

CASE 2287: Application of HONOLULU
FOR A [illegible] subject
[illegible]
[illegible]

Case No.

2207

Application, Transcript,
Small Exhibits, Etc.

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

*File
Case 2207*

March 29, 1961

C
O
P
Y

Honolulu Oil Corporation
P. O. Box 67
Denver City, Texas

Attention: Mr. Jack Bendler

Gentlemen:

Enclosed herewith is a supply of Commission Form C-120, for your use in filing monthly reports on your Chisum-Devonian Pressure Maintenance Project.

Although Rule 8 of Order R-1900 which authorized this project calls for our Pressure Maintenance Project Operator's Monthly Report to be filed monthly within three days after the normal unit allowable has been established, it will not be necessary to do this as long as there is only one injection well and one producing well in the project area.

The order was deliberately phrased to be far more comprehensive than is necessary at the present time to avoid the necessity of additional hearings if and when additional wells should be completed.

Until such time as there are such additional wells, the Commission's District Office at Artesia will assign no allowable to the injection well in the proration schedule, and will carry a double allowable for your one producing well.

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

-2-

Monthly reports on the operation of the project shall be filed on Form C-120 by the 15th of each month, showing thereon the information required.

If additional wells are completed and included within the project area, the use of Form C-120 will be discontinued and the Pressure Maintenance Project Operator's Monthly Report required.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/DSH/ir

cc: Oil Conservation Commission
Artesia, New Mexico

C
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Y

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

January 22, 1968

Pan American Petroleum Corporation
Post Office Box 67
Albuquerque, New Mexico

Attention: Mr. V. E. Staley

Gentlemen:

Reference is made to the telephone conversation of this date between Mr. Al Klarr of your office and Mr. Dan Nutter of this office wherein Mr. Klarr advised that Pan American desires to resume water injection into its State "E" well No. 3, located in the NE/4 SE/4 of Section 13, Township 11 South, Range 27 East, Chisum-Devonian Pool, Chaves County, New Mexico. Injection was originally authorized for Honolulu Oil Corporation under Order No. R-1900, and it is our understanding that Pan American, as successor to Honolulu, desires to resume injection after discontinuing same several years ago. Further, that the producing and injection wells and perforated intervals are identical with as before.

Pan American Petroleum Corporation is authorized to resume injection into the above-described well, provided that operation of the well and the injection project shall continue to be subject to the provisions of Order No. R-1900.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/DSM/ir

cc: Oil Conservation Commission - Artesia, New Mexico
State Land Office - Oil & Gas Division - Santa Fe
Case No. 2207

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date 3/6/61

CASE NO. 2207

HEARING DATE 3/3/61 9am
DSJ @ SF

My recommendations for an order in the above numbered case(s) are as follows:

Enter an order ~~assigning~~ ^{authorizing} Honolulu
to commence a press. maint. project
in the Chisum Pool by injecting
water into its State "B" well # 3
loc in the NE/4 SE/4 Sec 13 T11S
R27E Chisum Co.

Utilize the rules as suggested
by Honolulu in last 2 pages of
Ex 1 with minor modifications
to make them conform a little
more closely to other press maint
rules recently issued

Sam Rutter
Staff Member
EX-10

HONOLULU OIL CORPORATION

P. O. DRAWER 1391

MIDLAND, TEXAS

March 6, 1961

Mr. Daniel S. Nutter, Chief Engineer
New Mexico Oil Conservation Commission
107 Mabry Hall, Capitol Building
Santa Fe, New Mexico

Dear Mr. Nutter:

File
Re: Case No. 2207
Pressure Maintenance Project
Honolulu Oil Corporation -
Chisum Pool
Chaves County, New Mexico

Following is the cementing information on the Honolulu -
State "B" Well No. 3 that was requested at the hearing on Case No.
2207 on March 3, 1961:

1. Top of cement behind the 8-5/8" casing is at 1335'
by temperature traverse.
2. Top of cement behind the 5-1/2" casing is at 4800'
by temperature traverse.

Thank you for allowing us to furnish this information by
mail.

Very truly yours,

HONOLULU OIL CORPORATION

By

George R. Hoy

George R. Hoy
Division Drilling and
Proration Engineer

GRH:bm

cc: S. B. Christy, IV
File

CLASS OF SERVICE

This is a fast message unless its desired character is indicated by the proper symbol.

WESTERN UNION TELEGRAM

W. P. MARSHALL, President

SYMBOLS

DL = Day Letter

NL = Night Letter

LT = International Letter Telegram

1201

The filing time shown in the date line on domestic telegrams is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination.

LA150 SEH157

L RWA061DL PD=ROSWELL NMEX 9 14 1P MST=

THE NEW MEXICO OIL CONSERVATION COMMISSION=

STATE LAND OFFICE BLDG SANTA FE NMEX=

HONOLULU OIL CORPORATION HEREBY MAKES APPLICATION FOR AN ORDER AUTHORIZING THE INJECTION OF WATER FOR PRESSURE MAINTENANCE PURPOSED INTO THE DEVONIAN FORMATION UNDERLYING ITS STATE B LEASE IN THE CHISUM OIL POOL LOCZTEE IN THE N1/2 SE1/4 SECTION 13 TOWNSHIP 11 SOUTH RANGE 27 EAST CHAVES COUNTY NEW MEXICO PURSUANT TO RULE 701 AND FOR THE PROMULGATION OF SPECIAL RULES GOVERNING

End 1

Case 2207

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

Worked Males

FEB 9 PM 2:23
MAIN OFFICE OCC

OF SERVICE
is a fast message
time its desired char-
acter is indicated by the
proper symbol.

WESTERN UNION

TELEGRAM

W. P. MARSHALL, PRESIDENT

1201

SYMBOLS
NL = Night Letter
LT = International
Letter Telegram

The filing time shown in the date line on domestic telegrams is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination.

L RWAD61

1961 FEB 9 PM 2 12

THE OPERATION OF SAID PROJECT A SUPPLEMENT TO THIS
APPLICATION WILL BE FILED WITHIN THE NEXT TWO OR THREE
DAYS BUT WE REQUEST THAT THE ABOVE BE ADVERTISE FOR THE
EXAMINER HEARING ON MARCH 3 1961=

HERVEY DOW & HINKLE.

1961 FEB 9 PM 2 12
MAIN OFFICE OCC.

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

DRAFT

RSM/esr
March 7, 1961

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. 2207

Order No. R-1900

(DEVONIAN)

APPLICATION OF HONOLULU OIL CORPORATION
FOR A PRESSURE MAINTENANCE PROJECT IN
THE CHISUM OIL POOL, CHAVES COUNTY, NEW
MEXICO, AND FOR THE PROMULGATION OF
SPECIAL RULES GOVERNING THE OPERATION
OF SAID PROJECT.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on
March 3, 1961, at Santa Fe, New Mexico, before Daniel S. Nutter,
Examiner duly appointed by the Oil Conservation Commission of New
Mexico, hereinafter referred to as the "Commission," in accordance
with Rule 1214 of the Commission Rules and Regulations.

NOW, on this _____ day of March, 1961, the Commission,
a quorum being present, having considered the application, the
evidence adduced, and the recommendations of the Examiner,
Daniel S. Nutter, 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, Honolulu Oil Corporation, proposes
to institute a pressure maintenance project in the Chisum^(Devonian) Oil
Pool, Chaves County, New Mexico, by the injection of water into
its State "B" Well No. 3, located in the NE/4 SE/4 of Section
13, Township 11 South, Range 27 East.

(3) That the proposed project area consists of the N/2
SE/4 of Section 13, Township 11 South, Range 27 East, NMPM,
Chaves County, New Mexico.

(4) That top unit allowable is to be assigned to ~~each~~ ^{the} ~~each~~ ^{any} producing
injection well and that the allowable assigned to ~~any~~ ^{the} producing
well in the project area shall be no greater than the demonstrated
ability of the well to produce, subject to top unit allowable for
the pool. In the case of curtailed or shut-in producing wells,

the allowable shall be no greater than the demonstrated ability of such well to produce as reflected by a 24-hour test at a stabilized rate of production immediately prior to such shut-in or curtailment. In no event is such allowable to be greater than the current normal unit allowable for the Chisum^(Devonian) Oil Pool during the month of transfer.

(5) That ~~the applicant also proposes that~~ ^{should} an administrative procedure be established whereby the pressure maintenance project may be expanded for good cause shown, and whereby additional wells in the project area may be converted to water injection.

IT IS THEREFORE ORDERED:

(1) That the applicant, Honolulu Oil Corporation, is hereby authorized to institute a Pressure Maintenance Project in the Chisum^(Devonian) Oil Pool, Chaves County, New Mexico, by the injection of water into its State "B" Well No. 3, located in the NE/4 SE/4 of Section 13, Township 11 South, Range 27 East.

(2) That Special Rules and Regulations governing the operation of the Pressure Maintenance Project are hereby promulgated as follows, effective April 1, 1961:

SPECIAL RULES AND REGULATIONS
FOR THE CHISUM^(Devonian) OIL POOL
PRESSURE MAINTENANCE PROJECT

RULE 1. The project area of the Chisum^(Devonian) Oil Pool Pressure Maintenance Project hereinafter referred to as the Project, shall comprise the N/2 SE/4 of Section 13, Township 11 South, Range 27 East, NMPM, Chaves County, New Mexico.

RULE 2. The allowable for the Project shall be the sum of the allowables of the several wells within the project area, including those wells which are shut-in, curtailed, or used as injection wells. Allowables for all wells shall be determined in a manner hereinafter prescribed.

RULE 3. Allowables for injection wells may be transferred to producing wells within the project area, as may the allowables for producing wells which, in the interest of more efficient operation of the Project, are shut-in or curtailed because of

high gas-oil ratio or are shut-in for any of the following reasons: pressure regulation, control of pattern or sweep efficiencies, or to observe changes in pressures or changes in characteristics of reservoir liquids or progress of sweep.

RULE 4. The allowable assigned to any well which is shut-in or which is curtailed in accordance with the provisions of Rule 3, which allowable is to be transferred to any well or wells in the project area for production, shall in no event be greater than its ability to produce during the test prescribed by Rule 6, below, or greater than the current top unit allowable for the pool during the month of transfer, whichever is less.

RULE 5. The allowable assigned to any injection well on a 40-acre proration unit shall be top unit allowable for the Chisum^(Devonian) Oil Pool.

RULE 6. The allowable assigned to any well which is shut-in or curtailed in accordance with Rule 3, shall be determined by a 24-hour test at a stabilized rate of production, which shall be the final 24-hour period of a 72-hour test throughout which the well should be produced in the same manner and at a constant rate. The daily tolerance limitation set forth in Commission Rule 502 I (a) and the limiting gas-oil ratio (2,000 to 1) for the Chisum^(Devonian) Oil Pool shall be waived during such tests. The project operator shall notify all operators offsetting the well, as well as the Commission, of the exact time such tests are to be conducted. Tests may be witnessed by representatives of the offsetting operators and the Commission, if they so desire.

RULE 7. The allowable assigned to each producing well in the Project shall be equal to the well's ability to produce or to top unit allowable for the Chisum^(Devonian) Oil Pool, whichever is less. Each producing well shall be subject to the limiting gas-oil ratio (2,000 to 1) for the Chisum^(Devonian) Oil Pool.

RULE 8. Each month the project operator shall, within three days after the normal unit allowable for Southeast New Mexico has been established, submit to the Commission a Pressure Maintenance Project Operator's Report, on a form prescribed by the Commission,

outlining thereon the ^{pertinent} data required, and requesting allowables for each of the several wells in the Project as well as the total Project allowable. The aforesaid Pressure Maintenance Project Operator's Report shall be filed in lieu of Form C-120 for the Project.

RULE 9. The Commission shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for each well in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to the Project and may be produced from the wells in the Project in any proportion except that no well in the Project which directly or diagonally offsets a well outside the Project producing from the same common source of supply shall produce in excess of two times top unit allowable for the Pool.

RULE 10. The conversion of producing wells to injection, the drilling of additional wells for injection, and expansion of the project area shall be accomplished only after approval of the same by the Secretary-Director of the Commission. To obtain such approval, the Project operator shall file proper application with the Commission, which application, if it seeks authorization to convert additional wells to injection or to drill additional injection wells shall include the following:

(1) A plat showing the location of proposed injection well, all wells within the project area, and offset operators, locating wells which offset the project area.

(2) A schematic drawing of the proposed injection well which fully describes the casing, tubing, perforated interval, and depth, showing that the injection of ~~gas~~ water will be confined to the *Devonian* formation.

(3) A letter stating that all offset operators to the proposed injection well have been furnished a complete copy of the application and the date of notification.

The Secretary-Director may approve the proposed injection well if, within 20 days after receiving the application, no

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CASE No. 2207

objection to the proposal is received. The Secretary-Director may grant immediate approval, provided waivers of objection are received from all offset operators.

Expansion of the project area may be approved by the Secretary-Director of the Commission administratively when good cause is shown therefor.

DONE at Santa Fe, New Mexico, on the day and year herein-above designated.

GOVERNOR
EDWIN L. MECHEM
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER



P. O. BOX 671
SANTA FE

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

March 9, 1961

Mr. Sam Christy
Harvey, Dow & Hinkle
Box 10
Roswell, New Mexico

Re: Case No. 2207
Order No. E-1900
Applicant:
Honolulu Oil Corporation

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.
Secretary-Director

ir/

Carbon copy of order also sent to:

Hobbs OCC ☒
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. 2207
Order No. R-1900**

**APPLICATION OF HONOLULU OIL CORPORATION
FOR A PRESSURE MAINTENANCE PROJECT IN
THE CHISUM (DEVONIAN) OIL POOL, CHAVES
COUNTY, NEW MEXICO, AND FOR THE PROMUL-
GATION OF SPECIAL RULES GOVERNING THE
OPERATION OF SAID PROJECT.**

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on March 3, 1961, at Santa Fe, New Mexico, before Daniel S. Futter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

Now, on this 9th day of March, 1961, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Futter, 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, Honolulu Oil Corporation, proposes to institute a pressure maintenance project in the Chisum (Devonian) Oil Pool, Chaves County, New Mexico, by the injection of water into its State "B" Well No. 3, located in the NE/4 SE/4 of Section 13, Township 11 South, Range 27 East.

(3) That the proposed project area consists of the N/2 SE/4 of Section 13, Township 11 South, Range 27 East, NMPM, Chaves County, New Mexico.

(4) That top unit allowable is to be assigned to each injection well and that the allowable assigned to any producing well in the project area shall be no greater than the demonstrated ability of the well to produce, subject to top unit allowable for the pool. In the case of curtailed or shut-in producing wells, the allowable shall be no greater than the demonstrated ability of such well to produce as reflected by

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Order No. R-1900

a 24-hour test at a stabilized rate of production immediately prior to such shut-in or curtailment. In no event is such allowable to be greater than the current normal unit allowable for the Chisum (Devonian) Oil Pool during the month of transfer.

(5) That an administrative procedure should be established whereby the pressure maintenance project may be expanded for good cause shown, and whereby additional wells in the project area may be converted to water injection.

IT IS THEREFORE ORDERED:

(1) That the applicant, Honolulu Oil Corporation, is hereby authorized to institute a Pressure Maintenance Project in the Chisum (Devonian) Oil Pool, Chaves County, New Mexico, by the injection of water into its State "B" Well No. 3, located in the NE/4 SE/4 of Section 13, Township 11 South, Range 27 East.

(2) That Special Rules and Regulations governing the operation of the Pressure Maintenance Project are hereby promulgated as follows, effective April 1, 1961:

SPECIAL RULES AND REGULATIONS
FOR THE CHISUM (DEVONIAN) OIL POOL
PRESSURE MAINTENANCE PROJECT

RULE 1. The project area of the Chisum (Devonian) Oil Pool Pressure Maintenance Project hereinafter referred to as the Project, shall comprise the N/2 SE/4 of Section 13, Township 11 South, Range 27 East, NMPN, Chaves County, New Mexico.

RULE 2. The allowable for the Project shall be the sum of the allowables of the several wells within the project area, including those wells which are shut-in, curtailed, or used as injection wells. Allowables for all wells shall be determined in a manner hereinafter prescribed.

RULE 3. Allowables for injection wells may be transferred to producing wells within the project area, as may the allowables for producing wells which, in the interest of more efficient operation of the Project, are shut-in or curtailed because of high gas-oil ratio or are shut-in for any of the following reasons: pressure regulation, control of pattern or sweep efficiencies, or to observe changes in pressures or changes in characteristics of reservoir liquids or progress of sweep.

RULE 4. The allowable assigned to any well which is shut-in or which is curtailed in accordance with the provisions of Rule 3, which allowable is to be transferred to any well or wells in the project area for production, shall in no event be greater than its

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Order No. R-1900

ability to produce during the test prescribed by Rule 6, below, or greater than the current top unit allowable for the pool during the month of transfer, whichever is less.

RULE 5. The allowable assigned to any injection well on a 40-acre proration unit shall be top unit allowable for the Chisum (Devonian) Oil Pool.

RULE 6. The allowable assigned to any well which is shut-in or curtailed in accordance with Rule 3, shall be determined by a 24-hour test at a stabilized rate of production, which shall be the final 24-hour period of a 72-hour test throughout which the well should be produced in the same manner and at a constant rate. The daily tolerance limitation set forth in Commission Rule 502 I (a) and the limiting gas-oil ratio (2,000 to 1) for the Chisum (Devonian) Oil Pool shall be waived during such tests. The project operator shall notify all operators offsetting the well, as well as the Commission, of the exact time such tests are to be conducted. Tests may be witnessed by representatives of the offsetting operators and the Commission, if they so desire.

RULE 7. The allowable assigned to each producing well in the Project shall be equal to the well's ability to produce or top unit allowable for the Chisum (Devonian) Oil Pool, whichever is less. Each producing well shall be subject to the limiting gas-oil ratio (2,000 to 1) for the Chisum (Devonian) Oil Pool.

RULE 8. Each month the project operator shall, within three days after the normal unit allowable for Southeast New Mexico has been established, submit to the Commission a Pressure Maintenance Project Operator's Report, on a form prescribed by the Commission, outlining thereon the pertinent data required, and requesting allowables for each of the several wells in the Project as well as the total Project allowable. The aforesaid Pressure Maintenance Project Operator's Report shall be filed in lieu of Form C-120 for the Project.

RULE 9. The Commission shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for each well in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to the Project and may be produced from the wells in the Project in any proportion except that no well in the Project which directly or diagonally offsets a well outside the Project producing from the same common source of supply shall produce in excess of two times top unit allowable for the Pool.

RULE 10. The conversion of producing wells to injection, the drilling of additional wells for injection, and expansion of the project area shall be accomplished only after approval of the same

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Order No. R-1900

by the Secretary-Director of the Commission. To obtain such approval, the project operator shall file proper application with the Commission, which application, if it seeks authorization to convert additional wells to injection or to drill additional injection wells shall include the following:

- (1) A plat showing the location of proposed injection well, all wells within the project area, and offset operators, locating wells which offset the project area.
- (2) A schematic drawing of the proposed injection well which fully describes the casing, tubing, perforated interval, and depth, showing that the injection of water will be confined to the Devonian formation.
- (3) A letter stating that all offset operators to the proposed injection well have been furnished a complete copy of the application and the date of notification.

The Secretary-Director may approve the proposed injection well if, within 20 days after receiving the application, no objection to the proposal is received. The Secretary-Director may grant immediate approval, provided waivers of objection are received from all offset operators.

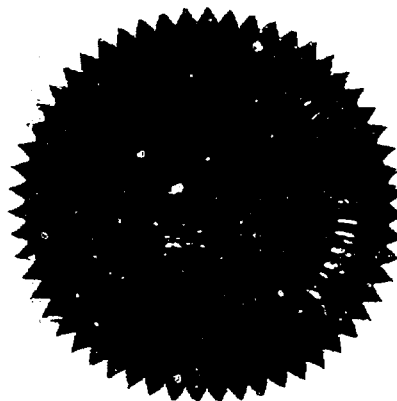
Expansion of the project area may be approved by the Secretary-Director of the Commission administratively when good cause is shown therefor.

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

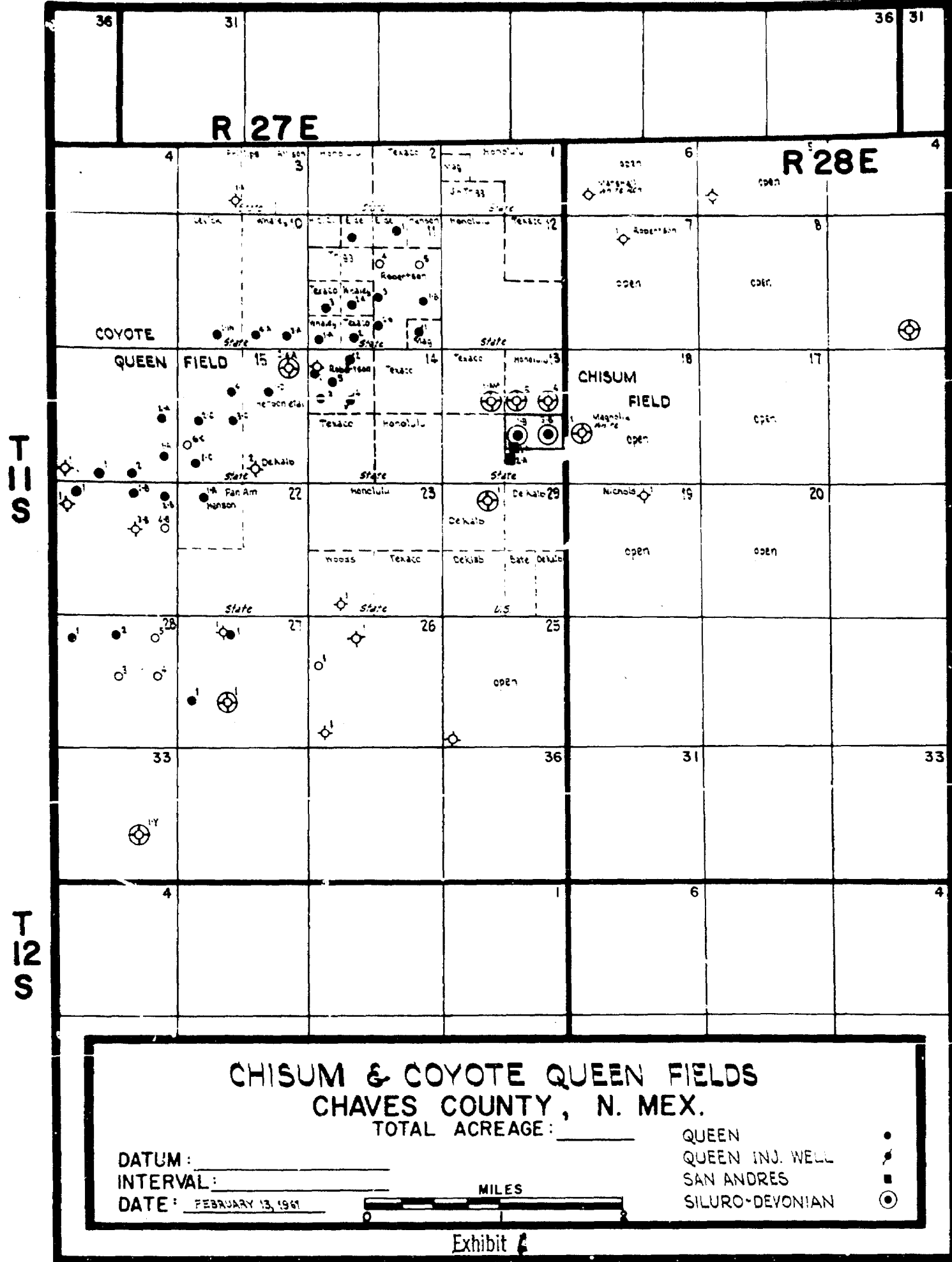
STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION



EDWIN L. MECHEM, Chairman


E. S. WALKER, Member
A. L. PORTER, Jr., Member & Secretary

esr/



BEFORE THE OIL CONSERVATION COMMISSION

OF THE STATE OF NEW MEXICO

APPLICATION OF HONOLULU OIL CORPORATION)
FOR AN ORDER AUTHORIZING THE INJECTION)
OF WATER FOR PRESSURE MAINTENANCE)
PURPOSES INTO THE DEVONIAN FORMATION)
UNDERLYING APPLICANT'S STATE "B" LEASE)
LOCATED IN THE N $\frac{1}{2}$ SE $\frac{1}{4}$ SECTION 13, TOWNSHIP)
11 SOUTH, RANGE 27 EAST, N.M.P.M., CHAVES)
COUNTY, NEW MEXICO, IN THE CHISUM OIL POOL.)
PURSUANT TO RULE 701, AND FOR THE PROMUL-)
GATION OF SPECIAL RULES GOVERNING THE)
OPERATION OF SAID PROJECT.)

CASE NUMBER

2207

APPLICATION

Comes now Honolulu Oil Corporation, whose address is Box 1391, Midland, Texas, and hereby makes application for an Order authorizing the injection of water for pressure maintenance purposes into the Devonian Formation underlying Applicant's State "B" Lease located in the N $\frac{1}{2}$ SE $\frac{1}{4}$ Section 13, Township 11 South, Range 27 East, N.M.P.M., Chaves County, New Mexico, in the Chisum Oil Pool, pursuant to Rule 701, and for the promulgation of special rules governing the operation of said project, and in support thereof states:

1. There is attached to this Application, and marked Exhibit "1", a plat showing the location of the proposed injection well and the location of all other wells within a radius of two miles from said proposed injection well, and the formations from which said wells are producing or have produced. This plat also indicates the lessees, if any there be, within said two mile radius. There is outlined in red on Exhibit "1" the proposed project area, which is a part of the lands embraced in Applicant's State "B" lease, which project area embraces the following described lands in Chaves County, New Mexico, to-wit:

Township 11 South, Range 27 East, N.M.P.M.
Section 13: N $\frac{1}{2}$ SE $\frac{1}{4}$

containing 80 acres, more or less.

Handwritten:
Honolulu
Mailed
3-17-61
JH

2. That a log of the proposed injection well is attached to this Application and marked Exhibit "2". That said injection well is known as Honolulu's State "B" No. 3 well and is located 1970 feet from the south line and 660 feet from the east line of said Section 13.

3. A description of the proposed injection well's casing program is:

13-3/8" OD from surface to 448', cemented to surface with 785 sacks of cement.

8-5/8" OD from surface to 2190', cemented with 200 sacks of cement - top of cement at 1335' outside 8-5/8" casing.

5-1/2" OD from surface to 6499', cemented with 500 sacks of cement. Top of cement outside 5-1/2" casing at 4800'.

4(a). The name and depth of the zone or formation into which injection will be made is the Devonian Formation at approximately feet.

(b). The kind of fluid to be injected is salt water which is so mineralized as to be unfit for domestic stock, irrigation and/or other general use.

(c). The anticipated amount to be injected is 300-350 barrels of salt water per day.

(d). The source of the injection fluid is the salt water produced from the Devonian Formation in Applicant's State "B" No. 1 well, the location of which is shown on said Exhibit "1".

5. That Applicant is the sole owner and operator of the oil and gas lease covering all of the above project area, and Applicant states that its belief that it is in the interest of conservation and the prevention of waste to now inaugurate a water injection program for pressure maintenance purposes as above set forth, and that the granting of this Application will result not only in the prevention of waste and be in

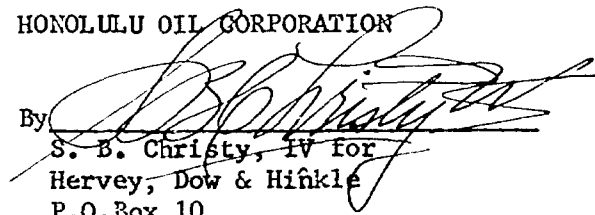
the interest of conservation, but will also promote the greatest ultimate recovery of oil from the Devonian Formation underlying the project area, and otherwise be in the interest of the protection of correlative rights of the interested mineral owners underlying such project area. Further in this connection, Applicant recommends the adoption of special field rules governing said project area, including the following:

- (a) The conversion of the producing well listed in Paragraph 3 hereof to a water injection well.
- (b) That the allowable for the project area be the sum of the allowables of the two wells within the project area, including the injection well.
- (c) That the allowable for the injection well be transferred to the producing well.
- (d) That the allowable for the injection well be top unit allowable for the Chisum Pool.
- (e) That the top allowable for the project be the top unit allowable of the Chisum Pool multiplied by the number of wells in the project area or the capacity of the producing well to produce as determined by a 24 hour test, whichever is less.
- (f) That well tests be limited to measurement of volumes of oil and water produced and be exempt from gas-oil ratio tests; the amount of gas evolved being too small to measure with normal test equipment.
- (g) That the project operator submit each month, within a reasonable time after the normal unit allowable for Southeast New Mexico has been established, to the Commission, a Pressure Maintenance Project Operator's Report on a form prescribed by the Commission requesting the total project allowable.
- (h) That the Commission assign the project allowable which shall be the sum of the injection well allowable and the producing well allowable.

Wherefore, Applicant requests that this Application be set down for an examiner hearing, and after due notice and hearing, that this Application be granted.

HONOLULU OIL CORPORATION

By


S. B. Christy, IV for
Hervey, Dow & Hinkle
P.O. Box 10
Roswell, New Mexico
Attorneys for the Applicant

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
March 3, 1961

IN THE MATTER OF:

Application of Honolulu Oil Corporation for a pressure maintenance project. Applicant, in the above-styled cause, seeks permission to institute a pressure maintenance project in the Chisum Oil Pool, Chaves County, New Mexico, by the injection of water into certain wells underlying its State B Lease, N/2 SE/4 of Section 13, Township 11 South, Range 27 East. Applicant further seeks the promulgation of special rules and regulations governing said project.

Case
2207

BEFORE:

Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: Case 2207.

MR. MORRIS: Application of Honolulu Oil Corporation for a pressure maintenance project.

MR. CRISTY: Sim Cristy, Hervey, Dow & Hinkle, for applicant, Honolulu Oil Corporation. We have one witness, Mr. Examiner, and ask that he be sworn.

(Witness sworn.)

GEORGE R. HOY

called as a witness, having been previously duly sworn, testified as follows:

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DIRECT EXAMINATION

BY MR. CRISTY:

Q Would you please state your name, address and occupation?

A George R. Hoy; live in Midland, Texas; employed by Honolulu Oil Corporation as Division Drilling and Proration Engineer for the Midcontinent Division.

Q Have you previously appeared before this Commission, Mr. Hoy, as a geologist and had your qualifications accepted?

A Yes, sir, I have.

Q Are you familiar with the matters contained in this application?

A Yes, sir.

Q And with the section?

A Yes, sir.

Q Are you familiar with the two wells involved in the application?

A Yes, sir.

Q And their production history?

A Yes, sir.

Q Basically, Mr. Hoy, what are you seeking by this application, sir?

A We are requesting the Commission to approve a pressure maintenance project for this Chisum Pool, allowing us to inject produced water from the Devonian back into the Devonian in Well No. 3 to sustain the present pressure that has been furnished by a

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water drive.

Q I understand that the Chisum P oil involved in this application is only 980 acres; that is the total pool?

A Yes, sir, that's correct.

Q I refer you to the exhibit which has been prepared, and which I would like to have marked as Exhibit 1, refer you to the first page. I believe that is a plat map of the area; is that correct?

A Yes, sir, that's correct.

Q It shows the two wells involved in this application and some surrounding dry holes?

A Yes, it does.

Q Are there any other Devonian wells in this area?

A No, sir, there are not.

Q Referring you to the second page of the exhibit, this is an electric log on the proposed injection well?

A Yes, sir. It is an electric log and gamma ray log from top to bottom on the Honolulu State "B" No. 3. At the bottom of the log is shown a combination microlog and gamma ray log in detail. The porosity shown on this log between the depths of 6500 feet and 6557 is the interval into which we plan to inject the water.

Q Is the No. 3 Well you propose to use as an injection, and the No. 1 as an output?

A Yes, sir, that is correct.

Q Do you have a contour map on this, contoured on the Dev-



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on 'an?

A Yes, sir, that is Sheet No. 3 showing all of the wells in the immediate area that penetrated the Devonian formation; the sub-sea datum of the Devonian as determined by electric logs is shown below each well. This contour interval is 20 feet showing the Chisum Pool to be an asymmetrical anticlinal structure.

Q I notice ana and A-prime running east-west, B and B-prime running north-south on that exhibit. I assume that is a cross-section?

A Those lines are cross-section lines running through the wells indicated on the contour map.

Q And the cross-sections are shown on the succeeding two pages?

A Yes, sir, they are. The cross-sections are based on electric and radioactive logs on each well. The name of each well is at the top. The dotted line on the cross-section is the top of the Devonian formation as determined by electric and radioactive logs. Also, on each log are marked the drill stem test intervals, and at the bottom of the log is the test number, the interval and results of the tests.

Q With respect to reservoir pressure tests, have you conducted tests on that? Do you have any exhibit in connection with reservoir pressure?

A Yes, sir, I have a graph showing the reservoir pressure decline from the initial pressure of 2650 psi to a pressure in



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January of 2425 psi.

Q That is shown on the next succeeding page?

A Yes, sir, that's right.

Q What is the bottom hole pressure at this time on the two wells?

A The last measured bottom hole pressure in January, 1961, was 2425 psig for both wells.

Q What has been the accumulated production from these two wells, Mr. Hoy?

A Cumulative production to January 1st, 1961, for Well No. 1 is 204,454 barrels; for Well No. 3, 179,203 barrels.

Q Are these wells presently making their top unit allowable?

A No, sir.

Q What are they producing now?

A Our average daily production rate for the month of December for the Well No. 1 was 31 barrels of oil per day with an assigned allowable of 46 barrels of oil per day. For the month of December Well No. 3, average daily production was eight barrels of oil per day with an allowable of 12 barrels per day.

Q What is the top unit allowable for these wells at this depth?

A Approximately 60 barrels.

Q Are these flowing or pumping wells at present?

A Pumping wells.

Q Were they initially completed as flowing or pumping?



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A Flowing.

Q How old, about?

A Both wells were completed during the first part of 1950.

Q How long did they flow?

A Approximately one year, less than one year.

Q So they have been pumping for about ten years?

A Yes, sir.

Q Have the wells ever made top unit allowable?

A Yes, sir, they have.

Q Do you have any data with respect to this production decline you have been speaking of?

A Following this bottom hole pressure graph we have a graph of monthly average production rates for each year, versus time. Line No. 1 is the actual history of the production from the reservoir. Line No. 2 paralleling it, during the summer of 1960 the pumping units were electrified giving us a more dependable source of power and also the installation of larger pumps, subsurface pumping equipment, as is shown on the last point this year, 1960. Now, curve No. 3 is an estimate of the production decline rate we anticipate if this project is approved.

Q Are these wells producing any water?

A Yes, sir, they are. Well No. 1 produces approximately 75% water and Well No. 3 approximately 95%.

Q What type of water is this, salt or fresh?

A We have in the book an analysis made by the Western Com-



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on a sampling from Well No. 1. The sample was taken during the normal production operations. It shows a rather low sodium chloride or hydrogen sulfide content.

Q Going back to the amount being produced, I believe we passed over Page 7 in the exhibit. That was your cumulative production in barrels?

A Yes, sir. That is a plot of daily average production versus cumulative production in thousands of barrels. At the top of this graph is shown three lines, 1-W, 2-W and 3-W. Line 1-W shows the present trend of water production under present producing methods. 2-W is the result of the equipment change as explained earlier. 3-W is our anticipated water production rate if the project is approved.

Q Let's turn to this type of pressure maintenance project you propose to install in the Chisum Pool as requested in your application. Would you explain what you propose to do to maintain pressure in the pool?

A We propose to re-inject the produced water in Well No. 1 into Well No. 3. This injection will initially be by gravity flow through tubing under a packer. The packer will be set in the bottom joint of the 5 1/2-inch casing in Well No. 3.

Q Is that water corrosive?

A Only mildly so.

Q Where is your casing at present in this well?

A In Well No. 3?



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Q That is the Injection Well?

A Yes, sir, 13 3/8 surface casing at 448 feet and cemented to the surface with 735 sacks of cement; intermediate string, 8 5/8, 2190 feet and cemented with 200 sacks of cement.

MR. NUTTER: Do you have the top of that cement?

A I don't have that with me, Mr. Nutter, But I can get it.

MR. NUTTER: Furnish that to us, please.

A (Continued) 5 1/2 casing set at 6400 to 6499 feet and cemented with 500 sacks of cement.

MR. NUTTER: Do you have the top of the cement on that?

A No, sir, I do not.

MR. NUTTER: You can furnish the information on both strings?

A Yes, sir. The total depth of Well No. 3 is 6556. If approved, this water injection will be in open hole. Well No. 1 has a surface string of 13 3/8 casing set at 440 feet, cemented to the surface with 500 sacks of cement; intermediate string of 9 5/8 casing set at 1866 feet and cemented with 500 sacks. The top of the cement on that string was 860 feet behind the pipe. 7-inch production casing set at 6490 feet and cemented in three stages. First stage was 500 sacks, from 4490 back to 4514; second stage, 400 sacks, 4235 back to 2760; third stage, 290 sacks from 2590 feet to surface.

Q In the drilling of the No. 3 well, did you encounter any fresh water zones?



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A Yes, sir. There is fresh water at a depth of approximately 250 feet.

Q Do I understand you correctly, in the injection program proposed you would have to protect the fresh water basin; you would have the tubing, the casing and the cement?

A That's right.

Q At the 250 foot area?

A Yes, sir.

Q About what rate of injection would you propose; what amount of salt water?

A Initially 300 barrels per day, all the water produced from Well No. 1. That will increase as the water production percentage increases from Well No. 1.

Q Do you think that would be a sufficient amount of water to stabilize and maintain the pressure that you have mentioned?

A Yes, sir. We feel that it will with the fairly active water drive in the reservoir at the present time.

Q Are there any other operators in this project area, sir?

A No, sir, there are not.

Q What kind of lands?

A Owned by the State of New Mexico.

Q Any override?

A No, sir.

Q Just working interest owners, Honolulu, and State of New Mexico involved?



A Yes, sir.

Q The application includes a request for inauguration of special rules to cover the Chisum Pool here. Would you tell us, briefly, what suggestions you might have to the Commission with respect to special rules?

A Yes, sir. Our proposed rules: No. 1, that the project area be defined as the N/2 of the SE/4 of Section 13, Township 11 South, Range 27 East, Chaves County.

Q I believe those matters you are mentioning now are set forth on the last page on the exhibit?

A Yes, sir, last two pages, and consisting of proration units assigned to Honolulu State "D" Nos. 1 and 3. Rule 2, Honolulu's State "B" 3 be converted to a water injection well for the injection of water into the Devonian producing formation of the Chisum Pool. Rule 3, allowable for the injection well be transferred to the producing well. Rule 4, the allowable for the injection well will be the top unit allowable for the Chisum Pool. Rule 5, the allowable for the project area will be the sum of the allowables of the two wells within the project area, including the injection well. Rule 6, the top allowable for the project be the top unit allowable of the Chisum Pool multiplied by the number of wells, in this case, two, in the project area, or the capacity of the producing well to produce as determined by a 24-hour test, whichever of these two amounts is the least. Rule 7, Well test be limited to the measurements of volumes of oil and water produced; be exempt from gas-oil

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ratio tests. The amounts of gas being produced with the oil is too small to measure with normal equipment. I might state on that, bottom hole sample taken on Well No. 1 on April 27, 1950, showed a solution gas-oil ratio of 88 cubic feet per barrel, bubble point to be 244 psig, and present bottom hole pressure, 2425, so that the normal producing ratios will be through the life of this field, approximately the solution ratio. Rule 8, project operator will submit to the Commission each month, within a reasonable time after they establish the normal unit allowables for southeast New Mexico a pressure maintenance project operator report on a form prescribed by the Commission, requesting the total project allowable. In the final rule, 9, Commission shall assign the project allowable upon receipt of the above-required form which shall be the sum of the allowables of the injection well and the producing well.

Q Mr. Hoy, what do you feel the lifetime of this pool will be?

A We anticipate an additional seven years if this project is approved.

Q Without it?

A Approximately five more years.

Q Mr. Hoy, in connection with the application, do you see any way in which the correlative rights of either the State of New Mexico or Honolulu might be violated, or any other interested party if the application is granted?

A No, sir.



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Q Would the granting of the application result in the prevention of waste?

A Yes, sir, in that we anticipate it will result in the recovery of 205,000 barrels of additional oil over the seven-year additional lifetime.

Q I believe, Mr. Hoy, you have prepared a summarization of your testimony; is that correct, sir?

A Yes, sir, that is correct.

Q May we have this marked as Exhibit 2, sir? I will ask you whether or not Exhibits 1 and 2, with the exception of the log, were prepared by you or under your direct supervision?

A Yes, sir, they were.

MR. CRISTY: At this time we would like to offer in evidence applicant's Exhibits 1 and 2.

MR. NUTTER: Honolulu's Exhibits 1 and 2 will be admitted.

Q Do you have anything else in connection with this application you feel would be of interest to the Commission that I have omitted?

A No, sir, I think not.

MR. CRISTY: That is all from this witness.

MR. NUTTER: Any questions?

BY MR. PAYNE:

Q Would you give me the producing capacity on the No. 1 and No. 3 wells again?

A Based on our December production the Well No. 1 had an



average daily production rate of 30 barrels per day. Well No. 3, average daily production rate of eight barrels per day.

Q Do you consider the No. 3 as a stripper well?

A It is, in our opinion, yes, sir.

Q The reason you filed an application for a pressure maintenance project rather than a waterflood project is because of the capacity of the No. 1 Well?

A Yes, sir.

Q Do you propose to drill any more wells on this 80-acre tract?

A No, sir, we do not.

Q If I understand your proposal, you are going to re-inject the salt water that is produced from which well?

A No. 1.

Q So you have no problem about it being compatible?

A No, we do not. It will only be the formation water from the Devonian formation.

Q Do you propose in your injection well to fill the annulus space with sweet oil, ammonia or naphtha?

A Ammonia and sweet oil.

Q And you propose that the injection will be assigned top unit allowable which would then, of course, be transferred and produced out of the No. 1 well?

A Yes, sir.

Q The No. 1 well be given top unit allowable, or its ability

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to produce, whichever is less?

A Yes, sir.

BY MR. NUTTER:

Q What was it you recently did to the equipment, you set a casing pump or something?

A That is correct, upon approval from the Commission in January we put a casing pump in Well No. 1.

Q Now, on your exhibit sheet here that shows the production versus time, you show a jump in production for 1960.

A That was because of an electrification of the power units on the pump units and also installation of larger surface pumps, but they were tubing pumps, both of them.

Q If you had another point for the first part of 1961, with this casing pump in there you would probably have a point a little higher than 1760?

A That's right, and that is shown on the Curve 3, first point on that curve. That is based on tests made with this casing pump.

Q I thought the third curve was the curve under pressure maintenance?

A That's right, but that is our anticipated decline rate based on the initial test we got with this casing pump.

Q In other words, putting the casing pump in is going to bring it to this point, and pressure maintenance will hold the curve at the level you have drawn it here?

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A Yes, sir, that's right.

Q The way I interpret the next table, where you show average daily versus cumulative, the second line is with the enlarged equipment you put in this well, and you would reach your economic limit at approximately 460 or 70 barrels; is this correct?

A 460,000 barrels; that's correct.

Q But by pressure maintenance you are going to shift this curve over to No. 3 and you will reach your economic limit at 670 barrels; is this correct?

A Yes, sir.

Q You expect to recover an additional 200,000 or so barrels of oil?

A Yes, sir.

Q Will the injection be under gravity all through the life of the project?

A It is doubtful, but we anticipate the pressures will never be very high.

Q Do you anticipate you will have to use makeup water, or will you only use Devonian?

A At the present time, the study we have made, only Devonian water. We don't anticipate having to use any makeup water.

Q What do you expect the rate of injection will be toward the end of the life of the project?

A Setting the economic limit on this project at 98%, I would not have any idea exactly what the rate would be.



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Q What I was delving at, the ultimate rate of injection that you are planning, will it be too great to permit you to inject through tubing?

A We don't anticipate so. We may have to change to three-inch tubing, but we don't expect to have to go down the casing. We think we can handle it with tubing.

Q These rules that you have submitted here for your proposed rules, are substantially the same as previous rules which have been approved by the Commission?

A That's correct.

Q I notice you have left out the gas credit which is permissible, but you don't anticipate high GOR's?

A We do not.

Q Mr. Hoy, you stated the injection would be through tubing and packer.. Would you tell me where that packer will be set with relation to the top of the cement?

A It will be set in the bottom joint of the casing.

Q Will the injections be by gravity?

A We anticipated initially by gravity, with anticipated 300 barrel rate. Higher rates may require a small amount of pumping.

MR. NUTTER: Any further questions of Mr. Hoy? He may be excused. Do you have anything further, Mr. Cristy?

MR. CRISTY: That is all for the applicant.

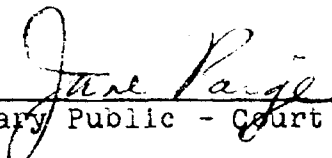
MR. NUTTER: Anyone have anything they wish to offer in Case 2207? Take the case under advisement.



STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, JUNE PAIGE, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 10th day of March, 1961.


Notary Public - Court Reporter

My Commission expires:
May 11, 1964.

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I N D E X

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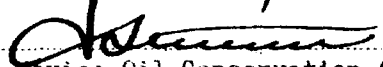
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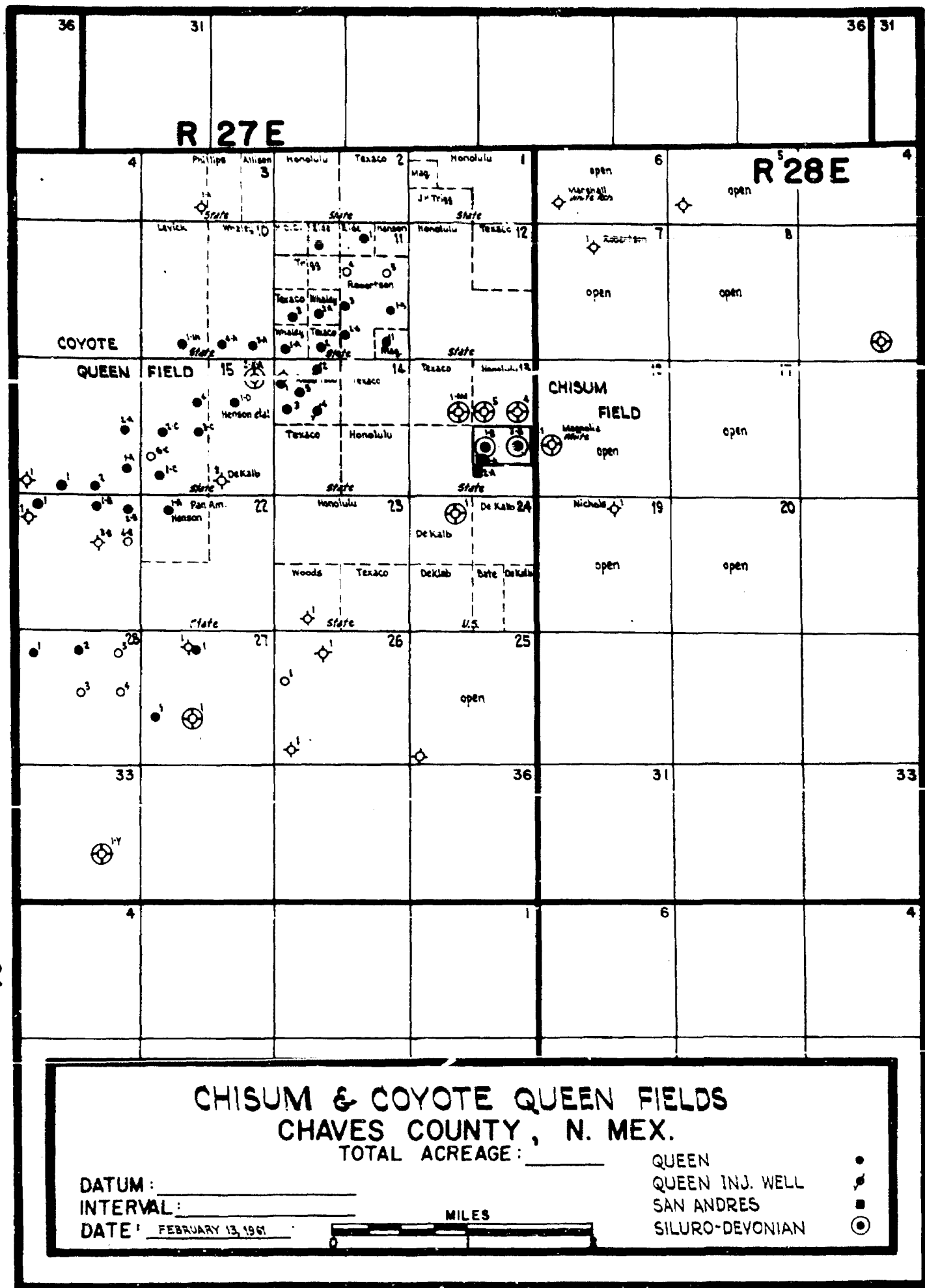
E X H I B I T S

<u>NUMBER</u>	<u>EXHIBITS</u>	<u>IDENTIFIED</u>	<u>OFFERED</u>	<u>ADMITTED</u>
Ex.#1	Booklet	3	12	12
Ex.#2	Summary of Testimony	12	12	12

I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case No. 2207
heard by me on 3/3, 1961.

 , Examiner
New Mexico Oil Conservation Commission



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S

THE WESTERN COMPANY

Service Laboratory

West Highway 80

Box 310

Midland, Texas

Phone MU 3-2781 Day or Night

WATER ANALYSIS

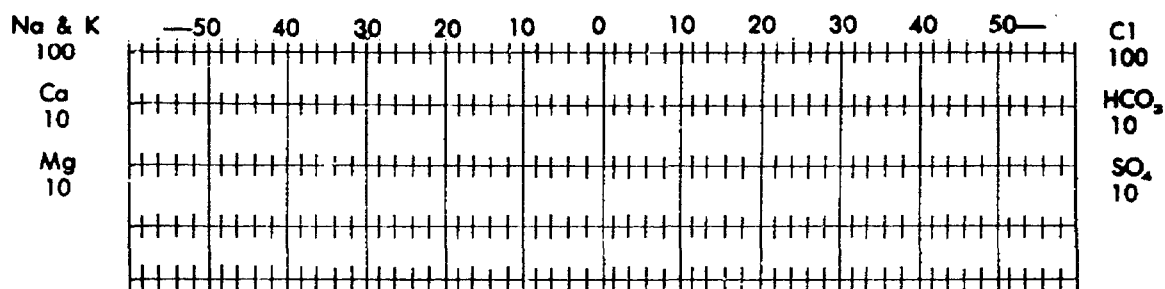
Operator	Honolulu Oil Corp.	Date Sampled	February 2, 1961
Well	New Mexico State 2 1	Date Received	February 5, 1961
Field	Chisum	Submitted by	Mr. John B. Nixon
Formation	Devonian	Worked by	Jim Looney
Depth	6500	Other Description	
County	Chaves, New Mexico		

CHEMICAL DETERMINATIONS

Density	1.030 @ 73° F	pH	7
Iron	None	Hydrogen Sulfide	Fair trace
Sodium and Potassium	14,421 ppm	Bicarbonate	1037 ppm
Calcium	1480 ppm	Sulfate	1550 ppm
Magnesium	437 ppm	Phosphate	ppm
Chloride	24,400 ppm	as Sodium Chloride	ppm
Resistivity	.145 ohm-meters @ 77° F		

Remarks:

for Stiff type plot (in meq./l.)



Per _____

RECOMMENDED RULES FOR PRESSURE MAINTENANCE PROJECT
CHISUM OIL POOL
CHAVES COUNTY, NEW MEXICO

- Rule 1. Project area to be the North 1/2 of the Southeast 1/4 of Section 13, T-11-S, R-27-E, Chaves County, New Mexico. This area consists of the two forty acre proration units assigned to Honolulu - State "B" Wells Nos. 1 and 3.
- Rule 2. The Honolulu - State "B" Well No. 3 will be converted to a water injection well for the injection of water into the Devonian producing formation of the Chisum Pool.
- Rule 3. The allowable for the injection well be transferred to the producing well.
- Rule 4. The allowable for the injection well will be the top unit allowable for the Chisum Pool.
- Rule 5. The allowable for the project area will be the sum of the allowables of the two wells within the project area, including the injection well.
- Rule 6. The top allowable for the project shall be the top unit allowable of the Chisum Pool multiplied by the number of wells in the project area, or the capacity of the producing well to produce as determined by a 24 hour test, whichever is less.
- Rule 7. Well tests be limited to measurement of volume of oil and water produced and be exempt from gas-oil ratio tests; the amount of gas produced with the oil being too small to measure with the usual equipment for measuring gas-oil ratios or gas-fluid ratios.

Rule 8.

The project operator shall submit to the Commission each month, within a reasonable time after the normal unit allowable for Southeast New Mexico has been established, a Pressure Maintenance Project Operator Report on a form prescribed by the Commission requesting the total project allowable.

Rule 9.

The Commission shall assign the project an allowable, upon receipt of the above required form, which shall be the sum of the allowables of the injection well and the producing well.

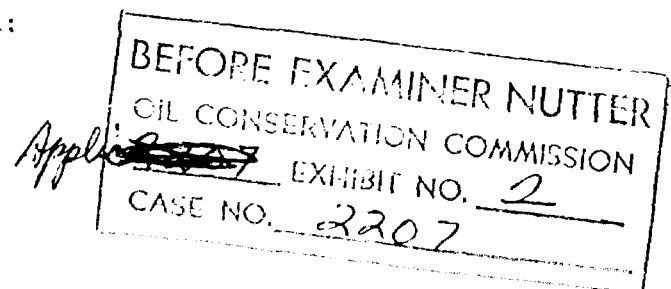
CHISUM TESTIMONY

This is an application by Honolulu Oil Corporation for authorization to conduct a pressure maintenance project by the injection of water into the Devonian producing formation underlying the Honolulu - State "B" Lease in the Chisum Oil Pool, Section 13, T-11-S, R-27-E, Chaves County, New Mexico. This Honolulu - State "B" Lease covers all of Chisum Oil Pool. The producing wells in this Pool are the Honolulu - State "B" Nos. 1 and 3.

Following is a brier history of this field. The discovery well was the Honolulu - State "B" No. 1 located 1980' from the South and East lines of Section 13, T-11-S, R-27-E, Chaves County, New Mexico. This well was completed February 20, 1950, for a flowing potential of 170 barrels of clean 40.5° gravity oil in twenty-four hours. The well was originally drilled to a total depth of 6,933 feet in granite. The surface string of 13-3/8" casing had been set at 440' and cemented to surface with 500 sax cement. The intermediate string of 9-5/8" casing had been set at 1,866' and cemented with 500 sax cement. Top of cement behind the pipe is at 860'. At total depth of 6,933', the well was plugged back to 6,563'. The 7" production casing was set at 6,490' and cemented in three stages. First stage was 500 sax cement from 6,490' back to 4,514'. The second stage was 400 sax cement from 4,235' to 2,760'. The third stage was from 390 sax of cement from 2,590' to surface. The producing interval is in the open hole between 6,490' and 6,563'. The well was reacidized with 8,000 gallons on June 22, 1950 and repotentialized for 498 barrels clean oil in 24 hours, flowing.

The only other producing well in the field is the Honolulu - State "B" No. 3 located 1980' from South line and 660' from the East line of Section 13, This well has 13-3/8" surface casing set at 448' and cemented to surface with 735 sax cement. An intermediate string of 8-5/8" casing was set at 2,190' and cemented with 200 sax cement. The well was drilled and cored to a depth of 6,556'. The producing string of 5-1/2" casing was set at 6,499' and cemented with 500 sax cement. After 10,500 gallons acid treatment of the open hole between 6,499' and 6,556', the well potentialized for 882 barrels of clean oil in 12 hours, flowing, Gas-oil ratio was 79 cubic feet per barrel.

There have been 6 dry holes drilled to the Devonian formation in the area of the Chisum Oil Pool. These are:



Honolulu - State "B" No. 4 - located 1980' from the North line and 660' from the East line of Section 13;

Honolulu - State "B" No. 5 - located 1980' from North line and 1880' from East line of Section 13;

Magnolia - White No. 1 - located 1980' from South and 660' from West lines of Section 18, T-11-S, R-28-E;

Texas Co. - State No. 1-AM - located 1980' from the North and West lines of Section 13;

DeKalb - State No. 2-X-A - located 660' from the North and East lines of Section 15, T-11-S, R-27-E;

Honolulu - Federal-Hinkle No. 1 - located 660' from North and 1980' from West lines of Section 24.

As Honolulu's Exhibit No. 1, we offer a plat showing the area surrounding the proposed project area for a distance of two or more miles. This plat shows the lease ownership, lease name, and well locations. As shown on the legend, the solid circles are Queen sand producing wells in the Coyote Queen Oil Pool. The formation produces from a depth of about 1,200'. The solid squares are producing wells in the Chisum (San Andres) Oil Pool. The two concentric circles designate wells to the Devonian. The solid circles with a diagonal line through them indicate water injection wells in the Queen sand formation in the Coyote Queen Pool. The proposed project area is outlined in red, being the N/2 of the SE/4 of Section 13.

Honolulu's Exhibit No. 2 is a copy of the electric log and gamma ray log of Well No. 3, the proposed injection well. As shown on the log, the top of the Devonian formation is at 6,496'. The Microlog indicates porosity between 6,500' and the total depth of 6,556'. It is proposed to inject water into this interval between the bottom of the 5-1/2" casing at 6,499' and the total depth of 6,556'. There was one core taken in this well from 6,512' and 6,553'. This recovery was 100% crystalline dolomite with some vuggy porosity and an extensive fracture system. The core analysis gave 22.2% porosity, average permeability of 14 millidarcys with a range of from less than 0.1 md. to 59 md. The analysis also gives a residual oil saturation of 32.7% and a connate water content of 27%.

Honolulu's Exhibit No. 3 is a contour map of the Chisum Pool and the area around it. The contours are based on the top of the Devonian of all wells in the area. The subsea datum of the Devonian is shown for all wells. Contour interval is twenty feet. Except for Honolulu Wells Nos. 1 and 3, the other wells shown tested only water in the Devonian. This contour map shows an asymmetrical anticline with the apex of the structure to be the small area around Honolulu Well No. 1 with a rapid drop to the North, East, and South and a more gentle dip to the West. The contour map also shows Honolulu Well No. 3 to be on the extreme Eastern edge of the probable producing area of the Chisum Pool. This map indicates that the project area as proposed will include all of the oil productive area of the Chisum Pool. The two dotted lines on the Map A-A' and B-B' are the lines of two cross-sections which will be Honolulu's Exhibits Nos. 4 and 5.

Honolulu's Exhibit No. 4 is a cross-section A-A' roughly NW-SE along the apex of the Chisum Pool structure. From NW to SE the wells are as follows: Texaco - State No. 1-AM, Honolulu - State "B" No. 1, Honolulu - State "B" No. 3, and Magnolia - White No. 1. The cross-section is made from portions of electric logs and radioactive logs of the above named wells. The dotted line is the top of the Devonian formation as shown on the logs. The drill stem test intervals on each well are shown on the logs. Below each well log are shown the drill stem test intervals, length of time of each test, and fluid recovery on each test. As the tests show, only the Honolulu wells recovered any oil or gas without sulfur water. The Texaco - State well recovered 1,270' of mud cut oil and 840' of oil and gas cut sulfur water approximately 70' below the top of the Devonian. However, samples did not indicate any porosity for the accumulation of oil above the depth where this test was taken. The test shown was taken in the first porosity encountered in the Devonian. This cross-section also shows the relatively steep Easterly dip of the structure from the Honolulu Well No. 3 to the Magnolia - White No. 1. This cross-section also indicates that the area drained ^{by the} two Honolulu wells includes all of the Chisum Pool. It also indicates that Well No. 3 is 8' lower structurally than Well No. 1.

Honolulu's Exhibit No. 5 is a North-South cross-section of the Chisum Pool through the line B-B' shown on Exhibit No. 3. The crosssection goes through the following wells: Honolulu - State "B" No. 5, Honolulu - State

"B" No. 1 and Honolulu - Federal-Hinkle No. 1.

The dotted line shown on the cross-section is the top of the Devonian formation as determined from the electric and radioactive logs. As on the previous Exhibit, the drill stem tests on each well are shown. As indicated by the tests, the only well showing commercial production is the Honolulu - State "B" No. 1. This Exhibit also shows the rapid dip in the structure both to the North and to the South from the State "B" No. 1.

Honolulu's Exhibit No. 6 is graph of the reservoir performance data for the two wells in the Chisum Pool. This graph is a plot of the reservoir pressure against time. The original pressure was 2650 psi taken in March, 1950 after completion of the discovery well. There are three other pressure points on the curve. These show the bottom hole pressure of 2600 psi in June, 1950; 2578 psi in August, 1950; 2552 psi in February, 1951; and 2425 psi in January, 1961. This curve represents our interpretation of the pressure performance in this pool. The first four pressure determinations were made during the flowing life of the field, which lasted less than one year. After installation of pumping equipment, no pressure determinations were made until January, 1961. As the graph shows, there has been a relatively small pressure decline during the last ten years compared to the first year of production.

This reservoir pressure curve indicates an active water drive reservoir. Since there has been a decline in pressure under present withdrawal rates, this decline indicates that the water drive is not sufficient to completely replace reservoir fluid withdrawals. We anticipate a more rapid decline in pressure under planned increased withdrawal rates if there is no program of pressure maintenance. We believe the natural water drive to be sufficiently active to maintain the present reservoir pressure if it is aided by returning the produced water to the reservoir.

617 Honolulu's Exhibit No. 7 is a graph of oil production rate versus time. There are three curves on this Exhibit. Curve No. 1 shows the actual oil production rate of the Chisum Pool up to the year 1960. Early in 1960, the lease was electrified and larger pumps were installed. The dashed line portion of Curve No. 1 is the anticipated decline rate of production if the electricity and larger pumps had not been installed. The electrification and installation resulted in the increased production rate shown by the point on Curve No. 2. Curve No. 2 shows the anticipated decline rate resulting from the equipment change. Curve No. 2 parallels the decline rate established by

Curve No. 1 to the economic limit of 20 barrels per day or 600 barrels per month.

The point at the beginning of Curve No. 3 is the anticipated production rate for 1961 provided the Commission approves this pressure maintenance project. The dashed line is parallel to Curve No. 1 and represents the anticipated oil production rate under this proposed program to the economic limit. This curve indicates an approximate extension of seven years to the producing life of the field. The anticipated oil producing rate at the economic limit of this pool is 20 barrels per day, at which rate we expect to be producing 98% water.

Honolulu's Exhibit No. 8 is a plot of the oil production rate versus cumulative oil production. The three curves correspond to the same numbered curves on Exhibit No. 7. Projection of these curves to the economic limit show that the equipment change in 1960 increased the ultimate recovery approximately 40,000 barrels over the previous anticipated recovery. Curve No. 3 shows that an anticipated additional 265,000 barrels of oil will be recovered under the proposed pressure maintenance program.

Ex 8
The curves in the upper portion of the Exhibit numbered 1W, 2W, and 3W are water production curves corresponding to the numbered oil production curves. This water production is expressed in per cent of total fluid production as shown on the right hand margin of the Exhibit. Curves Nos. 2W and 3W are estimates only as the water production trend has not been established at the anticipated production rates for the two wells. Curve No. 1W is the composite overall trend established for both wells. The change in slope of Curve No. 2W is estimated on the basis of the higher producing rate from Well No. 1 during 1960. The current water per cent of Well No. 1 is 75% and of Well No. 3 95%. An increase in production ^{from Well No. 1} would lower the overall produced water percentage.

Curve No. 3W is the anticipated water cut trend under the proposed pressure maintenance program. Under this program, all fluid withdrawals would be from Well No. 1, and the initial water cut would be that of the current water per cent production from Well No. 1. The slope of this curve can only be estimated at this time, but due to the higher structural position of Well No. 1 compared to Well No. 3, the water production should not increase as fast as the combined water production from the two wells. The water production at the economic limit of production under this proposed program is estimated to be 98% of total production.

Honolulu's Exhibit No. 9 is a water analysis of water produced from the State "B" No. 1 Well during normal pumping operations. This sample was analysed by the Western Company.

Read Analysis.

From this analysis it can be seen that the formation water being produced by Well No. 1 is only mildly corrosive as evidenced by the neutral PH of 7, the relatively low sodium chloride content, and the very low hydrogen sulphide content. Because of the extremely mild corrosiveness, no equipment corrosion problems are anticipated in the proposed injection of this water into Well No. 3.

Honolulu's Exhibit No. 10 is an outline of proposed rules for the operation of this project if this application is granted by the Commission.

Read rules.

As shown by these rules, Honolulu is not requesting any unusual orders or special treatment for the operation of this project. The reason for requesting that Well No. 3 be converted into an injection well is that all other wells drilled to the Devonian in this reservoir have been plugged and abandoned at least ten years ago. It would be prohibitively expensive to clean out one of these old holes, run the necessary casing and tubing, lay the necessary water lines, and do all things necessary to prepare the well for water injection. The Well No. 3 has reached the point where it will no longer be possible to produce this well economically. During the month of December, 1960, production from Well No. 3 averaged 8 barrels of oil per day or 5% oil and 150 barrels of water per day, or 95% water. Honolulu is requesting that only the normal unit allowable be assigned each well and that permission be granted to transfer the normal unit allowable from Well No. 3 to Well No. 1. Also, if Well No. 1 cannot make this project allowable at any time, the allowable shall be assigned on the basis of production tests.

The solution gas-oil ratio of this reservoir under original conditions was only 88 cubic feet of gas per barrel of stock tank oil. The bubble point pressure is 244 psig at the reservoir temperature of 131° F. These figures indicate that the producing gas-oil is too small to accurately measure by normal procedures. Therefore, we request that the project be exempt from gas-oil ratio tests. The above reservoir data were obtained from two bottom hole samples taken on April 27, 1950 at a depth of 6,435' in Well No. 1.

Conclusions

Based on the previous testimony the following conclusion have been made by Honolulu Oil Corporation.

1. Due to the nature of the reservoir and reservoir rock, it is felt that injection of produced water to be the best method of maintaining reservoir pressure.

2. Although there is an active water drive present in this reservoir, it is not active enough to fully maintain the present reservoir pressure. However, it is thought that by the injection of the produced water that this pressure can be maintained at about its present level.

3. As shown above by the Exhibits, an anticipated increase in ultimate recovery is expected if this project is approved. This increased recovery will amount to approximately 205,000 barrels of oil over and above the anticipated recovery under present producing methods. This will result in recovery of oil that would otherwise be left in the ground and will result in increased revenue to the State of New Mexico since this is a State lease.

4. The approval of this project by the Commission will not adversely affect any other operator or royalty owner in the Chisum Pool, since there are only two wells in this Pool, both operated by Honolulu, and only one royalty owner, the State of New Mexico.