CASE 3080: Application of PAN AM. for a NO-FLARE EXCEPTION, SAN JUAN COUNTY, NEW MEXICO.

CASE NO. 3080

Application,
Transcripts,
Small Exhibits
ETC.

PAN AMERICAN PETROLEUM CORPORATION
C. A. MCADAMS "B" LEASE
ANGELS PEAK GALLUP POOL
JUNE 29, 1964

Economics of Casinghead Gas Sales

Freight on Compressor	$450.00
Install Compressor	500.00
Total to Install	$950.00
Monthly Rental	$500.00
Monthly Operating and Maintenance Cost	225.00
Total Fixed Monthly Costs	$725.00

Period	Daily Gas Sales Rate MCF	Total For Period, MCF	Gas Value At $0.10 (Net)	Less Operating Costs for Period	Loss For Period
July-December, 1964	239	43,500	4350	4350	$ -
January-June, 1965	205	37,500	3750	4350	600
July-December, 1965	182	33,100	3310	4350	1,040
January-June, 1966	155	28,200	2820	4350	1,530
July-December, 1966	134	24,400	2440	4350	1,910
January-June, 1967	112	20,400	2040	4350	2,310
July-December, 1967	97	17,700	1770	4350	2,580
				Total Operating Loss	$ 9,970

Daily gas sales rate is production less 15 MCF for fuel.

Total Loss = Operating Loss plus installation costs

= $9,970 + $950 = $10,920

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Exhibit No. 4
Case No. 3080

PAN AMERICAN
CA McADAMS "B" LEASE
ANGELS PEAK GALLUP POOL

MEASURED DATA
PREDICTED FUTURE PERFORMANCE

GAS - OIL RATIO, CU. FT./BBLS.

18000
16000
14000
12000
10000
8000
6000
4000
2000

0
10
20
30
40
50
60
70

CUMULATIVE PRODUCTION, M BBLS.

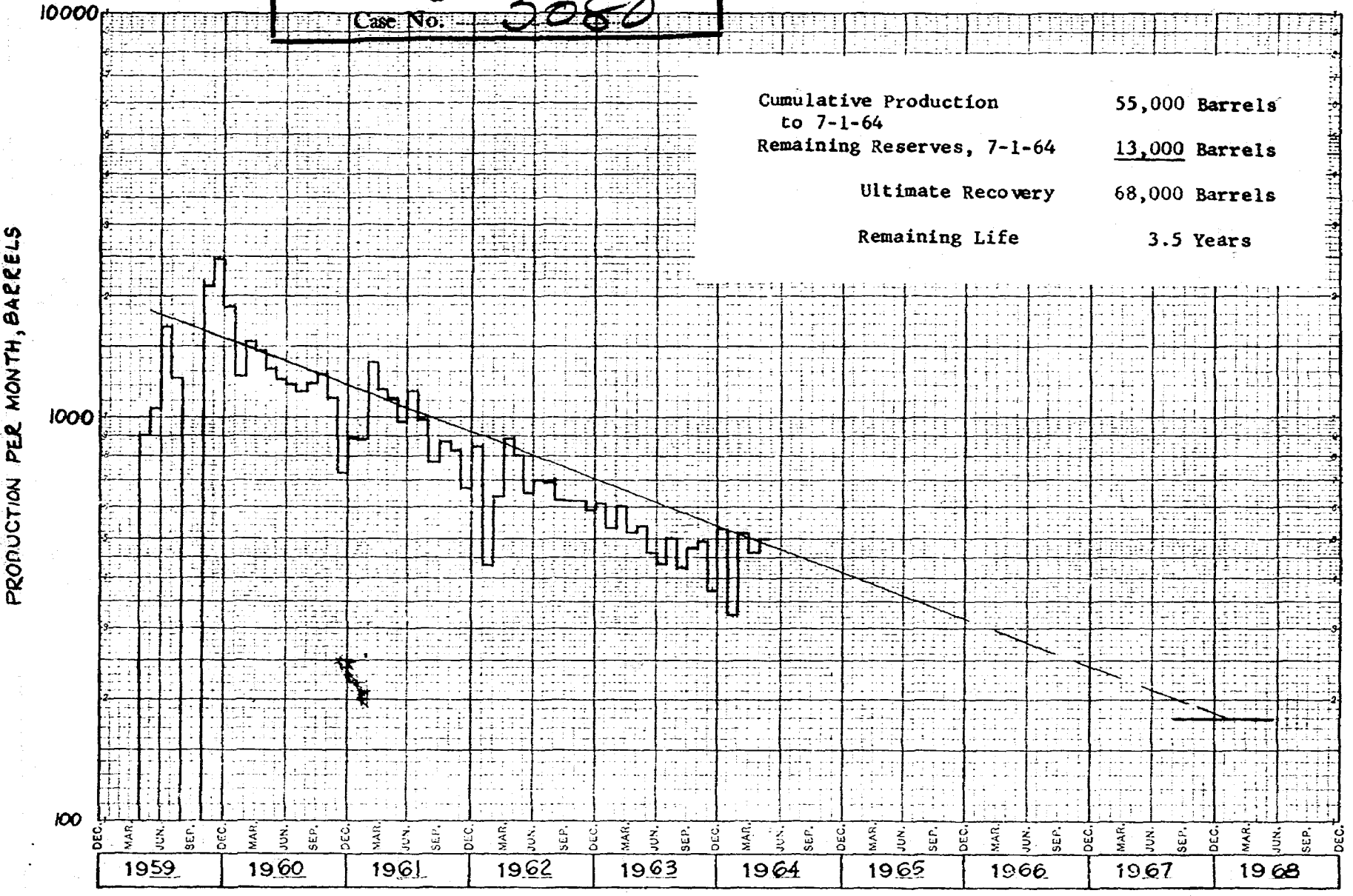
KEUFFEL & ESSER CO. 10 X 10 TO THE ½ INCH 359-12

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Exhibit No. 3
Case No. 3080

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Exhibit No. 2
Case No. 3080

PAN AMERICAN
C. A. MCADAMS "B" LEASE
ANGELS PEAK GALLUP FIELD

Cumulative Production to 7-1-64	55,000 Barrels
Remaining Reserves, 7-1-64	13,000 Barrels
Ultimate Recovery	68,000 Barrels
Remaining Life	3.5 Years



Case 3080

Application of Pan American Petroleum Corp for ~~an~~ a ~~Exception to the No-Flare~~ No-Flare Exception, San Juan County, New Mexico

Applicant, in the above ~~styled~~ cause, ~~seeks authority~~ to ~~produced~~ casinghead gas produced from its C. A. McAdams "B" Wells Nos. 1 and 2, located in Units J and E of Section 28, Township 27 North, Range 10 West Angels Peak-Gallup Pool, San Juan County, New Mexico.

Rule 8 of
in exception to Order No. R-1410 to permit the flaring of

costs were high—

PAN AMERICAN PETROLEUM CORPORATION
C. A. MCADAMS "B" LEASE
ANGELS PEAK GALLUP POOL
JUNE 29, 1964

foundation concrete work etc.

Economics of Casinghead Gas Sales

Freight on Compressor	$450.00
Install Compressor	500.00
Total to Install	$950.00
Monthly Rental	$500.00
Monthly Operating and Maintenance Cost	225.00
Total Fixed Monthly Costs	$725.00

Period	Daily Gas Sales Rate MCF	Total For Period, MCF	Gas Value At $0.10 (Net)	Less Operating Costs for Period	Loss For Period
July-December, 1964	239	43,500	4350	4350	$ -
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January-June, 1967	112	20,400	2040	4350	2,310
July-December, 1967	97	17,700	1770	4350	2,580
				Total Operating Loss	$ 9,970

Daily gas sales rate is production less 38 MCF for fuel.

Total Loss = Operating Loss plus installation costs

= $9,970 + $950 = $10,920 — $260/mo loss

PAN AM EX 4
CS 3080

Docket No. 19-64

DOCKET: REGULAR HEARING - WEDNESDAY - JULY 15, 1964

OIL CONSERVATION COMMISSION - 9:00 A.M. - MORGAN HALL, STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

ALLOWABLE: (1) Consideration of the oil allowable for August, 1964;

(2) Consideration of the allowable production of gas for August, 1964, from ten prorated pools in Lea and Eddy Counties, New Mexico, also consideration of the allowable production of gas from nine prorated pools in San Juan, Rio Arriba and Sandoval Counties, New Mexico for August, 1964.

CASE 3077: Southeastern New Mexico nomenclature case calling for an order for the creation and extension of certain pools in Lea and Roosevelt Counties, New Mexico:

a) CREATE A new oil pool for Wolfcamp production, designated as the Austin-Wolfcamp Pool, and described as:

TOWNSHIP 14 SOUTH, RANGE 36 EAST, NMPM
SECTION 19: NW/4

b) CREATE A new oil pool for Wolfcamp production, designated as the East Vacuum-Wolfcamp Pool, and described as:

TOWNSHIP 18 SOUTH, RANGE 35 EAST, NMPM
SECTION 3: SW/4

c) CREATE A new gas pool for Pennsylvanian production, designated as the Wilson-Pennsylvanian Gas Pool, and described as:

TOWNSHIP 21 SOUTH, RANGE 34 EAST, NMPM
SECTION 13: NW/4

d) EXTEND the South Crossroads-Devonian Pool to include therein:

TOWNSHIP 10 SOUTH, RANGE 36 EAST, NMPM
SECTION 16: S/2

e) EXTEND the Kemnitz-Wolfcamp Pool to include therein:

TOWNSHIP 16 SOUTH, RANGE 34 EAST, NMPM
SECTION 22: SW/4

f) EXTEND the Mesa-Queen Pool to include therein:

TOWNSHIP 16 SOUTH, RANGE 32 EAST, NMPM
SECTION 7: N/2 and SE/4
SECTION 18: NE/4

g) EXTEND the East Saunders-Permo Pennsylvanian Pool to include therein:

TOWNSHIP 14 SOUTH, RANGE 34 EAST, NMPM
SECTION 20: SW/4

h) EXTEND the Tobac-Pennsylvanian Pool to include therein:

TOWNSHIP 8 SOUTH, RANGE 33 EAST, NMPM
SECTION 29: NW/4

CASE 3078: Northwestern New Mexico nomenclature case calling for an order for the extension of the following pools in Rio Arriba, San Juan and Sandoval Counties, New Mexico:

a) EXTEND the Ballard-Pictured Cliffs Pool to include therein:

TOWNSHIP 24 NORTH, RANGE 4 WEST, NMPM
SECTION 31: NW/4

b) EXTEND the Blanco-Pictured Cliffs Pool to include therein:

TOWNSHIP 29 NORTH, RANGE 9 WEST, NMPM
SECTION 15: E/2

TOWNSHIP 30 NORTH, RANGE 8 WEST, NMPM
SECTION 31: SW/4

TOWNSHIP 30 NORTH, RANGE 9 WEST, NMPM
SECTION 9: All
SECTION 15: All
SECTION 16: All
SECTION 21: N/2 & SE/4
SECTION 22: All
SECTION 27: NE/4

c) EXTEND the South Blanco-Pictured Cliffs Pool to include therein:

TOWNSHIP 23 NORTH, RANGE 2 WEST, NMPM
SECTION 7: S/2
SECTION 18: N/2

TOWNSHIP 23 NORTH, RANGE 3 WEST, NMPM
SECTION 12: SE/4
SECTION 13: NE/4

d) EXTEND the Tapacito-Pictured Cliffs Pool to include therein:

TOWNSHIP 26 NORTH, RANGE 4 WEST, NMPM
SECTION 25: W/2
SECTION 26: E/2

e) EXTEND the Blanco-Mesaverde Pool to include therein:

TOWNSHIP 27 NORTH, RANGE 8 WEST, NMPM
SECTION 30: W/2

TOWNSHIP 27 NORTH, RANGE 9 WEST, NMPM
SECTION 25: E/2
SECTION 36: E/2

TOWNSHIP 32 NORTH, RANGE 5 WEST, NMPM
SECTION 20: W/2

f) EXTEND the Devils Fork-Gallup Pool to include therein:

TOWNSHIP 24 NORTH, RANGE 6 WEST, NMPM
SECTION 15: E/2 NW/4 & W/2 NE/4

g) EXTEND the Many Rocks-Gallup Oil Pool to include therein;

TOWNSHIP 31 NORTH, RANGE 16 WEST, NMPM
SECTION 21: E/2 NW/4

CASE 3079: Application of El Paso Natural Gas Company for reinstatement of accumulated underproduction in the Jalmat Gas Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 14 (A) of the General Rules and Regulations for Prorated Gas Pools of Southeastern New Mexico promulgated by Order No. R-1670, to permit wells in the Jalmat Gas Pool, Lea County, New Mexico, to make up underproduction subject to cancellation on July 1, 1964 and January 1, 1965, during the make-up period from July 1, 1964 to June 30, 1965 by reinstating that portion of such underproduction that is administratively determined to have been made up during said make-up period upon application of the operator filed within 30 days after July 1, 1965.

CASE 3080: Application of Pan American Petroleum Corporation for a no-flare exception, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 8 of Order No. R-1410-C to permit the flaring of casinghead gas produced from its C. A. McAdams "B" Wells Nos. 1 and 2, located in Units J and E of Section 28, Township 27 North, Range 10 West, Angels Peak-Gallup Pool, San Juan County, New Mexico.

BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF PAN AMERICAN PETROLEUM CORPORATION FOR AN EXCEPTION TO RULE 8 OF ORDER NO. R-1410-C, TO PERMIT FLARING OF CASING HEAD GAS, ANGELS PEAK-GALLUP POOL, SAN JUAN COUNTY, NEW MEXICO.	)	No. 3080

ENTRY OF APPEARANCE

The undersigned, Atwood & Malone of Roswell, New Mexico, a firm of attorneys whose members are duly licensed to practice law in the State of New Mexico, hereby enters its appearance as local counsel with Guy Buell, of the Texas Bar, appearing for Pan American Petroleum Corporation in this cause.

DATED at Roswell, New Mexico this 10th day of July, 1964.

ATWOOD & MALONE

By Charles E. Malone

Post Office Drawer 700
Roswell, New Mexico

ATWOOD & MALONE
LAWYERS

JEFF D. ATWOOD (1883-1960)
ROSS L. MALONE
CHARLES F. MALONE
RUSSELL D. MANN
PAUL A. COOTER
F. TURNER
ROBERT A. JOHNSON

P. O. DRAWER 700
TELEPHONE 505 622-6221
SECURITY NATIONAL BANK BUILDING
ROSWELL, NEW MEXICO
88201

July 10, 1964

Mr. A. L. Porter, Jr.
Oil Conservation Commission
Post Office Box 871
Santa Fe, New Mexico

Dear Mr. Porter:

We enclose our Entry of Appearance in Case No. 3080, for Pan American Petroleum Corporation.

Thank you for your kind attention and with regards,

Very truly yours,

ATWOOD & MALONE

CFM:md

By: Charles F. Malone

encl.

cc: J. K. Smith - w/signed Entry of Appearance

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. 3080
Order No. R-2744

APPLICATION OF PAN AMERICAN PETROLEUM
CORPORATION FOR A NO-FLARE EXCEPTION,
SAN JUAN COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on July 15, 1964, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 23rd day of July, 1964, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, 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, Pan American Petroleum Corporation, seeks an exception to Rule 8 of the Special Rules and Regulations for the Angels Peak-Gallup Pool to flare or vent casinghead gas produced from its C. A. McAdams "B" Wells Nos. 1 and 2, located in Units J and E of Section 28, Township 27 North, Range 10 West, NMPM, San Juan County, New Mexico.

(3) That the cost of installing, operating, and maintaining a compressor on the applicant's C. A. McAdams "B" Lease would decrease the productive life of the subject wells, resulting in premature abandonment of said wells and waste of recoverable oil.

(4) That approval of the subject application will result in greater ultimate recovery of the most valuable hydrocarbons from the applicant's C. A. McAdams "B" Lease, thereby preventing waste.

IT IS THEREFORE ORDERED:

(1) That the applicant, Pan American Petroleum Corporation, is hereby granted an exception to Rule 8 of the Special Rules and Regulations for the Angels Peak-Gallup Pool to flare or vent all casinghead gas produced from its C. A. McAdams "B" Wells Nos. 1 and 2, located in Units J and E of Section 28, Township 27 North, Range 10 West, NMPM, San Juan County, New Mexico.

(2) 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

JACK M. CAMPBELL, Chairman

E. S. WALKER, Member

A. L. PORTER, Jr., Member & Secretary

esr/

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER

P. O. BOX 871
SANTA FE

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

July 23, 1964

Re: Case No. 3080
Order No. ~~R-2744~~
Applicant:
Pan American Petroleum Corp.

Mr. Guy Buell
Pan American Petroleum Corporation
Post Office Box 1410
Fort Worth, Texas

Dear Sir:

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

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ir/

Carbon copy of order also sent to:

Hobbs OCC __x____

Artesia OCC_____

Aztec OCC __x____

OTHER_____

_____

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

July 15, 1964

REGULAR **HEARING**

IN THE MATTER OF:

Application of Pan American Petroleum Corporation for a no-flare exception, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 8 of Order No. R-1410-C to permit the flaring of casinghead gas produced from its C. A. McAdams "B" Wells Nos. 1 and 2, located in Units J and E of Section 28, Township 27 North, Range 10 West, Angels Peak-Gallup Pool, San Juan County, New Mexico.

Case No. 3080

BEFORE: A. L. (Pete) Porter, Jr.
E. S. (Johnny) Walker

TRANSCRIPT OF HEARING

MR. PORTER: We will take up Case 3080.

MR. DURRETT: Application of Pan American Petroleum Corporation for a no-flare exception, San Juan County, New Mexico.

MR. BUELL: For Pan American Petroleum Corporation, Guy Buell.

MR. PORTER: Any other appearances in this case?

(Whereupon, Pan American's Exhibits Nos. 1 through 4 marked for identification.)

(Witness sworn.)

GEORGE W. EATON, JR.

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

DIRECT EXAMINATION

BY MR. BUELL:

Q Mr. Eaton, would you state your complete name, by whom you are employed and what capacity and what location, please?

A George W. Eaton, Jr., Senior Engineer for Pan American Petroleum Corporation, Farmington, New Mexico.

Q Mr. Eaton, you have testified at many previous Commission hearings, have you not, and your qualifications as a Petroleum Engineer are a matter of public record?

A Yes, they are.

Q Would you first look at what has been identified as

Exhibit 1 and briefly state for the record what that exhibit reflects?

A Exhibit No. 1 is a map of a portion of the Angels Peak-Gallup Pool in San Juan County, New Mexico. The red line on Exhibit No. 1 reflects the recognized pool boundary of the Angels Peak-Gallup Pool, and the green line outlines the Pan American operated C. A. McAdams "B" lease. That lease is located in the northwestern edge of the Angels Peak-Gallup Pool.

Q Mr. Eaton, if memory serves me correctly, the last pool rule hearing on Angels Peak was in June of 1963; is my memory correct?

A That is correct.

Q Do you recall at that time how many producing oil wells we had in this pool?

A There were seven oil wells at that time.

Q How many oil wells do we have in this pool at this time?

A There are only four oil wells left in this pool.

Q And two of those four are the two on the McAdams lease which is the subject matter of this hearing?

A Yes, sir.

Q Mr. Eaton, in your opinion what is the approximate stage of depletion of Pan American's McAdams lease?

A The McAdams lease is between eighty and eighty-five

percent depleted.

Q In that connection, would you look at what has been marked as Pan American's Exhibit No. 2 and briefly state what that exhibit reflects?

A Exhibit No. 2 is a graph showing the production rate versus time for the two wells on the C. A. McAdams "B" lease. It specifically shows a plot of production in barrels per month as a function of time.

Q Mr. Eaton, what is the purpose of preparing a performance curve on a performance graph such as Exhibit No. 2 reflects?

A This graph shows that there has been a definite decline trend in production established. That trend is so well established that I feel justified in extrapolating it to an economic limit, thereby establishing future producing rates and future reserves.

Q Is this a valid engineering technique to ascertain reserves and remaining producing life?

A Yes, sir, it is.

Q In your opinion, is the production history that we've experienced on the McAdams lease sufficient to definitely establish a trend?

A Yes, sir.

Q I wish you would refer now to the pasted-on tabulation in the upper right hand corner of this exhibit. What does that

reflect?

A This tabulation actually shows four items: First, it shows that the remaining life of the McAdams lease is estimated to be three and one-half years; secondly, it shows that the cumulative production to July 1st, 1964, has been 55,000 barrels; that the ultimate recovery from the lease is expected to be 68,000 barrels; and that therefore the remaining reserves of this lease are 13,000 barrels.

Q Both the remaining producing life of three and a half years and the remaining recoverable reserves of 13,000 barrels were determined from your extrapolation of this curve on Exhibit 2?

A Yes, sir. That is the remaining life and the remaining reserves lying underneath the extrapolated portion of the decline trend to the economic limit of 180 barrels per month.

Q Mr. Eaton, in your opinion as a reservoir engineer, would you feel that a lease that has a remaining reserve of only 13,000 barrels and it will take three and a half years to get it, would you say that was a marginal economic lease at best?

A I think it is quite evident that this is an economically marginal operation.

Q Well, from the standpoint of our request here today, what is the significance of that fact?

A The current producing rate on this lease is approxi-

mately 500 barrels per month or 16 barrels per day, and that is for two wells on the lease, not individually,16 barrels per day per well,but 16 barrels for the lease. The significance then lies in the fact that any unusual expense that is incurred will probably force a premature abandonment of the McAdams "B" lease.

Q In the event that Pan American is forced to install compression and save and sell the producing casinghead gas at an economic loss, would that be such an unusual cost that would perhaps cause premature abandonment of this lease?

A I believe that that would cause the over-all economic abandonment point to be reached prior to normal depletion and would result, therefore, in premature abandonment of the lease.

Q Mr. Eaton, would you explain to me, how do you engineers analyze the situation such as this to make a judgment as to whether it would be economic or uneconomic to save the gas?

A Well, of course, first of all a forecast of gas producing rates must be made. Now to do this it is normally the practice to make a forecast of the future oil producing rate, a forecast of the future gas-oil ratio performance; and by multiplying the gas-oil ratio by the oil rate obtain the gas producing rate.

Q All right. Now our Exhibit No. 2 showed the predicted oil producing rate, did it not?

A Yes, sir.

Q All we need now is a gas-oil ratio trend and we're in business?

A Yes, sir.

Q Look then at Exhibit 3 and briefly state for the record what it reflects.

A Exhibit 3 is a plot of the past gas-oil ratio history of the McAdams "B" lease, together with my estimate of what that gas-oil ratio performance will be for its remaining life.

On this graph the circles designate actual observed data points. They are quite scattered, but through this group of circles I have drawn a smooth curve in a solid line depicting past performance. I have then shown by the dashed line the predicted future gas-oil ratio performance of this lease.

Q Mr. Eaton, what data and what studies have you based the extrapolated portion of this curve, your prediction of the gas-oil ratio trend in the future for this lease?

A While I was never able to exactly match past performance by material balance work, nevertheless material balance considerations indicate that gas-oil ratios will peak at approximately eighty-five to ninety percent depletion of the oil reserves. Therefore on Exhibit No. 3 I have shown some increase in gas-oil ratio over the near term peaking out at approximately 17,600 cubic feet per barrel, and then tapering off at the end of the

economic life of the lease.

Q We're approaching then the stage of depletion at which, according to your material balance calculations, the gas-oil ratios will peak and then start declining?

A Yes, sir.

Q Did you take these data reflected on Exhibit 3 and the data reflected on Exhibit 2 and make an economic evaluation of whether or not Pan American could justifiably compress, save and sell this casinghead gas?

A Yes, sir, I did.

Q In that connection would you look at Exhibit 3 and state what that reflects?

A Exhibit 4.

Q Exhibit 4, thank you, Mr. Eaton.

A Exhibit 4 is a compilation of the results of my economic calculation regarding casinghead gas sales from the McAdams "B" lease.

Q Mr. Eaton, there is no compressor on that lease at this time, is there?

A No, sir, there is not.

Q Would there be an initial charge, then, to get a compressor there and install and hook it up, or whatever you do with a compressor?

A Yes, sir. I have shown that initial charge in two

parts. First, the compressor that I located that is suitable is in Tulsa, so there will be a freight charge of approximately $450.00 to get it into the Farmington area. In addition, the cost to install the compressor, and that would include laying the foundation and the concrete work and the necessary piping, is estimated to be $500.00, a total of $950.00 to get the compressor installed and ready to run. This would be incurred whether or not any gas was ever compressed and sold.

Q Once you have accrued those costs, then, you have certain monthly costs to operate and maintain the compressor?

A Yes, sir. Again I have broken those fixed monthly costs into two parts. The rental charge on this compressor is $500.00. I've estimated the monthly operating and maintenance cost to be $225.00. This makes a total fixed monthly cost of $725.00.

Q Monthly rental, do you figure that it would be cheaper to rent a compressor than buy a compressor?

A Yes, sir, I do.

Q Now with regard to the monthly operating and maintenance cost expenses, is that based on Pan American's own experience adjusted downward or reduced by the experience of others in Northwest New Mexico?

A As you are aware, we once had a compressor on this McAdams "B" lease. This compressor that was once installed on

this lease was not new at the time of installation. Its operating costs were exceedingly high. I do not believe that it would be in line to use cost based on that operation.

In the meantime, we have obtained some costs from the operation of a compressor of fairly similar size to the one which is needed on this lease and was operated by a company compressing and selling gas from property in the Cha Cha-Gallup Pool north of the San Juan River. It is based on that cost data that I've estimated these operating costs.

Q You feel that that lower cost data is probably more representative than our unfortunate experience that we had in the past on the McAdams lease?

A Yes, sir.

Q That amounts to $725.00 per month, is that correct, your rental and operating expense?

A Yes.

Q How have you evaluated the economics for the remaining three and a half year life of the McAdams lease?

A To evaluate this matter I have chosen to break the remaining life down into six month operating periods. The first six month period covers the months July through December, 1964, and then six months being the first half of 1964 and so forth through the remaining life of the lease.

Q What are the economics, the first six months incremental

period you have here, July to December, 1964, Mr. Eaton?

A The operating costs for that period, based on $725.00 per month, amount to $4,350.00. The value of the gas sold and saved during that same period amounts to $4,350.00. Therefore it is a break-even proposition during the first six months of operation.

Q Ignoring the fact that you are not amortizing your initial installation cost?

A This did not count any amortization of the original $950.00 expenditure.

Q Breaking even over a six month period, it would seem obvious to me that some months we had made some money and some other months that we lost money. It might be of interest to the Commission if you would relate for this particular increment of time the monthly profit and loss ratio for each individual month of this period. Do you have that?

A Yes, sir. I might add at this point, referring back to Exhibit 3, the gas-oil ratio is predicted to increase slightly over the near term, but referring back to Exhibit 2, the oil producing rate is predicted to continue its decline over the near term and throughout the remaining life of the lease. Since the gas rate is a function of the multiplication of the oil rate times the gas-oil ratio, one of which is decreasing and the other increasing, the two are somewhat compensating.

However, the decrease in oil rate is enough to more than compensate for the increase in gas-oil ratio. As a result, the gas rate is constantly declining through this six month period of July through December, 1964. With fixed operating costs and a decline in income rate, I think it is quite evident that the near months will have greater economics than the more distant months, so here is how the picture looks insofar as each of those six months is concerned.

July shows a profit of $32.00, August a profit of $22.00, September a profit of $6.00, and then the last three months show losses. October shows a loss of $8.00; November, a loss of $19.00; December, a loss of $33.00. In other words, during the first three months of this six month period there is a total profit of $60.00;during the last three months there is a loss of $60.00.

Q So, Mr. Eaton, if you just look instantaneously, so to speak, in other words, let's look at July and notany further down the road, and let's ignore the installation costs, actually you can compress and save the gas and make a little profit in July?

A Yes, sir.

Q But when you consider the installation cost and you look further down the road on the McAdams lease, it is not profitable to save and sell the gas?

A No, sir, it is not. Even the $60.00 profit that occurs over the first three months would not come close to amortizing the $950.00 installation cost.

Q Would you briefly now review the economics for the other incremental six months periods reflected on your Exhibit 4?

A You will note that during each of the succeeding six months periods, the gas sales rate constantly undergoes a decline. Again, with fixed operating costs and a declining gas sales rate, the losses for the individual periods continue to increase.

The last column on the right hand side on Exhibit 4 shows what those losses are. I have then summed up the losses for the individual periods, showing that the total operating loss over the remaining life of the lease is $9,970.00. This number, when added to the $950.00 installation cost, shows a total loss for the installation and operation of a compressor, of $10,920.00 over the remaining three and one-half year life of the McAdams "B" lease.

Q Considering the total loss of $10,920.00 and the three and a half year life, what will be the average per month loss for the remaining life of this lease?

A $10,920.00 divided by three and one-half years shows a loss of $260.00 per month.

Q Mr. Eaton, certainly you, as a reservoir engineer, would agree with me that the bare fact of the flaring of gas is waste?

A Yes.

Q In your opinion, is the flaring of the gas produced on this McAdams lease preventable waste?

A I do not believe that it is preventable waste. It might be coining a phrase, but perhaps it should be called justifiable waste.

Q Mr. Eaton, if Pan American is forced to compress, save and sell this gas at a loss, as more or less a toll charge we have to pay to produce our oil, do you think from the over-all standpoint that conservation will be preserved?

A No, sir, I do not. I believe that that would force premature abandonment of the lease and leave oil otherwise recoverable in the ground.

Q So to reverse that coin, is it your opinion that conservation, over-all conservation would best be served by granting Pan American the exception they are requesting here today?

A Yes, sir.

Q Do you have anything else you would care to add at this time, Mr. Eaton?

A No, sir, I don't believe so.

MR. BUELL: May it please the Commission, that's all

we have by way of direct, and may I formally offer Pan American's Exhibits 1 through 4, inclusive?

MR. PORTER: Without objection, the exhibits will be admitted.

(Whereupon, Pan American's Exhibits Nos. 1 through 4 received in evidence.)

CROSS EXAMINATION

BY MR. PORTER:

Q Mr. Eaton, at this point would you say that the value of the oil and gas that might be left in the ground because of premature abandonment would exceed the value of the gas that might be flared under any favorable action on this application by the Commission?

A The operating costs of a normal operation of a lease, plus the operating costs of this compressor, would result in reaching an economic limit in February, 1966. This will reduce the oil reserves by an amount of 4700 barrels. In other words, instead of 13,000 barrels remaining reserves, the oil reserves remaining as of this time are only 8300 barrels.

Now at that same time, the gas which would have been produced can be pulled from column 3 on Exhibit No. 4. My quick additions show that the value of the gas produced through December, 1965, is $11,510.00.

MR. BUELL: Mr. Eaton, I get 410.

A All right, I'll accept that. Now the value of 4,700 barrels of oil at $2.70 a barrel is $12,700.00. In the context of the way I calculated it, I would say the value of the oil left does exceed the gas.

Q At the outset, I mean when this pool was first developed, were you able to predict with any degree of accuracy the performance of the gas-oil ratio, I mean as shown by actual performance?

A No, I never was at that time and I never have been able to since, to match by calculations the past performance of the gas-oil ratio on the McAdams "B" lease. No, sir, I sure haven't, Mr. Porter.

Q I see.

A The only thing that I have been able to do consistently is by material balance to make these gas-oil ratios, regardless of the assumptions made, all peak out at approximately the same stage of depletion, but by making various kinds of assumptions have gotten gas-oil ratio histories that peak out at much higher values than this 17,600 and at much lower values than 17,600.

Q Have these wells produced more casinghead gas than you anticipated at the time that you applied for your first no-flare order?

A I believe that they have, yes, sir, for the reason

that the gas-oil ratios have continued to increase since that time. I really didn't think that they would, at least not to the extent that they have.

Q Is it not true that the gas-oil ratios or that your gas production might exceed what you are predicting here on your Exhibit 3?

A It's possible that it would, but with the decline in oil rate the gas-oil ratio would have to increase quite a bit to change the economic picture very much. I don't mean to say --

Q In other words, you think if your gas production went up, your oil production comes down?

A Yes, sir.

Q One would offset the other?

A Yes, sir, more or less. They are somewhat compensating, though, I will say that.

MR. PORTER: Anyone else have a question? Mr. Nutter.

BY MR. NUTTER:

Q What would you do, Mr. Eaton, in the event that the gas-oil ratio climbed to the point it was reclassified as a gas well?

A In that event there would be no choice but to do one of two things, either install compression equipment to continue producing the well, shut it in; or if it had a gas-oil ratio that high, then it might have enough surface pressure to also

produce into the low pressure gathering system without compression. The other gas wells do.

Q Referring to your Exhibit No. 2, Mr. Eaton, at what point was the compressor that was installed removed? Wasn't it along about February or March of 1962?

A I believe so. I may be able to dig something up here that would firm that up a little bit, but that's my recollection, yes, sir.

Q Do you know how much gas was sold from the lease prior to the removal of the compressor?

A No, sir, I don't.

Q You stated that you didn't want to consider the operating costs of that compressor as typical of operating costs of compressors. That compressor was oversized, wasn't it?

A Yes, sir, it was.

Q And as a result of being oversized, it operated at extreme heats because there wasn't sufficient gas going through the compressor?

A Yes, and we had a bypass around it to take part of the compressed gas and feed back into the intake of the compressor so as to keep it fully loaded, but that was not very satisfactory either because the temperatures went up so high that the temperature -- we shut the compressor down just the same as it would be shut down if it hadn't any gas to be

sucked into the intake.

Q Are you acquainted with the previous history of this lease as far as the exception to the no-flares are concerned and the various letters and correspondence that have been held between the Commission and Pan American on this lease?

A Yes, sir, I believe so, Mr. Nutter.

Q You estimate now that your operating costs for this compressor would be a total -- operating and maintenance cost, I believe?

A Yes.

Q -- would be a total of $225.00. I believe that is the figure that's also quoted in Pan American's letter of May 8, 1964. However, apparently the same compressor, it has the same installation cost, the same rental cost, last year in a letter from Pan American dated June the 3rd, 1963, the operating and maintenance cost was $135.00 per month.

A Yes, sir.

Q What has been the cause for such an increase in operating costs on this compressor?

A At the time of those previous applications, we had only rule of thumb estimates on operating and maintenance costs that were furnished by Pan American's mechanical engineers; and I presume they got the data basically from the compressor manufacturer.

Now then, in the interim period we obtained actual cost experience from operation of a compressor in the Farmington area that showed it to be much higher than we had estimated. I believe that the actual cost experience data were preferable to these rule of thumb estimates, since they actually represent material obtained in the Four Corners area. So that's the reason that we went up to $225.00 per month.

Q There are some compressors that are going to be removed from certain installations, gathering installations north of the San Juan River in Totah or Cha Cha Pool in the near future, aren't there?

A I believe they have already been removed and taken away from the Farmington area.

Q They are not available for rental in that area any more?

A No, sir.

Q The nearest compressor is in Tulsa?

A The nearest compressor that I could find that seemed to fit this condition is in Tulsa.

Q What capacity compressor are you talking about, Mr. Eaton?

A I'm talking about a 60, I believe it figures out 60 horsepower compressor. It's two-stage, it will handle approximately 400 MCF a day from 20-pound suction pressure to 300-pound discharge.

Q 300 pounds is sufficient to get into the pipeline in the area?

A Yes.

Q And can handle 400 MCF a day at that compression rate?

A Yes, sir. This particular compressor has an inter-cooler between the two stages and no after-cooler. I hope that an after-cooler will not be necessary. If it proved to be necessary, then the rental charge would be a little higher. That's the only difference that it would make.

Q Mr. Eaton, you stated that if you were forced to compress the gas and sell it, that the economic life of the lease would be shortened till February of 1966, I believe, and thus lose 4700 barrels of oil; was that the figure?

A Yes, sir.

Q And your gas value which you are predicting would be produced is based on your curve there on Exhibit 3, is that correct?

A Yes, sir.

Q Looking at the gas-oil ratios that you have had available in this pool or on this lease over the life of the lease, you have got a rather random pattern of GOR's indicated by the circles there. Would you agree with me that drawing the smooth line which you've drawn to indicate the gas-oil ratio would be a highly interpretive piece of art?

A Yes, sir, it's only justified on the basis that we know approximately what shape it should have.

Q And drawing the broken line where your gas production is peaking out and dropping down is also an interpretive piece of art?

A Yes, sir, but less so than the other one because we do have this material balance where it indicates about eighty-five or ninety percent depletion.

Q You should have a peak but you don't know exactly what the level of the peak would be?

A That's correct.

MR. NUTTER: I believe that's all. I would like to request that N.F.O. File 530 be incorporated in the record of this case by reference. It will include letters from Pan American dated February 2, 1962, February 9th, 1962, May 2nd, 1962, December 14, 1962, June 3rd, 1963, and May the 8th, 1964.

MR. PORTER: Would you like to examine those?

MR. BUELL: Pan American would join in his motion to include that in the record.

MR. PORTER: Mr. Nutter, the Commission will take administrative notice of the letters in the files pertaining to the no-flare situation.

Anyone else have a question? Mr. Utz.

BY MR. UTZ:

Q Mr. Eaton, what has been done with this gas in the past? For a while you sold it, as long as you had a compressor. Did you sell it after you took the compressor out?

A No.

Q You have been flaring it under no-flare orders ever since?

A Yes, that is correct.

Q And this case has come to be because no-flare orders were refused or what?

A Well, perhaps we did, in hindsighting I would say we did make an error in preparing our applications in the manner we did, considering only the present behavior of the lease at the time the application was filed. The unfortunate part of it is that the gas rates have continued to increase on this lease over and above what was thought at each of these times. It finally got to such a high level that it looked like that there was such a close balance between the economics of compressing or not compressing, that the matter was set for hearing to consider it.

MR. PORTER: Mr. Utz, I can answer that question for you, and I agree with what Mr. Eaton has said concerning the economics of the situation have caused the market of gas and the value of the gas coming closer and closer. When I received the application for administrative consideration, I did give

it administrative consideration but only for a period of thirty days until we could get more facts into the record. That's the reason this hearing has been called here today.

Q (By Mr. Utz) How much gas has been flared in the past?

A I don't have that figure.

Q You don't have an estimate of how much the lease has flared on your no-flare order?

A I can give you an estimate of how much it's flaring per day.

Q Well, that's all right.

A It's approximately 250 to 260 MCF per day at the present time.

MR. NUTTER: I think, Mr. Utz, that the no-flare file, N.F.O. 530, will give an indication of the amount of gas that's been produced.

A Yes.

Q (By Mr. Utz) How much oil does the lease produce now? I think you stated that.

A Yes, it's producing approximately sixteen barrels per day.

MR. BUELL: That's total lease production.

A Total lease production, sixteen barrels per day, 500 barrels per month.

Q (By Mr. Utz) You are making money on the sixteen barrels per day?

A That's above the economic limit. Of course, I am sure you recognize that what happens to a lease when it gets down close to the economic limit, which I have to say this is getting close to it, the rods part on the pumping unit or the tubing parts or some unexpected thing happens and the payout that you can see,on repairing even a minor item like that,eventually gets to be such a long period of time that you just figure, well, it isn't worth that long a payout period, and give up on the operation of that particular well.

It is above the economic limit now and will be, I think, for some time to come, so long as we don't have extraordinary expenses incurred.

Q If you were to compress the gas now, wouldn't your lease, including the gas sale, the loss on the gas, the profit on the oil, would you still not be making a profit on the lease?

A It would not become uneconomic until February, 1966.

Q It's your contention that if you compress it, it will be uneconomic at an earlier date?

A Yes, that's right. What I wanted to say, Mr. Utz, that perhaps it's unfortunate that we didn't do this sooner; but it's only at this time that we have sat down and tried to make a forecast of what the gas rates will be on this lease

throughout the remainder of its life. All previous applications have been based on data that was available only at that present time, by extrapolating that into the future.

Q If your gas production should increase substantially in the later life of this lease, what would be your attitude then?

A If it looked like that the gas volumes were high enough that compression was an economic venture, I would certainly recommend it.

Q At the same time, if your oil production dropped down to a few barrels a month, you wouldn't make application to run that down the arroyo, would you?

A No, sir.

MR. UTZ: That's all I have.

MR. PORTER: Mr. Nutter.

BY MR. NUTTER:

Q Does Pan American operate any other oil wells in this pool?

A No, we have one other well in this pool, the Jack Frost "B" No. 1 which is that well that's located in the Southeast Quarter of Section 27. But the well became uneconomic to operate, oh, about the same time as the compressor was removed from the McAdams lease; and that well has been shut-in ever since then. It isn't abandoned because it's a dual

completion in the Dakota, but it hasn't been produced in a long time.

Q What is the purchase price of an engine and a compressor in the 400 MCF per day capacity range?

A I believe I've heard our people speak of $250.00 per installed horsepower, which would on a 60 horsepower machine be $15,000.00.

Q $250.00 per horsepower?

A I believe.

MR. NUTTER: Thank you.

BY MR. PORTER:

Q Would you say these two wells have paid out? They produced 55,000 barrels of oil up to now. I don't know what the value of the gas itself that's been sold is.

A It's sure a difficult question. I am going to say they are about dead. The reason it's so difficult, they are dual completions in the Dakota.

Q So you would have to apportion the cost?

A Yes. I would say they have about paid cut now.

MR. NUTTER: The cost of dualling has been paid out, at least?

A I would assume so, although the cost of dualling may be somewhat more than what might be thought, since we have much larger casing, seven inch instead of four and a half, and

we have two strings of tubing in there and two sets of perforations and two fract jobs, and the cost of dualling might be more.

Q (By Mr. Porter) Mr. Eaton, another question. Are you asking for an indefinite order granting permission to no-flare, a permanent order?

MR. PORTER: I believe he wants you to answer that.

MR. BUELL: May it please the Commission, yes, sir, we are. We are confident of the data that we have, although admittedly some of it is based on prediction. We feel sincerely it is accurate enough to justify a permanent exception.

Certainly if the Commission would rather grant a temporary exception so they could review it at a later date, Pan American would have no objections whatsoever.

MR. PORTER: Mr. Utz.

BY MR. UTZ:

Q Mr. Eaton, you then have two Dakota wells on this lease also?

A Yes, sir.

Q You are making a profit on the Dakota completions?

A Yes, sir, I hope so.

Q You have how many Pictured Cliff wells?

A The Pictured Cliff wells do not belong to Pan American.

Q You just have them from the Gallup then?

A Yes, sir.

MR. UTZ: That's all.

MR. PORTER: Anyone else have a question? The witness may be excused.

(Witness excused.)

MR. PORTER: Does that conclude Pan American's testimony?

MR. BUELL: Yes, that concludes our testimony. I would like to make a brief statement.

MR. PORTER: You may proceed if there's no further testimony in the case.

MR. BUELL: I can personally understand the concern of the Commission and the Staff with regard to flaring of gas, not only on our McAdams lease but anywhere in the State of New Mexico. I think that concern is certainly **justified**and I would like to, as sincerely as I can, state that we certainly wish it was economic to save and sell this gas here, for two reasons: One, Pan American to my knowledge has never turned its back on a profit; and, two, we like to, to the fullest extent that we can, serve conservation.

Admittedly, the flaring of gas is waste when you just look at that bare fact, but I think the Commission's jurisdiction and concern should be guided by what is preventable waste and what is not preventable waste.

Certainly in my opinion as a lawyer, and based on my experience on proration,gas that is uneconomic to compress, save and sell, the flaring of that gas in my opinion is not preventable waste, and I would like to reiterate --

MR. PORTER: In other words, you would classify that as justifiable waste?

MR. BUELL: Certainly. I believe it would well fall within the definition. Waste is occurring every day in New Mexico. There is not a well abandoned but what hydrocarbons are not left in the reservoir. If we would carry prevention of waste to an extreme, this Commission would require the operators to mine the reservoir in order to get every last drop out of it. But that residual oil and that residual gas that is left is waste, but it is not, with the techniques we have today, preventable waste.

I think certainly the flaring of gas in the case where it is not even a borderline economic case but clearly an economic losing case is not in any sense preventable waste.

MR. NUTTER: Are you disagreeing with your witness? I think he said it was preventable but justifiable.

MR. BUELL: If he said that, I do disagree with it, and I want the record to show that I disagree with him. This is not preventable waste. I don't believe he said it.

MR. WALKER: I think he meant that it was preventable

but justifiable. You will also agree that sometimes we have human waste, too.

MR. PORTER: Does anyone have anything further in the case? The Commission will take the case under advisement.

* * *

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal this 27th day of July, 1964.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

DRAFT
JMD/esr
July 17, 1964

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. 3080

Order No. R-2744

APPLICATION OF PAN AMERICAN PETROLEUM
CORPORATION FOR A NO-FLARE EXCEPTION,
SAN JUAN COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on July 15, 1964, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this _____ day of July, 1964, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, 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, Pan American Petroleum Corporation, seeks an exception to Rule 8 of the Special Rules and Regulations for the Angels Peak-Gallup Pool to flare or vent casinghead gas produced from its C. A. McAdams "B" Wells Nos. 1 and 2, located in Units J and E of Section 28, Township 27 North, Range 10 West, NMPM, San Juan County, New Mexico.

(3) That the cost of installing, operating, and maintaining a compressor on the applicant's C. A. McAdams "B" Lease would decrease the productive life of the subject wells, resulting in premature abandonment of said wells and waste of recoverable oil.

(4) That approval of the subject application will result in greater ultimate recovery of the most valuable hydrocarbons from the applicant's C. A. McAdams "B" Lease, thereby preventing waste.

IT IS THEREFORE ORDERED:

(1) That the applicant, Pan American Petroleum Corporation, is hereby granted an exception to Rule 8 of the Special Rules and Regulations for the Angels Peak-Gallup Pool to flare or vent all casinghead gas produced from its C. A. McAdams "B" Wells Nos. 1 and 2, located in Units J and E of Section 28, Township 27 North, Range 10 West, NMPM, San Juan County, New Mexico.

(2) 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.