 15, "C" Wells Nos. 4, 5, 6, 7, and 8, located, respectively, in Units F and I of Section 24, F of Section 14, and M and E of Section 13, all in Township 26 North, Range 5 West, NMPM, Rio Arriba County, New Mexico.

(3) That the applicant seeks authority to commingle ~~the~~ Blanco Mesaverde and Basin-Dakota production within the wellbores of the above-described wells.

(4) That of the aforesaid wells, the Jicarilla "A" well No. 1, "B" Well No. 8, and "C" Wells Nos. 6, 7, and 8 are of low productivity in either one or both of the aforesaid Blanco Mesaverde and Basin-Dakota Pools.

(5) That the Jicarilla "C" Wells Nos 4 and 5 are at present ~~completed on~~ producing from the Basin-Dakota Pool only, but are expected to be of low productivity in the Blanco Mesaverde Pool

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

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

(8) That to afford the ~~Commission~~ Oil Conservation Division of the New Mexico Energy and Minerals Department the opportunity to assess the potential for waste and to expeditiously order appropriate remedial action, the operator ~~xxx~~ should notify the Aztec ~~district~~ office of the ~~Commission~~ Division any time the subject wells are shut-in for 7 consecutive days.

(9) That in order to allocate the commingled production to each of the commingled zones in the subject wells, 98 percent of the ~~production~~ Mcf in well No. A-1, 35 percent of the production in well No. B-8, 40 percent of the production in well No. C-6, and 80 percent of the production

in both well No. C-7 and well No. C-8 should be attributed to the Dakota formation, and the remainder of the gas production in each well should be attributed to the Mesaverde formation. All liquid hydrocarbons should be attributed to the Dakota formation in each well.

(10) That during completion operations on Wells Nos. C-4 and C-5, the applicant should conduct productivity and pressure tests of each of the zones to be commingled, and should consult with the Supervisor of the Division's Aztec Office to determine an allocation formula for each of said wells.

(3)

(11) That the Division Director should have the authority to rescind the commingling authority herein granted for said wells Nos. C-4 and C-5 in the event said productivity tests indicate non-marginal production from either or both of the commingled zones in said wells, or in the event the pressure differential between the commingled zones is of such magnitude as to possibly cause waste.

IT IS THEREFORE ORDERED:

(1) That the applicant, Tenneco Oil Company, is hereby authorized to commingle Blanco Mesaverde and Basin-Dakota production within the wellbores of the Jicarilla "A" Well No. 1 in Unit L of Section 18, "B" Well No. 8 in Unit B of Section 15, "C" Wells Nos. 4, 5, 6, 7 and 8, located, respectively, in Units F and I of Section 24, F of Section 14, and M and E of Section 13, all in Township 26 North, Range 5 West, NMPM, Rio Arriba County, New Mexico.

(2) That 98 percent of the gas production in Well No. A-1, 35 percent of the production in Well No. B-8, 40 percent of the production in Well No. C-6, and 80 percent of the production in both Well No. C-7 and Well No. C-8 shall be attributed to the Dakota formation, and the remainder of the production in each well shall be attributed to the Mesaverde formation, All liquid hydrocarbon production shall be attributed to the Dakota formation in each well.

(3) That during completion operations on Wells Nos. C-4 and C-5, the applicant shall conduct productivity tests and pressure tests on each of the zones to be commingled, and shall consult with the Supervisor of the Division's Aztec Office to determine an allocation formula for each of said wells.

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

(5) That the Division Director shall have the authority to rescind the commingling authority herein granted for Wells Nos. C-4 and C-5 in the event the productivity tests on said wells indicate that either or both of the commingled zones in said wells are of non-marginal character, or in the event that the pressure tests on said wells indicate a pressure differential between the zones to be commingled of such magnitude as may cause waste.

(4) 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.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION
LUCERO CHAIRMAN
ARNOLD MEMBER
RAMEY MEMBER AND
DIVISION DIRECTOR