

CASE 3096: Appli. of CONTINENTAL  
for pool rules and gas-oil ratio  
for MALJAMAR-ABO POOL, LEA COUNTY.

CASE NO.

3096

Application,

TRANSCRIPTS,

Small Exhibits

ETC.

DRAFT

JMD/esr

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:

CF Subj

① Special Rules  
Maljamar Abo  
80-acre spacing  
② Special Rules  
Maljamar Abo  
6000 to 1 GOR

CASE No. 3096

Order No. R-2766

APPLICATION OF CONTINENTAL OIL  
COMPANY FOR SPECIAL POOL RULES,  
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on  
August 26, 1964, at Santa Fe, New Mexico, before Examiner  
Daniel S. Nutter

NOW, on this Sept day of August, 1964, the Commission,  
a quorum being present, having considered the testimony, the record,  
and the recommendations of the Examiner, and being fully advised  
in the premises,

FINDS:

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

(2) That the applicant, Continental Oil Company, seeks the  
promulgation of ~~temporary~~ special rules and regulations for the  
Maljamar-Abo Pool in Township 17 South, Range 32 East, NMPM, Lea  
County, New Mexico, including a provision for 80-acre spacing  
units and a gas-oil ratio of 6000 to 1.

(4) That in order to prevent the economic loss caused by  
the drilling of unnecessary wells, to avoid the augmentation of  
risk arising from the drilling of an excessive number of wells,  
to prevent reduced recovery which might result from the drilling

(3) That one well in the Maljamar-Abo Pool can  
efficiently and economically drain and develop  
80 acres.

of too few wells, and to otherwise prevent waste and protect correlative rights, ~~temporary~~ special rules and regulations providing for 80-acre spacing units should be promulgated for the Maljamar-Abo Pool.

(5) That the ~~temporary~~ special rules and regulations should provide for limited well locations in order to assure orderly development of the pool and protect correlative rights.

(6) That the ~~temporary~~ special rules and regulations should provide for a limiting gas-oil ratio of ~~5000~~<sup>7000</sup> to 1 in order to allow each operator in the pool the opportunity to use his just and equitable share of the reservoir energy.

(6) That the temporary special rules and regulations should be established for a one-year period in order to allow the operators in the subject pool to gather reservoir information to establish the area that can be efficiently and economically drained and developed by one well.

(7) That this case should be reopened at an examiner hearing in \_\_\_\_\_, 1965, at which time the operators in the subject pool should be prepared to appear and show cause why the Maljamar-Abo Pool should not be developed on 40-acre spacing units.

IT IS THEREFORE ORDERED:

That temporary Special Rules and Regulations for the Maljamar-Abo Pool are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS  
FOR THE

of too few wells, and to otherwise prevent waste and protect correlative rights, ~~temporary~~ special rules and regulations providing for 80-acre spacing units should be promulgated for the Maljamar-Abo Pool.

(5) That the ~~temporary~~ special rules and regulations should provide for limited well locations in order to assure orderly development of the pool and protect correlative rights.

(6) That the ~~temporary~~ special rules and regulations should provide for a limiting gas-oil ratio of ~~5000~~<sup>7000</sup> to 1 in order to allow each operator in the pool the opportunity to use his just and equitable share of the reservoir energy.

(6) That the temporary special rules and regulations should be established for a one-year period in order to allow the operators in the subject pool to gather reservoir information to establish the area that can be efficiently and economically drained and developed by one well.

(7) That this case should be reopened at an examiner hearing in \_\_\_\_\_, 1965, at which time the operators in the subject pool should be prepared to appear and show cause why the Maljamar-Abo Pool should not be developed on 40-acre spacing units.

IT IS THEREFORE ORDERED:

That temporary Special Rules and Regulations for the Maljamar-Abo Pool are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS  
FOR THE  
MALJAMAR-ABO POOL

RULE 1. Each well completed or recompleted in the Maljamar-Abo Pool or in the Abo formation within one mile ~~of the Maljamar-Abo Pool~~<sup>thereof</sup>, and not nearer to or within the limits of another designated Abo <sup>oil</sup> pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. Each well ~~completed or recompleted in the Maljamar-Abo Pool~~ shall be located on a standard unit containing 80-acres, more or less, consisting of the N/2, S/2, E/2, or W/2 of a ~~single~~ governmental quarter section; provided, however, that nothing

RULE 3. The Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 without notice and hearing when an application has been filed for a non-standard unit comprising a single quarter-quarter section or lot. All operators offsetting the proposed non-standard unit shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the formation of the non-standard unit within 30 days after the Secretary-Director has received the application.

RULE 4. *The first well drilled on every standard or non-standard unit shall be located in the NE/4 or SW/4 of a governmental quarter section. All wells shall be located within 100 feet of the center of a governmental quarter-quarter section.*

RULE 5. The Secretary-Director may grant an exception to the <sup>footage</sup> requirements of Rule 4 without notice and hearing when an application has been filed for an unorthodox location necessitated by topographical conditions or the recompletion of a well previously drilled to another horizon, *provided the well will be located no nearer than 330 feet to the outer boundary of the unit.* All operators offsetting the proposed unorthodox location shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the unorthodox location within 20 days after the Secretary-Director has received the application.

RULE 6. A standard proration unit (79 through 81 acres) ~~in~~ ~~the Majamar-Abu Pool~~ shall be assigned an 80-acre proportional

factor of 4.00 for allowable purposes, and in the event there is more than one well on an 80-acre proration unit, the operator may produce the allowable assigned to the unit from the wells on the unit in any proportion.

The allowable assigned to a non-standard proration unit shall bear the same ratio to a standard allowable ~~in the Maljamar-Abo Pool~~ as the acreage in such non-standard unit bears to 80 acres.

RULE 7. The limiting gas-oil ratio ~~in the Maljamar-Abo Pool~~ shall be <sup>1000</sup>~~6000~~ cubic feet of gas for each barrel of oil produced.

IT IS FURTHER ORDERED:

(1) That any well presently drilling to or completed in the Abo formation within the Maljamar-Abo Pool or within one mile of the Maljamar-Abo Pool that will not comply with the well location requirements of Rule 4 is hereby granted an exception to the requirements of said rule. The operator shall notify the Hobbs District Office of the Commission in writing of the name and location of the well on or before \_\_\_\_\_, 1964.

(2) That any operator desiring to dedicate 80 acres to a well presently drilling to or completed in the Maljamar-Abo Pool shall file a new Form C-128 with the Commission on or before September 15, 1964.

(3) That this case shall be reopened at an examiner hearing in \_\_\_\_\_, 1965, at which time the operators in the subject pool may appear and show cause why the Maljamar-Abo Pool should not be developed on 40-acre spacing units.

(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.

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE  
STATE OF NEW MEXICO

MAIN OFFICE OCC

1984 AUG 10 AM 7:43

*Case 3096*

IN THE MATTER OF THE APPLICATION OF  
CONTINENTAL OIL COMPANY FOR SPECIAL  
POOL RULES FOR THE MALJAMAR-ABO POOL  
INCLUDING PROVISIONS FOR 80-ACRE  
SPACING AND 6000:1 GAS-OIL RATIO  
LIMITATION.

A P P L I C A T I O N

Comes now Applicant, Continental Oil Company, and respectfully requests the promulgation of special pool rules for the Maljamar-Abo Pool, including provisions for 80-acre drilling and spacing units and gas-oil ratio limitation of 6000:1 and in support thereof would show:

1. The Maljamar-Abo Pool as presently designated is comprised of the following described lands in Township 17 South, Range 32 East, Lea County, New Mexico:

S/2 Section 16  
SE/4 Section 17  
E/2 Section 20  
Section 21  
NW/4 Section 22  
E/2 Section 28  
N/2 NE/4 Section 33

2. Applicant is the owner and operator of leases and wells in said pool.

3. Applicant can show that special pool rules providing for 80-acre drilling and spacing units and a 6000:1 gas-oil ratio limitation will prevent waste and protect correlative rights.

WHEREFORE, Applicant respectfully requests that this application be set for hearing before the Commission's duly-appointed examiner and that upon hearing an order be entered promulgating special rules for the Maljamar-Abo Pool as described above.

Respectfully submitted,  
CONTINENTAL OIL COMPANY

By *Carl Marshall*  
District Manager  
of Production

JM-DFW

DOCKET MAILED

Date 8-12-64  
*JK*



BEFORE THE OIL CONSERVATION COMMISSION  
OF THE  
STATE OF NEW MEXICO

1934 AUG 10 AM 7 44

IN THE MATTER OF THE APPLICATION OF  
CONTINENTAL OIL COMPANY FOR SPECIAL  
POOL RULES FOR THE MALJAMAR-ABO POOL  
INCLUDING PROVISIONS FOR 80-ACRE  
SPACING AND 6000:1 GAS-OIL RATIO  
LIMITATION.

A P P L I C A T I O N

Comes now Applicant, Continental Oil Company, and re-  
spectfully requests the promulgation of special pool rules for the  
Maljamar-Abo Pool, including provisions for 80-acre drilling and  
spacing units and gas-oil ratio limitation of 6000:1 and in support  
thereof would show:

1. The Maljamar-Abo Pool as presently designated is  
comprised of the following described lands in Township 17 South,  
Range 32 East, Lea County, New Mexico:

S/2 Section 16  
SE/4 Section 17  
E/2 Section 20  
Section 21  
NW/4 Section 22  
E/2 Section 28  
N/2 NE/4 Section 33

2. Applicant is the owner and operator of leases and  
wells in said pool.

3. Applicant can show that special pool rules providing  
for 80-acre drilling and spacing units and a 6000:1 gas-oil ratio  
limitation will prevent waste and protect correlative rights.

WHEREFORE, Applicant respectfully requests that this ap-  
plication be set for hearing before the Commission's duly-appointed  
examiner and that upon hearing an order be entered promulgating  
special rules for the Maljamar-Abo Pool as described above.

Respectfully submitted,  
CONTINENTAL OIL COMPANY

By Carl Marshall  
District Manager  
of Production

MAIN OFFICE OCC  
BEFORE THE OIL CONSERVATION COMMISSION  
OF THE  
STATE OF NEW MEXICO

1994 AUG 10 AM 7:44

IN THE MATTER OF THE APPLICATION OF  
CONTINENTAL OIL COMPANY FOR SPECIAL  
POOL RULES FOR THE MALJAMAR-ABO POOL  
INCLUDING PROVISIONS FOR 80-ACRE  
SPACING AND 6000:1 GAS-OIL RATIO  
LIMITATION.

A P P L I C A T I O N

Comes now Applicant, Continental Oil Company, and respectfully requests the promulgation of special pool rules for the Maljamar-Abo Pool, including provisions for 80-acre drilling and spacing units and gas-oil ratio limitation of 6000:1 and in support thereof would show:

1. The Maljamar-Abo Pool as presently designated is comprised of the following described lands in Township 17 South, Range 32 East, Lea County, New Mexico:

S/2 Section 16  
SE/4 Section 17  
E/2 Section 20  
Section 21  
NW/4 Section 22  
E/2 Section 28  
N/2 NE/4 Section 33

2. Applicant is the owner and operator of leases and wells in said pool.

3. Applicant can show that special pool rules providing for 80-acre drilling and spacing units and a 6000:1 gas-oil ratio limitation will prevent waste and protect correlative rights.

WHEREFORE, Applicant respectfully requests that this application be set for hearing before the Commission's duly-appointed examiner and that upon hearing an order be entered promulgating special rules for the Maljamar-Abo Pool as described above.

Respectfully submitted,  
CONTINENTAL OIL COMPANY

By Jack Marshall  
District Manager  
of Production

JM-DFW

PAN AMERICAN PETROLEUM CO.  
NO. 1 USA BAISH-"B"  
212° FSL 519' FEL SEC 28-17S-32E  
TD. 9660' ELEV. 3990 DF

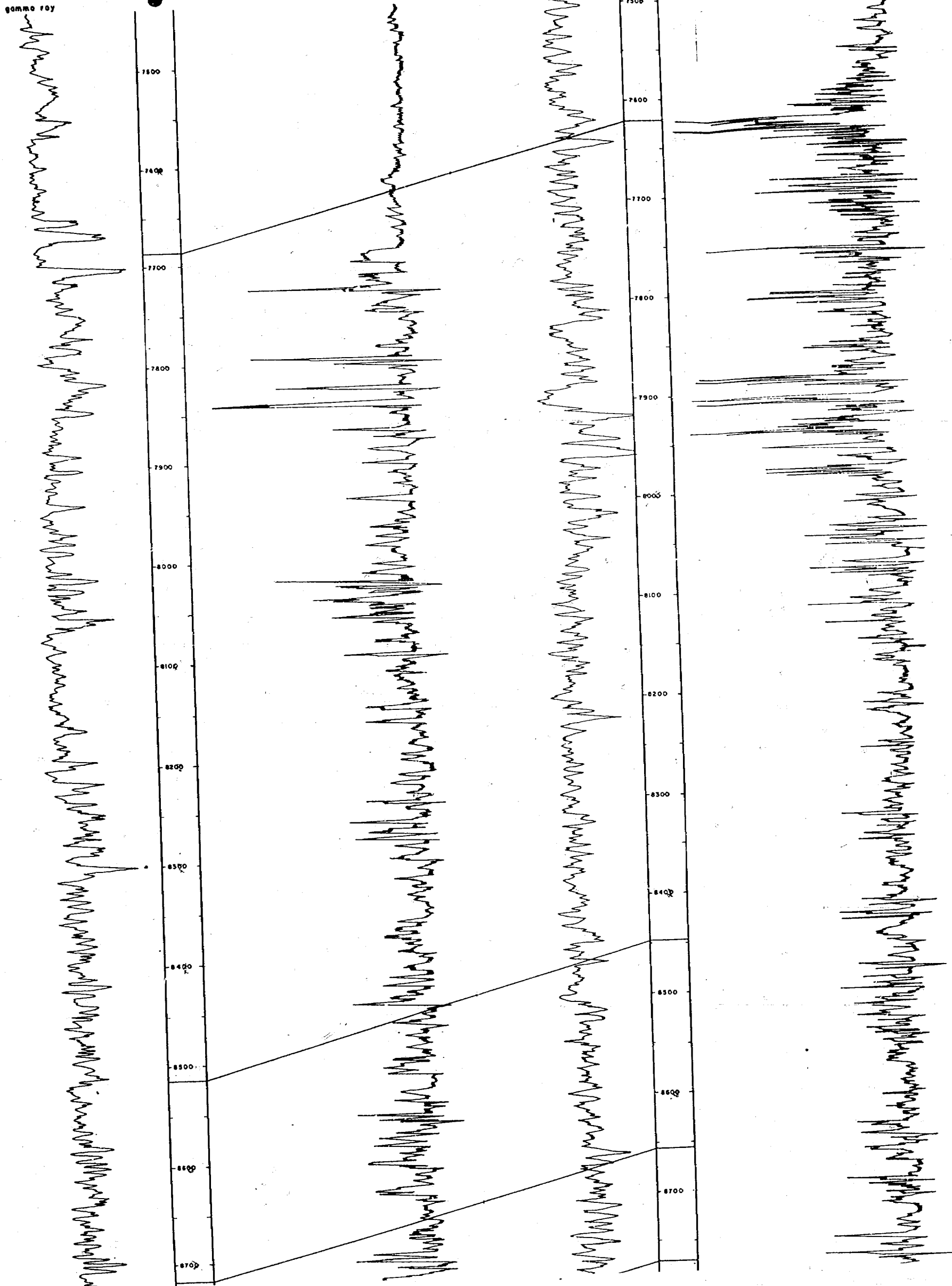
CONTINENTAL OIL COMPANY  
NO 8 BAISH "A"  
1980' FSL 810' FEL SEC 21-17S-32E  
TD. 13,670' ELEV. 4052' DF

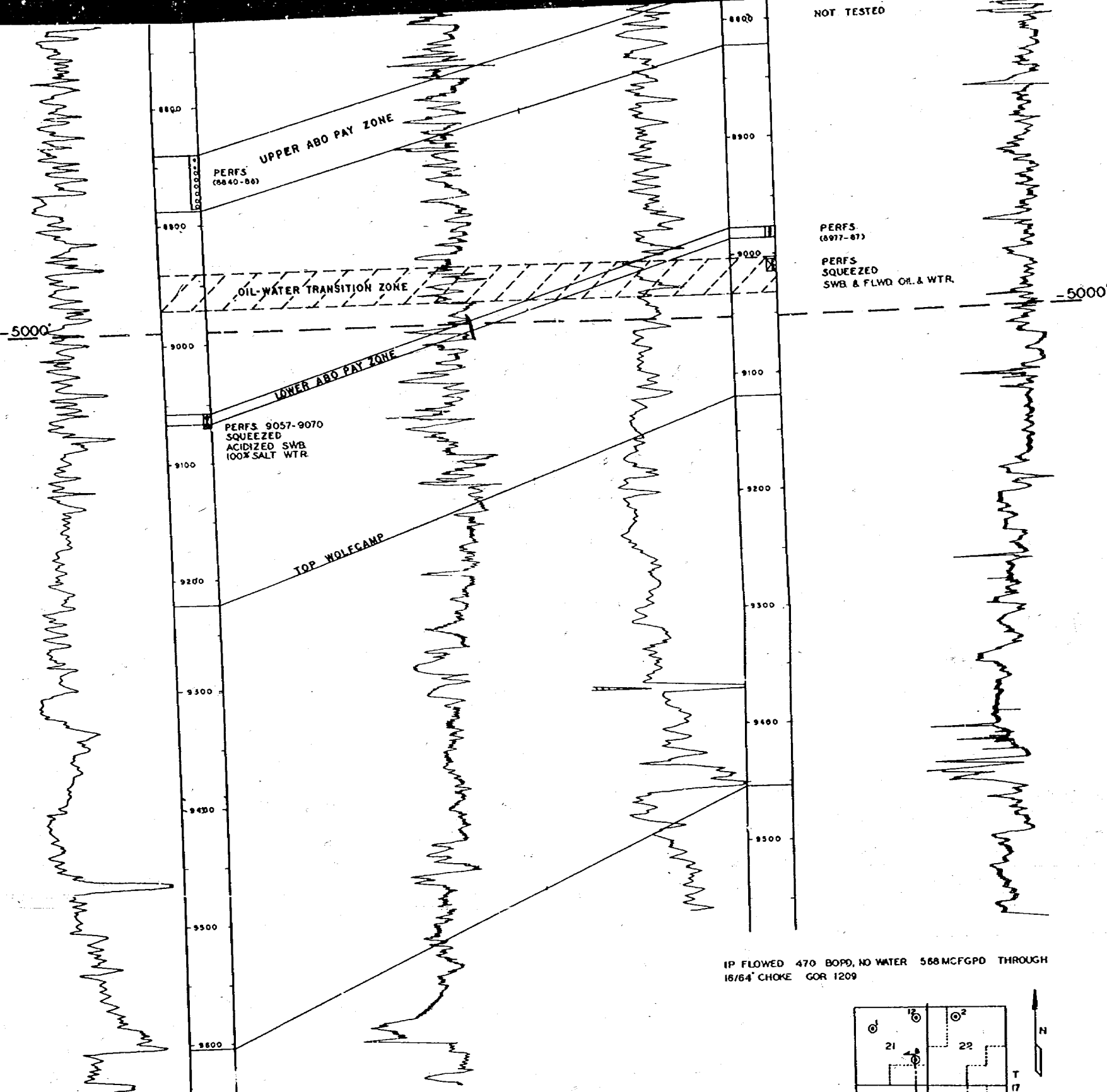
gamma ray

sonic

gamma ray

sonic





IP PUMPED 24 BOPD & 15 BWPD

IP FLOWED 470 BOPD, NO WATER 568 MCFGPD THROUGH 16/64" CHOKE GOR 1209

MALJAMAR DEEP WELLS

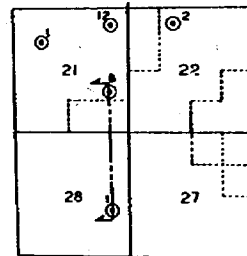


EXHIBIT NO. 2.

RFM

DOCKET: EXAMINER HEARING - WEDNESDAY - AUGUST 26, 1964

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 Elvis A. Utz, Alternate Examiner:

CASE 3095: Application of Continental Oil Company for an amendment to Order No. R-2564, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an amendment to Order No. R-2564 to provide, among other things, the substitution of two wells in Units N and O for the presently authorized injection well in Unit K of Section 34, Township 28 North, Range 17 West, Table Mesa-Dakota Pressure Maintenance Project, Table Mesa Pool, San Juan County, New Mexico.

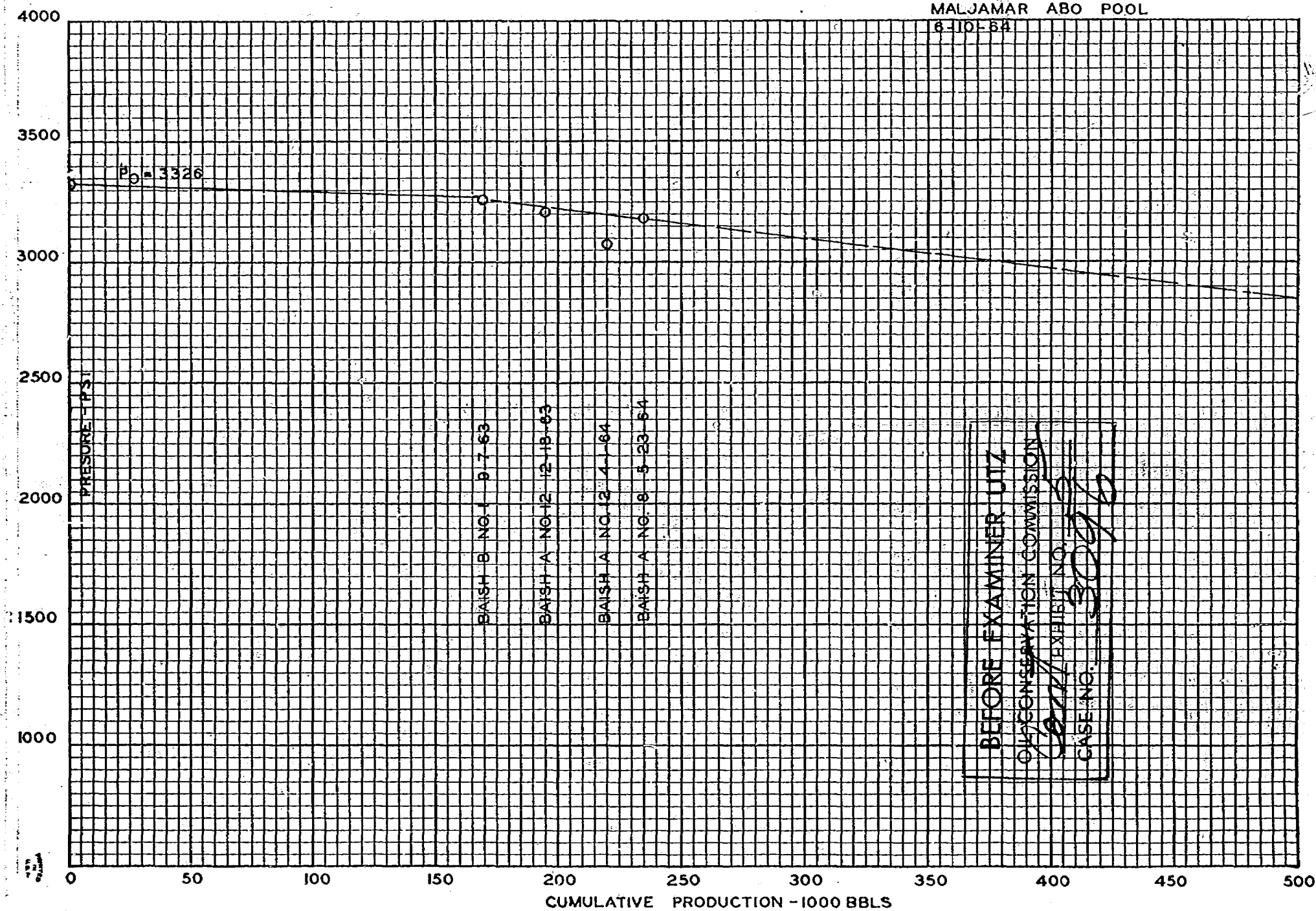
CASE 3096: Application of Continental Oil Company for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of special pool rules, including a provision for 80-acre spacing and a gas-oil ratio of 6000 to 1 for the Maljamar-Abo Pool in Township 17 South, Range 32 East, Lea County, New Mexico.

CASE 3097: Application of Continental Oil Company for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of special pool rules including a provision for 80-acre proration units for the Baish-Wolfcamp Pool in Sections 21 and 22, Township 17 South, Range 32 East, Lea County, New Mexico.

CASE 3082: (Continued from the July 22, 1964 Examiner Hearing)  
Application of Union Oil Company of California for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Devonian formation through perforations from 11,246 feet to 11,285 feet in its State-Gross Well No. 2 located in Unit G of Section 2, Township 12 South, Range 32 East, East Caprock Field, Lea County, New Mexico.

CASE 3098: In the matter of the hearing called by the Oil Conservation Commission upon its own motion to consider a revision of Rule 701-E-4. In the above-styled cause, the Commission proposes to consider an amendment to Rule 701-E-4 of the Rules and Regulations to provide a more current area allowable factor for waterfloods in Northwest New Mexico. The proposed factor would be approximately 70 barrels per day.

RESERVOIR PERFORMANCE  
MALJAMAR ABO POOL  
6-10-64





SPECIAL RULES AND REGULATIONS  
FOR THE MALJAMAR-ABO OIL POOL

RULE 1. Each well completed or recompleted in the Maljamar-Abo Oil Pool or in the Abo formation within one mile of the Maljamar-Abo Oil Pool, and not nearer to or within the limits of another designated Abo Oil Pool, shall be spaced, drilled, operated, and produced in accordance with the special Rules and Regulations hereinafter set forth.

RULE 2. Each well completed or recompleted in the Maljamar-Abo Oil Pool shall be located on a standard unit containing 80 acres, more or less, consisting of the N/2, S/2, E/2, or W/2 of a single governmental quarter section; provided, however, that nothing contained herein shall be construed as prohibiting the drilling of a well on each of the quarter-quarter sections in the unit.

RULE 3. The Secretary-Director may grant an exception to the requirements of Rule 2 without notice and hearing when an application has been filed for a non-standard unit comprising a single quarter-quarter section or lot. All operators offsetting the proposed non-standard unit shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the formation of the non-standard unit within 30 days after the Secretary-Director has received the application.

RULE 4. Each well projected to or completed in the Maljamar-Abo Oil Pool shall be located within 150 feet of the center of either the NE/4 or the SW/4 of the quarter section.

RULE 5. The Secretary-Director may grant an exception to the requirements of Rule 4 without notice and hearing when an application has been filed for an unorthodox location necessitated by topographical conditions, the recompletion of a well previously drilled to another horizon, or the drilling of a second well on a standard unit. All operators offsetting the proposed unorthodox

BEFORE EXAMINER UTZ

OIL CONSERVATION COMMISSION

EXHIBIT NO. 6

CASE NO. 3096



location shall be notified of the application by registered or certified mail and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the unorthodox location within 20 days after the Secretary-Director has received the application.

RULE 6. A standard proration unit (79 through 81 acres) in the Maljamar-Abo Oil Pool shall be assigned an 80-acre proportional factor of 4.00 for allowable purposes, and in the event there is more than one well on an 80-acre proration unit, the operator may produce the allowable assigned to the unit from the wells on the unit in any proportion. The allowable assigned to a non-standard proration unit shall bear the same ratio to a standard allowable in the Maljamar-Abo Oil Pool as the acreage in such non-standard unit bears to 80 acres.

RULE 7. The limiting gas-oil ratio for the Maljamar-Abo shall be

6000:1.  
4000:1

# PAN AMERICAN PETROLEUM CORPORATION

OIL AND GAS BUILDING P. O. BOX 1410

FORT WORTH 1, TEXAS

August 21, 1964

WILLIAM V. GRISHAM  
DIVISION ENGINEER*File  
Case 3096  
WV*

File: GHF-323-986.510.1

Subject: Special Field Rules  
Maljamar Abo Pool  
Lea County, New Mexico  
NMOCC Case 3096

Mr. A. E. Porter, Jr.  
Secretary-Director  
New Mexico Oil Conservation Commission  
P. O. Box 871  
Santa Fe, New Mexico

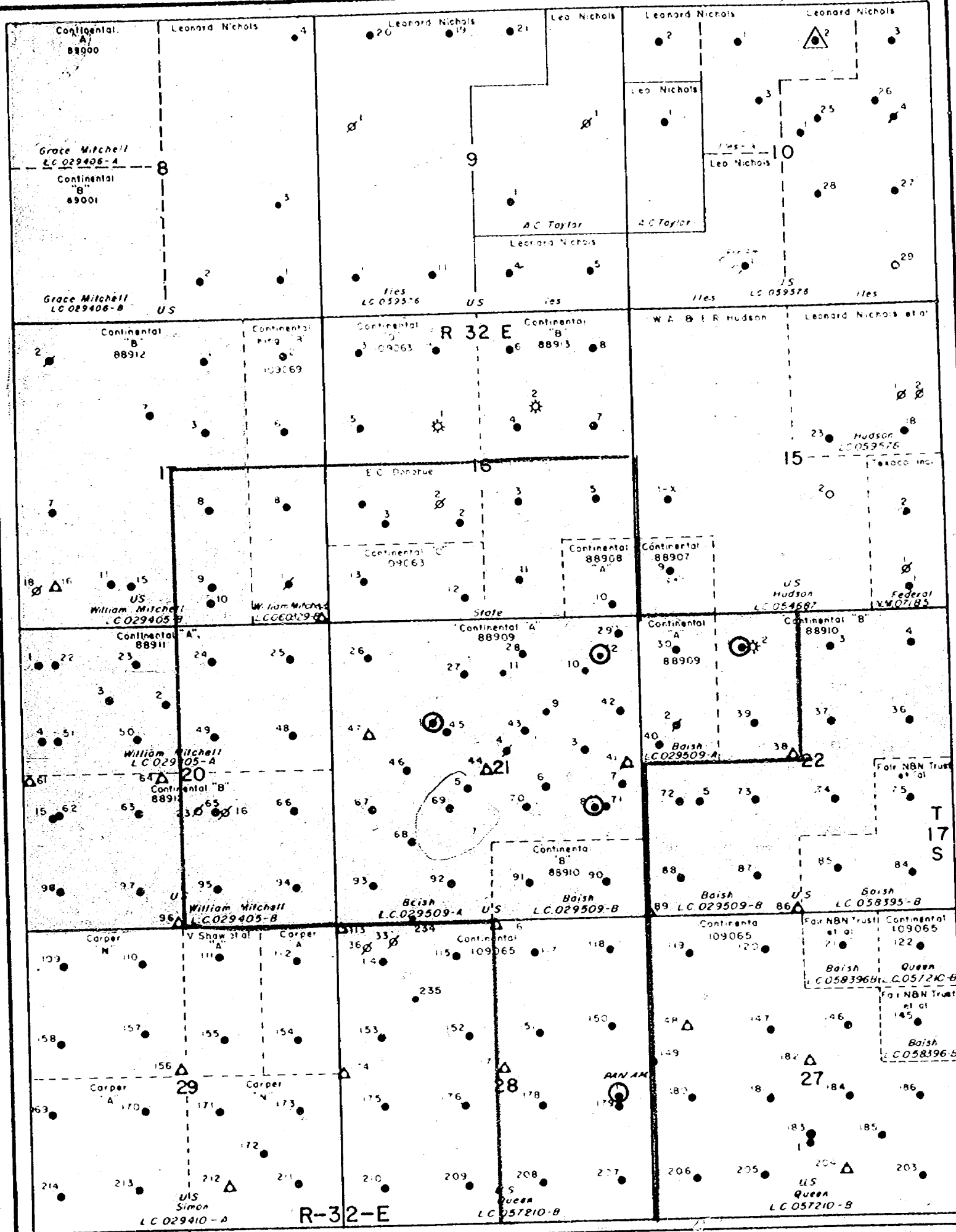
Dear Sir:

Case 3096 on the docket for the Commission's examiner hearing of August 26, 1964, is the application of Continental Oil Company for special pool rules, Lea County, New Mexico. The notice of hearing states that the applicant seeks the establishment of special pool rules including a provision for 80-acre spacing and a gas-oil ratio of 6,000 to 1 for the Maljamar Abo Pool in T-17-S, R-32-E, Lea County, New Mexico.

Pan American Petroleum Corporation has operations in this field and has no objection to Continental's proposed rules as outlined in the notice of hearing.

Yours very truly,

*W. V. Grisham*



● Maljamar Abo Pool Wells

BEFORE EXAMINER UTZ  
CONSERVATION COMMISSION  
EXHIBIT NO. 1  
CASE NO. 3096

CONTINENTAL OIL COMPANY  
PRODUCTION DEPARTMENT  
HOBBS DISTRICT  
MALJAMAR POOL AREA  
Leo County, New Mexico  
MALJAMAR ABO WELLS

SCALE  
0 1000 2000

Case 3086

Heard 8-26-64

Res. 8-26-64

1. Grant Comt. request for special pool  
Rules for Maljamas - Abo oil Pool.  
These rules in accordance with  
Ex. #6 except, allow 4000:1 GOR.  
rather than 6000:1

2. Make order permanent since pool  
appears to be fully developed by 4 wells.

Thurston W. J.

GOVERNOR  
JACK M. CAMPBELL  
CHAIRMAN

State of New Mexico  
**Oil Conservation Commission**



LAND COMMISSIONER  
E. B. JOHNNY WALKER  
MEMBER

P. O. BOX 2088  
SANTA FE

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

September 9, 1964

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

Re: CASE NO. 3096  
ORDER NO. R-2766  
APPLICANT Continental

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

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. 3096  
Order No. R-2766

APPLICATION OF CONTINENTAL OIL  
COMPANY FOR SPECIAL POOL RULES,  
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on August 26, 1964, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 8th day of September, 1964, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Continental Oil Company, seeks the promulgation of special rules and regulations for the Maljamar-Abo Pool in Township 17 South, Range 32 East, NMPM, Lea County, New Mexico, including a provision for 80-acre spacing units and a gas-oil ratio of 6000 to 1.

(3) That one well in the Maljamar-Abo Pool can efficiently and economically drain and develop 80 acres.

(4) That in order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, special rules and regulations providing

-2-

CASE No. 3096  
Order No. R-2766

for 80-acre spacing units should be promulgated for the Maljamar-Abo Pool.

(5) That the special rules and regulations should provide for limited well locations in order to assure orderly development of the pool and protect correlative rights.

(6) That the special rules and regulations should provide for a limiting gas-oil ratio of 4000 to 1 in order to allow each operator in the pool the opportunity to use his just and equitable share of the reservoir energy.

IT IS THEREFORE ORDERED:

That Special Rules and Regulations for the Maljamar-Abo Pool are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS  
FOR THE  
MALJAMAR-ABO POOL

RULE 1. Each well completed or recompleted in the Maljamar-Abo Pool or in the Abo formation within one mile thereof, and not nearer to or within the limits of another designated Abo oil pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. Each well shall be located on a standard unit containing 80-acres, more or less, consisting of the N/2, S/2, E/2, or W/2 of a governmental quarter section; provided, however, that nothing contained herein shall be construed as prohibiting the drilling of a well on each of the quarter-quarter sections in the unit.

RULE 3. The Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 without notice and hearing when an application has been filed for a non-standard unit comprising a single quarter-quarter section or lot. All operators offsetting the proposed non-standard unit shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the formation of the non-standard unit

-3-

CASE No. 3096

Order No. R-2766

within 30 days after the Secretary-Director has received the application.

RULE 4. The first well drilled on every standard or non-standard unit shall be located in the NE/4 or SW/4 of a governmental quarter section. All wells shall be located within 150 feet of the center of a governmental quarter-quarter section.

RULE 5. The Secretary-Director may grant an exception to the footage requirements of Rule 4 without notice and hearing when an application has been filed for an unorthodox location necessitated by topographical conditions or the recompletion of a well previously drilled to another horizon, provided the well will be located no nearer than 330 feet to the outer boundary of the unit. All operators offsetting the proposed unorthodox location shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the unorthodox location within 20 days after the Secretary-Director has received the application.

RULE 6. A standard proration unit (79 through 81 acres) shall be assigned an 80-acre proportional factor of 4.00 for allowable purposes, and in the event there is more than one well on an 80-acre proration unit, the operator may produce the allowable assigned to the unit from the wells on the unit in any proportion.

The allowable assigned to a non-standard proration unit shall bear the same ratio to a standard allowable as the acreage in such non-standard unit bears to 80 acres.

RULE 7. The limiting gas-oil ratio shall be 4000 cubic feet of gas for each barrel of oil produced.

IT IS FURTHER ORDERED:

(1) That any operator desiring to dedicate 80 acres to a well presently drilling to or completed in the Maljamar-Abo Pool shall file a new Form C-128 with the Commission on or before September 15, 1964.



-4-

CASE No. 3096  
Order No. R-2766

(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*

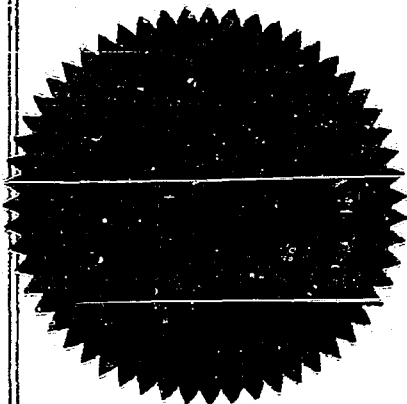
JACK M. CAMPBELL, Chairman

*E. S. Walker*

E. S. WALKER, Member

*A. L. Porter, Jr.*

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



esr/

BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
August 26, 1964

EXAMINER HEARING

IN THE MATTER OF:

Application of Continental Oil Company for  
special pool rules, Lea County, New Mexico.  
Applicant, in the above-styled cause, seeks  
the establishment of special pool rules,  
including a provision for 80-acre spacing  
and a gas-oil ratio of 6000 to 1 for the  
Maljamar-Abo Pool in Township 17 South,  
Range 32 East, Lea County, New Mexico.

Case No. 3096

BEFORE: ELVIS A. UTZ, Examiner.

TRANSCRIPT OF HEARING

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.  
PHONE 325-1182

SANTA FE, N. M.  
PHONE 863-3971

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MR. UTZ: We will call Case 3096.

MR. DURRETT: Application of Continental Oil Company for special pool rules, Lea County, New Mexico.

MR. KELLAHIN: Jason Kellahin, Kellahin and Fox, representing the Applicant. We have one witness I would like to have sworn.

(Witness sworn.)

(Whereupon, Applicant's Exhibits 1 through 6 were marked for identification.)

C. W. PICKERING

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A C. W. Pickering.

Q By whom are you employed and in what position, Mr. Pickering?

A With Continental Oil Company as a production engineer.

Q Have you ever testified before the Oil Conservation Commission of New Mexico?

A No, sir.



Q For the benefit of the Examiner, would you briefly outline your education and experience as a petroleum engineer?

A Yes, sir. I was graduated from Texas A. & M. University in 1957 with a Bachelor's Degree. I then worked with Gulf Oil Company through 1958, whereupon I re-entered Texas A. & M. and received my Master's Degree in January of 1960. Since that time I've been employed with Continental Oil Company.

Q What was your degree, what field was your degree in?

A Petroleum engineering.

Q Have you worked for Continental and for Gulf as a petroleum engineer?

A Yes, sir.

Q Where are you presently employed?

A In Hobbs, New Mexico.

Q How long have you been there?

A Been in Hobbs three and a half years.

Q Is the area involved in the application in Case 3096 under your jurisdiction as a petroleum engineer?

A Yes, sir.

MR. KELLAHIN: Are the witness's qualifications acceptable?

MR. UTZ: Yes, sir, they are.

Q Are you familiar with the application of Continental

Oil Company in Case 3096?

A Yes, sir.

Q Would you state briefly what is proposed by Continental in this case?

A Case No. 3096 involves the application of Continental Oil Company for special rules, including 80-acre spacing, and a gas-oil ratio limit increase to 6,000 to 1 for the Maljamar-Abo Pool located in Sections 16, 17, 21, 22, 28, and 33, Township 17 South, Range 32 East, Lea County, New Mexico.

Q Referring to what has been marked as Exhibit No. 1, would you identify that exhibit and state briefly what's shown on it?

A Yes, sir. Exhibit 1 is a location and ownership map showing the Maljamar Pool and surrounding area. The Maljamar Pool is outlined in green, with the exception of the North Half of the Northeast Quarter of Section 33, it's been omitted. The wells producing from the Maljamar-Abo Pool are circled in red, that is wells that are producing or have produced. The other wells in the area are shown by conventional symbols.

Q Is the ownership of the property in the area shown on Exhibit 2?

A Yes, sir. The ownership of the property is shown in a conventional manner.

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Q You say that the North Half of the Northeast Quarter of Section 33, 17 South, 32 East is not shown. For what reason was that omitted?

A There was one well completed on that acreage which has since been abandoned.

Q And properly it's not a producing portion of the pool at this time, is that correct?

A That's correct.

Q When was the Maljamar Pool, Maljamar-Abo Pool first established?

A The Maljamar-Abo Pool was first established in November, 1954 at the request of Buffalo Oil Company. They had anticipated a commercial Abo completion in their Baish "A" No. 25 well. This completion was found to be non-commercial and the well was temporarily abandoned.

Q Which was the first commercial well in the Maljamar-Abo Pool?

A That would be the Continental Oil Company Baish "A" No. 8, formerly the Baish "A" No. 27. This well is located 1980 feet from the South line and 810 from the East line of Section 21, 17, 32. This well was drilled to a total depth of 13,670 feet and plugged back to 9760 after unsuccessful completion attempts in the Cisco and Wolfcamp formations. The Abo



formation was perforated through seven-inch casing in the interval 8977 to 87 and treated with 1500 gallons of acid. On initial potential on September 20, 1959 the well flowed 470 barrels of 42 degree gravity oil, no water, in 24 hours through a 1/4-inch choke. Tubing pressure was 350 psi and the gas-oil ratio was 1209 to 1.

Q What additional wells have been completed in the pool?

A Continental has completed their Baish "B" No. 1 in Unit C, Section 22, their Baish "A" No. 1 in Unit F, Section 21, and their Baish "A" No. 12 in Unit A, Section 21, all in Township 17 South, Range 32 East.

Pan American has completed their Baish "A" No. 1 in Unit I, Section 28, Township 17 South, Range 32 East, and their Paul Love No. 1 in Unit A. The latter well has subsequently been abandoned and Continental's Baish "A" No. 1 is shut-in due to non-commercial producing rates.

Q Referring to what has been marked as Exhibit No. 2, will you explain what that exhibit is?

A Exhibit No. 2 is a log comparison between Pan American's Baish "B" No. 1 and Continental's Baish "A" No. 8. The interval in which Pan American's Baish "B" No. 1 is completed, identified as "upper" Abo zone is stratigraphically higher than a poorer zone in the Continental Oil Company's Baish "A" No. 8.

The "lower" Abo zone in Pan American's Baish "B" No. 1 produced salt water during the process of completion and was abandoned. This information influences our interpretation of water occurrence at a uniform subsea datum of minus 4965. The "upper" Abo zone in the Pan American Baish "B" 1 does not appear to be commercial in view of the low productivity in this well, 15 barrels of oil per day average during February, and the cost to drill and complete the well at this depth.

We believe that since both zones have a common oil-water contact, that it should follow that they have a common gas-oil contact. You'll note that the Pan American Baish "B" No. 1 produces with a gas-oil ratio of approximately 1000 cubic feet per barrel.

Q What development pattern has been followed up to the present on these additional wells?

A Continental has developed on a uniform 80-acre pattern in which wells have or will be drilled in the Northeast Quarter and Southwest Quarter of the quarter sections.

Q You say Northeast and Southwest?

A Northeast and Southwest.

Q Would you please describe the reservoir rock?

A The Abo pay zone is tan to brown, with some gray, anhydritic and coarsely crystalline dolomite. The porosity is



vuggy, intercrystalline, and fractured varying in degree from foot to foot. A core analysis taken from Continental's Baish "A" No. 12 indicates a porosity range from 14.6% to 1.5% with an average porosity of 5.3%. The permeability ranged from a high of 247 millidarcies to a low of 0.6 millidarcies, with the average being 21.3 millidarcies.

Q Now, referring to what has been marked as Exhibit No. 3, will you please identify that and explain the information shown on it?

A It is a structure map contoured on top of the lower Abo pay zone. The map indicates the structural configuration to be a broad symmetrical nose which dips southeastward at the rate of approximately 125 feet per mile. The pool is limited on the south and east by a water-oil transition zone. The lower limit of economic production occurs at approximately minus 4965 feet subsea. The western and northern limits of production appear to be defined by permeability rather than structure. Insufficient data are available to outline accurately the position of the permeability barrier, but its estimated position is denoted on the map by the heavy dashed line.

Q Referring to what has been marked as Exhibit No. 4, will you explain what that is?

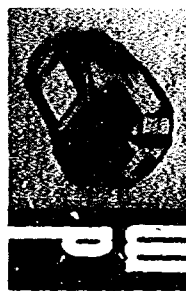
A Exhibit No. 4 is a cross-section drawn between three

Maljamar-Abo Pool wells. Each well is represented by Gamma Ray and Acoustic Velocity logs. The cross-section extends from Continental's Baish "A" No. 8 on the left through Continental's Baish "A" No. 12 to Continental's Baish "B" No. 1 on the right.

The exhibit shows the wells related to a common subsea datum so that structural differences between the wells are shown. The estimated oil-water contact is shown at minus 4965 feet sub-sea elevation which is the center of the oil-water transition zone. The transition zone is defined as an interval in which both water and oil may be produced. You would expect clean oil at a point just above the transition zone and 100% water production just below the transition zone. The limits of this water-oil transition zone were estimated from logs, drill stem test data and completion tests on wells in that area. The Abo pay zone is shaded in green. The completion data is printed below each well. The cross-section shows porous intervals in each well indicating that porosity is continuous in the known portion of the pool.

Q Referring to what has been marked as Exhibit No. 5, will you identify that exhibit and discuss it?

A Exhibit No. 5 is a reservoir performance curve of the Maljamar-Abo Pool. It's a cumulative production along the lower edge of the graph, or ordinate, and is plotted against pressure.



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The bulk of this production history has been taken from the first commercial well, Continental's Baish "A" No. 8. As may be seen from the plot, pressure decline has been small for relatively large withdrawals of oil. Since completion of the Baish "A" No. 8, 5-23-64, it had produced 182,470 barrels of oil with a total pressure decline of only 150 psi from the original estimated reservoir pressure of 3326 psi. This is 1216 barrels of oil produced per psi drop in pressure.

Q What type of drive mechanism do you believe exists in the reservoir?

A The reservoir performance indicates a complete water drive. The Baish "A" No. 12, however, has encountered an area of apparently high gas saturation, producing on initial completion 130 barrels of 48 degrees API gravity oil with a GOR of 6953 to 1. The other two wells in the pool produce oil having an API gravity of 42 degrees to 43 degrees, and with gas-oil ratios around 1700 to 1.

After a careful study, it now appears that the high gas saturation in Baish "A" No. 12 is a localized accumulation which is within the oil zone rather than above it, and consequently not susceptible to being shut off by practical means. Using reservoir parameters determined from core, log, and fluid analysis, the original oil in place in an 80-acre drainage radius

for the Baish "A" No. 3 was calculated as 197,000 barrels of oil.

As of May 23, 1964, this well has produced 132,470 barrels of oil, or almost 92% of the calculated oil in place. Since this is an exceedingly high ultimate recovery factor, even for a complete water drive, and the well is maintaining top allowable rates, one must conclude that some of the parameters used are pessimistic.

Q Which of the parameters used do you feel could be justifiably adjusted to account for the high recovery?

A That would be drainage area and a net effective pay. The net effective pay may be conservative if there is communication between porous and permeable zones. Our research department is to measure vertical permeabilities on the core taken from the Baish "A" No. 12 to determine the extent of this vertical fracturing.

But even if the net effective pay were tripled, which appears to be the maximum possible, the recovery would still be in excess of 30% which could be considered high for this short producing time and history. Since other parameters, such as porosity and formation volume factors are pretty well tied down by core, log and fluid analysis, it seems reasonable to assume the well is draining in excess of 80 acres.

Q What is your recommendation to the Commission in

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regard to well density in this pool?

A Considering the data presently available from the pool, I recommend that this pool be developed on 80-acre spacing. This is based on the fact that it appears a well will drain 80 acres under any type of drive that may be present.

Q Do you recommend this on a permanent or temporary basis?

A On the basis of the evidence presented, I recommend that permanent 80-acre spacing be adopted for this pool.

Q What is your recommendation to the Commission with regard to well locations in the event they approve 80-acre spacing for the pools?

A All producing wells completed to date conform to a uniform pattern of alternate 40-acre locations. In the interest of greatest possible drainage efficiency, I would recommend a continuation of that pattern. Specifically, in the Northeast Quarter or Southwest Quarter of the quarter sections.

Q Do you recommend any tolerance for well locations?

A Considering the number of wells drilled to the shallow formations which must be avoided in drilling twin wells, I recommend that no well be located nearer than 510 feet from the boundary of the appropriate quarter-quarter section.

Q Are there any other special field rules you would like

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to recommend for this pool?

A Yes. I would like to recommend an increase in the limiting GOR from 2000 to 1 to 6000 to 1.

Q On what basis do you make this recommendation?

A The bottom hole fluid analysis taken from Continental's Baish "A" No. 8 indicates a solution GOR of 1500 cubic feet per barrel and a bubble point pressure of 3188 psi. As the reservoir pressure declines below the bubble point, the gas-oil ratios can be expected to increase. Preliminary reservoir calculations indicate that this reservoir has an active water drive so that the reservoir energy does not depend greatly on solution gas. Our calculations indicate that the water drive will stabilize reservoir pressure at approximately 2500 psi. Calculations using average relative permeability data from 25 carbonate reservoirs indicate that the producing gas-oil ratio would reach approximately 6000 cubic feet per barrel at a pressure of 2500 psi. Because of the efficient drive mechanism existing in the reservoir, it is believed that no waste will be created by producing the reservoir with a 6000 to 1 limiting gas-oil ratio.

Q Is there any information other than the performance of Continental's Baish "A" No. 12 to indicate the presence or absence of a gas cap?

A As I mentioned before, there is information

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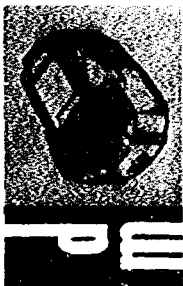
which indicates the Baish "A" No. 12 is producing a gas stringer rather than from a gas cap. Specifically, Pan American's Baish "B" No. 1 is completed at minus 4850 in the Abo and Continental's Baish "A" No. 12 is minus 4878. Since a common water-oil contact has been fairly well described at minus 4965, it would not seem unreasonable to assume that a common gas-oil contact would have been detected at some higher subsea elevation if it were present. In addition our Baish "A" No. 1 was also completed at a similar subsea depth minus 4989, Baish "A" 12, and it encountered no high gas saturation.

Q Did you run any special log on the Baish "A" No. 12?

A Yes, sir. A Delta log or temperature differential log was run in the well and indicated the gas was coming from the middle of the perforated interval. This tool is not always conclusive, but it appears to confirm the interpretation of a gas stringer.

Q In the event the GOR is increased, is there a market available for the produced gas?

A Yes. Continental Oil Company's Maljamar Gasoline Plant has facilities available to process and market the produced gas. The plant is presently operating below capacity and the supply is expected to decrease as the Maljamar waterflood is expanded.



Q Have you prepared a set of proposed field rules for the Commission's consideration?

A Yes, I have a set of proposed field rules embodying the recommendations which I have made during this hearing. I recommend their adoption.

Q That is marked as Exhibit No. 6?

A Yes.

Q Were Exhibits 1 through 6 prepared by you or under your supervision?

A Yes.

MR. KELLAHIN: At this time I would like to offer in evidence Exhibits 1 through 6.

MR. UTZ: Without objection Exhibits 1 through 6 will be admitted into the record of this case.

(Whereupon, Applicant's Exhibits 1 through 6 were offered and admitted in evidence.)

MR. KELLAHIN: That's all I have on direct examination.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Pickering, is my understanding correct in that you only have one well, which is your No. 12, which you had GOR problems with?

A Yes, sir. That gas-oil ratio has declined. The sales



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ratio during June, 1964 was 3851 and gravity has decreased.

Q The June production rate was 3851?

A Yes, sir, and the test taken July 1st, 1964, the well produced 62 barrels of oil per day with a GOR of 2470 to 1.

Q That was an official test?

A Yes, sir, that was official.

Q Your other three producing wells in the pool, what is their producing ratio?

A They're running about 1700 to 1. The Baish "B" No. 1 was found to have a higher GOR in excess of 2000 to 1, and I believe it was penalized, but we found that the higher test gas meter was quite a bit higher than our sales meter, so we corrected that, and I believe the ratio is well below 2000 to 1 during this time. It wasn't during June production.

Q They all run close to 1700 to 1?

A Yes, sir.

Q Then your No. 12 well is receiving a GOR penalty --

A Yes, sir.

Q -- in its allowable at the present time?

A Yes.

Q What kind of an allowable is that well now receiving?

A I believe that well has about 35 barrels, if I remember correctly, at this time. We have put in for an increase based

on this latest test.

Q What would a 6000 to 1 GOR give you in the way of an allowable?

A I believe those allowables run at this time 114 barrels of oil per day.

Q This is, in your opinion, a complete water drive pool?

A Yes, sir.

Q With gas solution drive being of little or no assistance to production?

A It will help, I believe, until pressure is stabilized.

Q In your opinion, is the producing rate of 114 barrels per day low enough to effectively prevent water coning in a water drive pool?

A Yes, sir, we have experienced no water production from the Baish "A" No. 8, although we have found it some 35 feet below the producing interval and we have experienced no coning.

Q These wells all have casing set through the pay zone and perforated?

A Yes, sir.

Q So that if necessary you could squeeze off the gas-producing zones?

A Yes, sir. Well, this is a problem, this is something

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we worry about. In the Baish "A" No. 12 we had more porous intervals than we had encountered before, and our Delta log indicated that it was coming in the middle of a section, so we believe that we have a good oil section and probably an area of high gas saturation coming from one of these new porous zones that we've picked up in this well. We believe that development drilling and probably testing these intervals separately would tell us definitely which zone was contributing the gas or which was a high gas saturation zone. A core analysis indicated no free gas zone as such. All porous zones had about the same oil saturation residual.

Q Is my understanding correct in that this pool is not only a structure, but somewhat of a stratigraphic trap in that it has permeability pinchouts on each side?

A Yes, sir.

Q So it's a pretty well-contained pool?

A Yes, sir.

MR. UTZ: Any other questions of the witness?

MR. PORTER: I have a question or two.

BY MR. PORTER:

Q Mr. Pickering, I believe you mentioned one Abo well that had produced some oil from this zone that has been plugged. Where is that well?

A Yes, sir. The Baish "A" No. 5. It's in Unit I, Section 21, 17, 32. That's Unit F, I guess.

MR. DURRETT: Has that got a red circle around it?

A Yes, sir.

Q (By Mr. Porter) Now your proposed pool boundaries are outlined in green?

A Yes.

Q So it does take in all the wells that have produced from the Abo at the present time?

A Yes, sir.

MR. PORTER: That's all I have.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q May I straighten that out? In response to a question by Mr. Porter you say that the green portion takes in all of the area that has produced from the Abo?

A That has produced.

Q The other area that you mentioned outside of this green boundary never produced?

A No, sir, it has not produced. Well, this -- the green line is the Commission's pool boundary.

MR. PORTER: At the present time.

Q But you did omit from that the North Half of the

Northeast Quarter of Section 33?

A Yes, sir.

Q That's not included here?

A That's right.

Q But that is within the boundary as outlined by the Commission?

A Yes, sir.

MR. PORTER: Excuse me a minute, the North Half of the Northeast Quarter of 33?

A Yes, sir, just below Section 28.

MR. PORTER: In other words, the pool as it now exists extends further south?

A Yes.

MR. PORTER: You say the reason for that being a dry hole. Has there been a well drilled in there that was non-productive?

A Yes, sir, there was a well drilled and completed, but it proved to be non-commercial and was plugged.

MR. PORTER: But it did produce some oil?

A Yes, sir.

MR. UTZ: The Pan American well in Section 28 is also shut-in now, is that true?

A No, sir, that well is still producing.



MR. UTZ: Still producing?

A Yes, sir, it looks shut-in.

MR. UTZ: Is it a marginal well?

A Yes, sir, it is marginal.

MR. UTZ: Any other questions? The witness may be excused.

(Witness excused.)

MR. KELLAHIN: That's all I have.

MR. UTZ: Any statements in this case? The case will be taken under advisement.

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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 2nd day of September, 1964.

*Ada Dearnley*  
 NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3096, heard by me on Aug. 26, 1964.

*Thos. A. Alf*, Examiner  
 New Mexico Oil Conservation Commission