

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF
RESERVE OIL AND GAS COMPANY FOR A
WATERFLOOD PROJECT, SOUTH LANGLIE JAL UNIT
LEA COUNTY, NEW MEXICO

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LEA COUNTY, NEW MEXICO

GENERAL

Operator: Reserve Oil and Gas Company
Project: South Langlie Jal Unit Waterflood
Pool: Jalmat
Location of Project:

Township 25 South, Range 37 East, N.M. P.M.

Section 7: SW/4 NE/4, E/2 SW/4, SE/4
Section 8: SW/4
Section 17: W/2
Section 18: E/2

No. of Wells
in Project: 27

Unit and Pro-
ject area: 1,080 acres

Other Waterflood
Projects in Area: The nearest flood project is the Amerada Hess
operated Langlie-Mattix Woolworth Unit,
approximately one and one-half miles to the
northeast.

GEOLOGICAL AND RESERVOIR DATA

Reservoir: From the top of the Seven Rivers formation to the
base of the Queen formation.

Depth: From approximately 3080 feet to approximately 3650
feet below the surface.

Productive Zones: The main reservoir sands found at an average depth
of 3270 feet in the proposed unit are in either the
Seven Rivers or Queen formation depending upon
the structural position of the well.

GEOLOGICAL AND RESERVOIR DATA, Continued

Net Pay: Sufficient data are not available to determine the net effective pay.

Description of Reservoir Rock: The Seven Rivers formation is dolomite, having a fine crystalline anhydrite interbedded with fine grained sandstone. The Queen formation sand members may be described as fine grained sandstone slightly anhydritic with some silty shale partings.

Structure: Elongated anticline dipping steeply to the southwest.

Reservoir Limits: An oil-water contact at approximately 312 feet subsea defines the down-dip productive limit to the west and southwest sides of the unit boundary. A gas-oil contact is present at an estimated 100 feet subsea.

Average Porosity of Net Pay: Estimated at 23%

Average Permeability of Net Pay: Estimated at 23 md. with a range from 0.1 to 177 md.

PRIMARY OPERATIONS

Date of First Production: April 18, 1948

No. of Wells in Project: 27

Cumulative Oil Production 1-1-70: 1,245,702 barrels

Remaining Primary Reserves 1-1-70: 16,435 barrels

Ultimate Primary Reserves 1-1-69: 1,262,137 barrels

*add'l oil
on secondary:
947,000 bbls
based on
75% of
ult. primary*

PRIMARY OPERATIONS, Continued

Daily Average Oil
Production Per
Well 12-69: 1.35 barrels

Original Reser-
voir Pressure: 1450 psi at 200 feet subsea

Oil Gravity: 37° API

Drive Mechanism: Solution Gas Drive

Stage of Depletion: Late; the reservoir in the project area is approxi-
mately 98.7% depleted of primary reserves.

Maximum Current
Production Ability
of a Well: During December, 1969, Reserve's Woolworth "D"
No. 2 produced an average of 3.5 barrels of oil per
day which was more than any other well in the
proposed unit.

WATERFLOOD OPERATIONS

Proposed Pattern: 80-acre five spot

No. of Injec-
tion Wells: 10 initially; 3 additional wells may be converted from
producers to injection at a later date.

Initial Injection Rate: 350 barrels of water per day per injection well.

Estimated Injection
Pressure: Maximum of 1200 psi at wellhead. Injection plant will
be designed for a maximum operating pressure of 1850
psi.

Plan of Injecting
Water: Inject into pay zone through internally coated tubing
and below a packer. The annulus will contain inhibited
fresh water.

Source of
Injection Water: Injection water will be purchased from Skelly Oil
Company. Produced water will be reinjected.

WATERFLOOD OPERATIONS, Continued

Additional Oil

Recovery Anticipated: 946,000 barrels which is equal to 75% of the estimated ultimate primary oil recovery.

CONCLUSIONS AND RECOMMENDATIONS

This pool produces by the solution gas drive mechanism and this portion of the pool is 98.7% depleted of primary oil and the daily oil production averages less than 2 barrels per well.

Engineering and geological studies and the performance of other nearby waterfloods indicate that the proposed unitized interval is susceptible to secondary recovery by water injection which will increase the life and the ultimate oil recovery from this productive zone. The increased recovery due to the proposed water injection operation should be approximately 946,000 barrels of oil.

Reserve Oil and Gas Company and the other working interest owners conclude that unitization of the 27 producing wells and the 1,080 acres outlined in Exhibit 1 for the purpose of waterflooding the Seven Rivers and Queen formations is in the best interest of conservation and prevention of waste.

Reserve, as designated operator of the South Langlie Jal Unit, respectfully requests that the New Mexico Oil Conservation Commission approve the proposed waterflood project and grant an unit oil allowable for the 27 qualifying and producing wells in the unit area as provided by Rule 701 of the New Mexico Oil Conservation Commission Rules and Regulations.

RESERVE OIL and GAS COMPANY

Woolworth "B" Well No. 4

Sec. 17 T-25-S, R-37-E

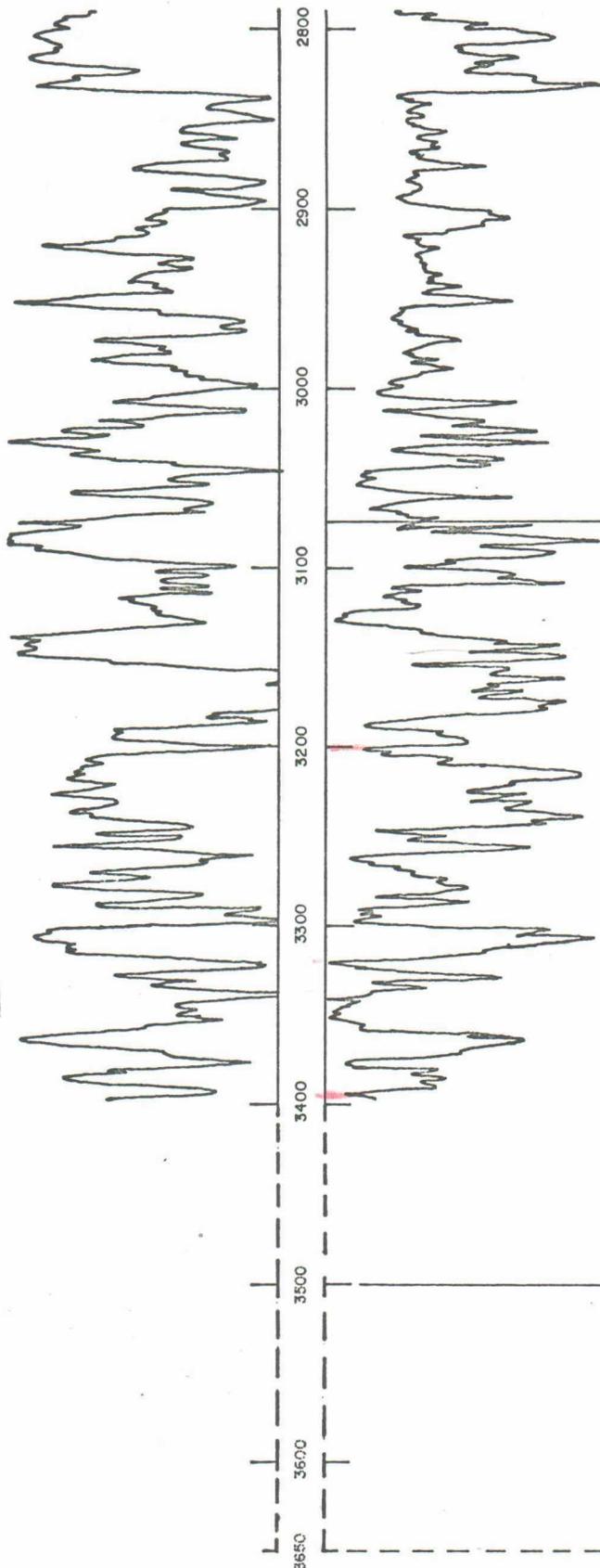


EXHIBIT 2
Typical Well Log and Vertical Limit
South Langlie Jal Unit
Lea County, New Mexico

Top Seven Rivers

BEFORE EXAMINER MUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 2
CASE NO. 4406

RECOMMENDED
VERTICAL LIMITS
FOR
UNITIZED INTERVAL

150'

Estimated
Base of Queen

EXHIBIT 5
SOUTH LANGLEIE-JAL UNIT

TYPICAL SINGLY COMPLETED INJECTION WELL
DALPORT WINTERS "E" NO. 2

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 5
CASE NO. 4906

Surface Casing
8-5/8" Casing;
Cemented with 200 sacks

301'

2-Stage Cement Tool @ 1580'
Cemented with 200 sacks

2-3/8", J-55 Tubing,
Internally Lined.

*inhibited
w/ in pump
except dual*

2470' - Calculated Top of Cement

compt.

w/ gauge

Injection Packer

3180'

Production Casing
5-1/2" Casing Cemented
with 200 sacks

3230'

Water Injection
Zone
3230-3320'

Open Hole
Interval
3230-3320'

3320'

Total Depth

EXHIBIT 5A
SOUTH LANGLEIE-JAL UNIT

TYPICAL DUAL PRODUCTION WELL
PRODUCING GAS FROM YATES AND
OIL FROM SEVEN-RIVERS ZONE
ROG VOSBURG NO. 1

*Dalport Harrison
It is essentially
the same
as this
well*

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 5
CASE NO. 4406

Exhibit 5A

Surface Casing 10-3/4"
Cemented with 115 Sacks
2-Stage Tool - Cemented
with 200 Sacks

159'

1052'

2-3/8", J-55, Tubing
Internally Lined

2568' - Calculated Top of Cement

2792'

Perforated Interval - Yates
Gas Zone

2900'

Packer

3100'

Production Casing 7"
Cemented with 200 sacks

3168'

Water Injection
Zone

3168-3336'

Open Hole
Interval
3168-3336'

Total Depth 3336'

