

DAYTON GRAYBURG FIELD
EDDY COUNTY, NEW MEXICO

BEFORE EXAMINER UTZ	
OIL CONSERVATION COMMISSION	
<i>Kewanee</i>	EXHIBIT NO. <u>1</u>
USE NO.	<u>3061</u>

KEWANEE OIL COMPANY
MAY, 1964

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
LOCATION	1
GEOLOGY	1
DEVELOPMENT	2
RESERVOIR	3
PRIMARY PERFORMANCE	3
PREDICTED SECONDARY PERFORMANCE	3
SUMMARY	4

FIGURES

Figure I	Dayton Grayburg Flood with Future Development
Figure II	Structure Map - Top Premier Sand
Figure III	Predicted Secondary Recovery

EXHIBITS

Exhibit A	Map of Dayton Grayburg Field
Exhibit B	Primary Performance - Williams Area
Exhibit C	Proposed Completion of Water Injection Well
Exhibit D	Gamma Ray - Neutron Log

DAYTON GRAYBURG FIELD EDDY COUNTY, NEW MEXICO

INTRODUCTION

This report has been prepared for presentation to the New Mexico Oil Conservation Commission in support of the Kewanee Oil Company's application to waterflood in this field. All pertinent information relative to Kewanee's waterflood application is included herein.

LOCATION

The Dayton Grayburg field is located in portions of Sections 24, 25, 26, 27, 34, and 35 of Township 18 South and Range 26 East, Eddy County, New Mexico. The oil productive area encompasses approximately 235 acres in the Williams lease area with additional scattered development to the southwest.

GEOLOGY

Production in the Dayton Grayburg field comes from the Premier Sand of the Grayburg Formation in the Guadalupian Series of Permian Age. The Grayburg formation consists of dolomites, sandstones, anhydrites, and red shales.

The Premier sand is generally fine grained, gray quartz with considerable dolomitic cementing material. Although this sand covers a wide area of Southeastern New Mexico, it exhibits low porosity and permeability for the most part.

The oil producing reservoir is characterized by improved porosity and permeability due to a reduced amount of dolomitic material. A stratigraphic trap was instrumental in the accumulation of oil as both porosity and permeability pinchouts are apparently present as is the case in the Atoka Grayburg field. This reduction in porosity and permeability has apparently isolated the wells in the Williams Area from Dayton wells to the southwest. These southwestern wells have recovered considerably less oil and are not thought worthy of secondary recovery operations.

DEVELOPMENT

Initial completion in the Dayton Grayburg field was Kewanee's McCall No. 1 completed by Martin Yates, Jr. on July 20, 1940. Eighteen additional wells have established production in the field. Of this total, only 10 are currently producing with 6 of this number located in the Williams Area. Reservoir limits are fairly well established by dry holes and very low productive wells.

Figure I, attached, shows the productive area of the field which could eventually be effected by waterflooding and proposed later development which will depend upon the results obtained from injection of water into Williams No. 6.

The eight productive wells on the Williams, McCall, and Scripps leases have recovered a cumulative of 111,900 barrels of oil to January 1, 1964. Currently the six active oil wells are averaging only 130 barrels

of oil per month or only 0.7 BOPD per well per day. Exhibit B, attached, is a graphical presentation of the performance of the leases for the past 7 years.

RESERVOIR

The Premier Sand in the Williams Area of the Dayton Grayburg Field includes about 235 acres with an average net effective pay thickness of about 4.5 feet containing approximately 1,000 acre feet. Porosity, permeability, and connate water saturated are estimated to be about the same as in the Atoka Grayburg Field.

The oil originally in place in this reservoir was approximately 900,000 barrels.

PRIMARY PERFORMANCE

The primary performance has been typical of a solution gas drive mechanism for a highly undersaturated crude oil. The predicted ultimate primary recovery of approximately 13 per cent of the oil in place is indicative of the low energy available for the expulsion of oil.

PREDICTED SECONDARY PERFORMANCE

The ultimate recovery from this reservoir should be increased by 170,000 by waterflooding as proposed by Kewanee.

Kewanee's prediction is based on the injection of 1,000 barrels of water per day over a period of five years.

Water injected will be from the shallow Artesian Basin from a water supply well equipped in the area. A maximum pressure of

1,000 psi is anticipated.

The water injection wells will be equipped to confine the injection water to the oil productive interval of the Premier Sand. Exhibit C indicates the completion method proposed for Williams #6W.

SUMMARY

Kewanee concludes that the Atoka Grayburg is an economically attractive waterflood prospect. Oil will be recovered by waterflooding that would be unrecoverable by primary means as the leases are uneconomical to operate at present. In the interest of conservation, waterflooding should be initiated immediately in this field. Kewanee Oil Company respectfully requests the Commission's favorable consideration of this application.

OIL & WATER PRODUCTION - BOPM & BWPM

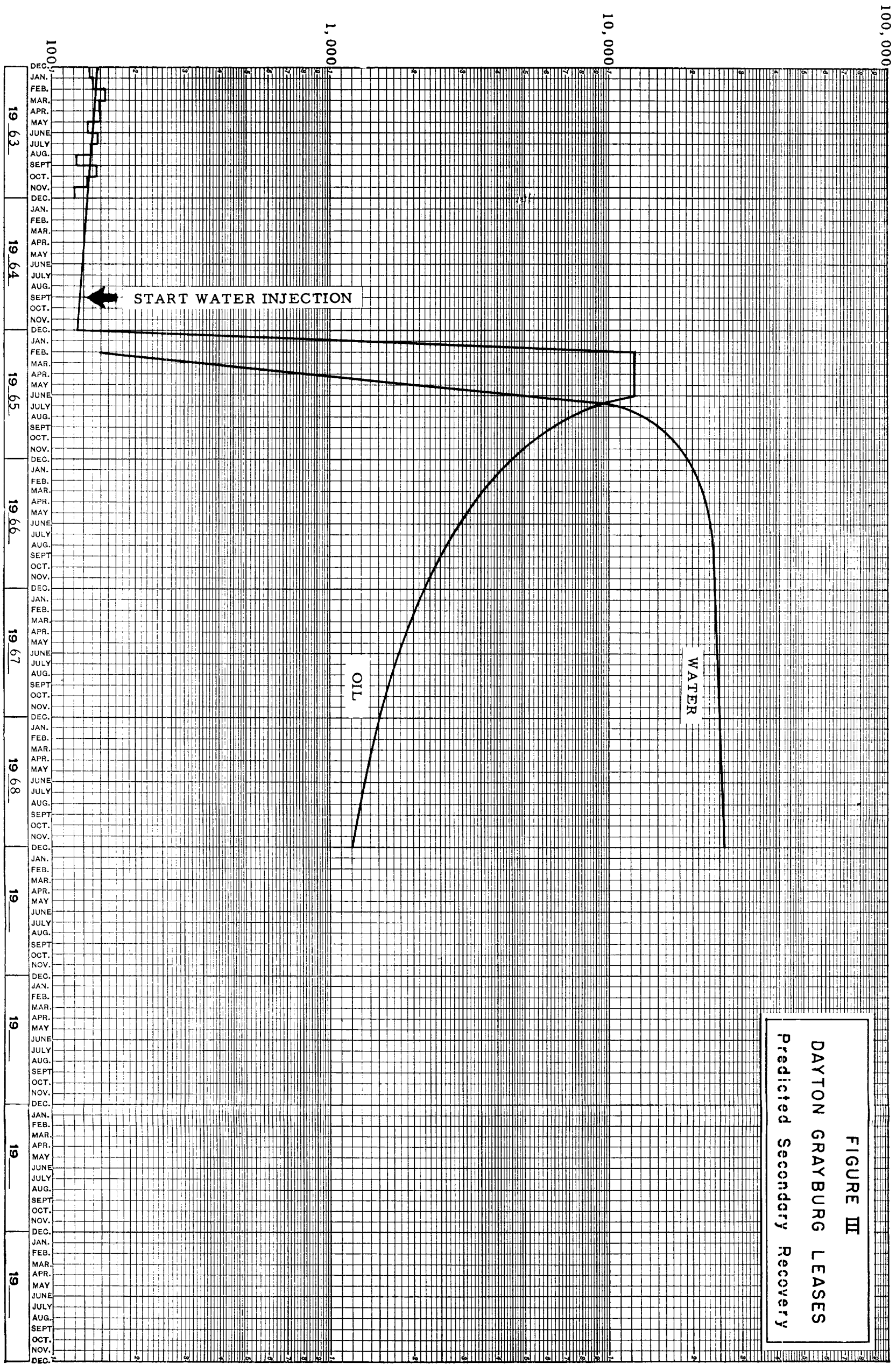
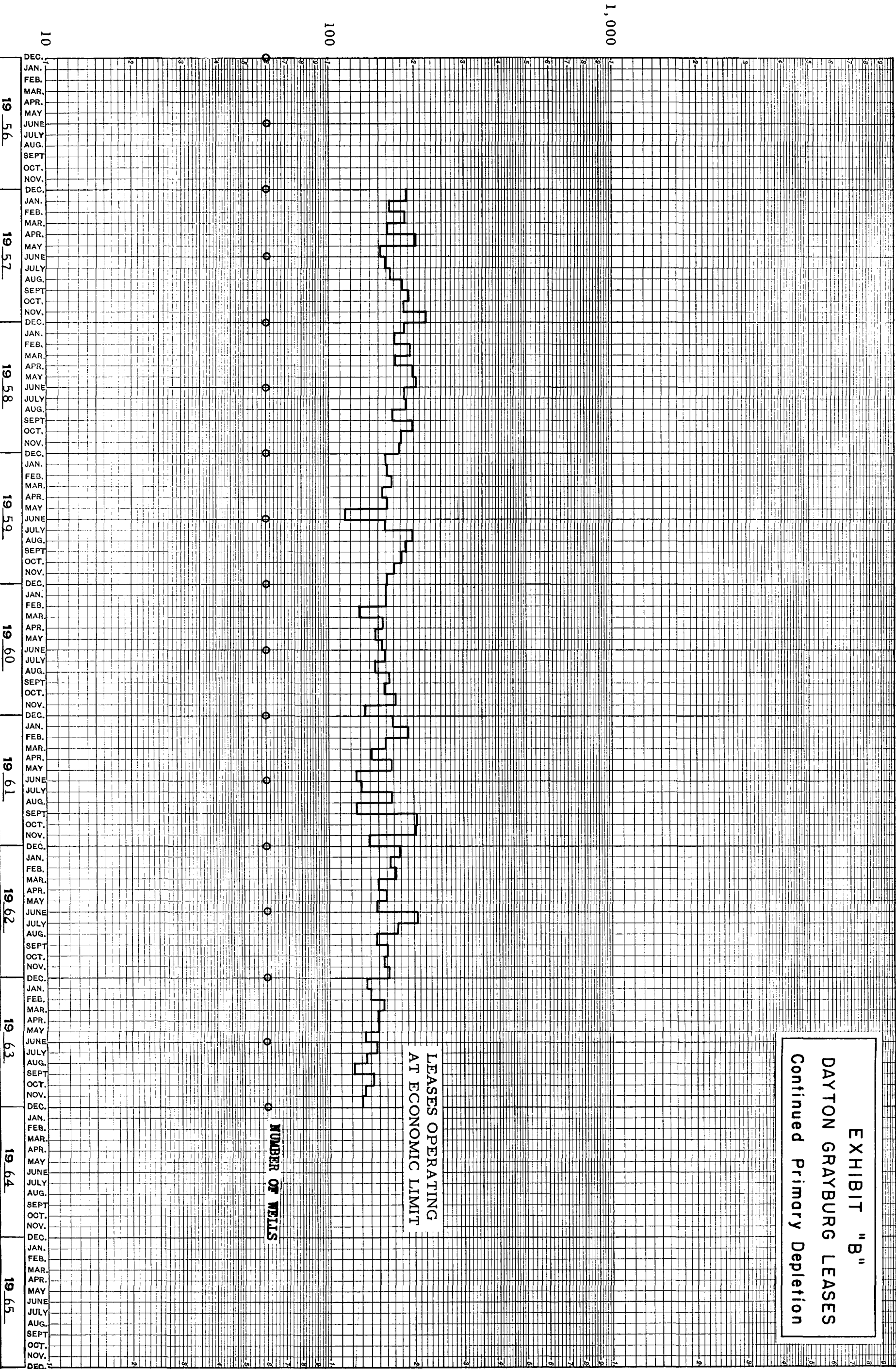


FIGURE III
DAYTON GRAYBURG LEASES
Predicted Secondary Recovery

OIL PRODUCTION - BOPM



R 27 E



--- FLOOD AREA
 PROPOSED UNIT AREA

LEGEND		DIVISION: WEST TEXAS		Drawn 1/5/64	REVISED
○ LOCATION	* ADD GAS WELL	DISTRICT: MALJAMAR			
● OIL WELL	□ WATER SUPPLY WELL	SCALE: 1" = 1000'	Checked		
◆ DRY HOLE	⊗ SALT WTR DISPOSAL	500' 660' 1320'	K E G		
▲ GAS WELL		2640' Dist	FILE		
● ABC OIL WELL		3-2-64	W-64		

Williams #6
NW/4 of NE/4
Section 25, T-18-S, R-26-E

9-10-70, 2623/E

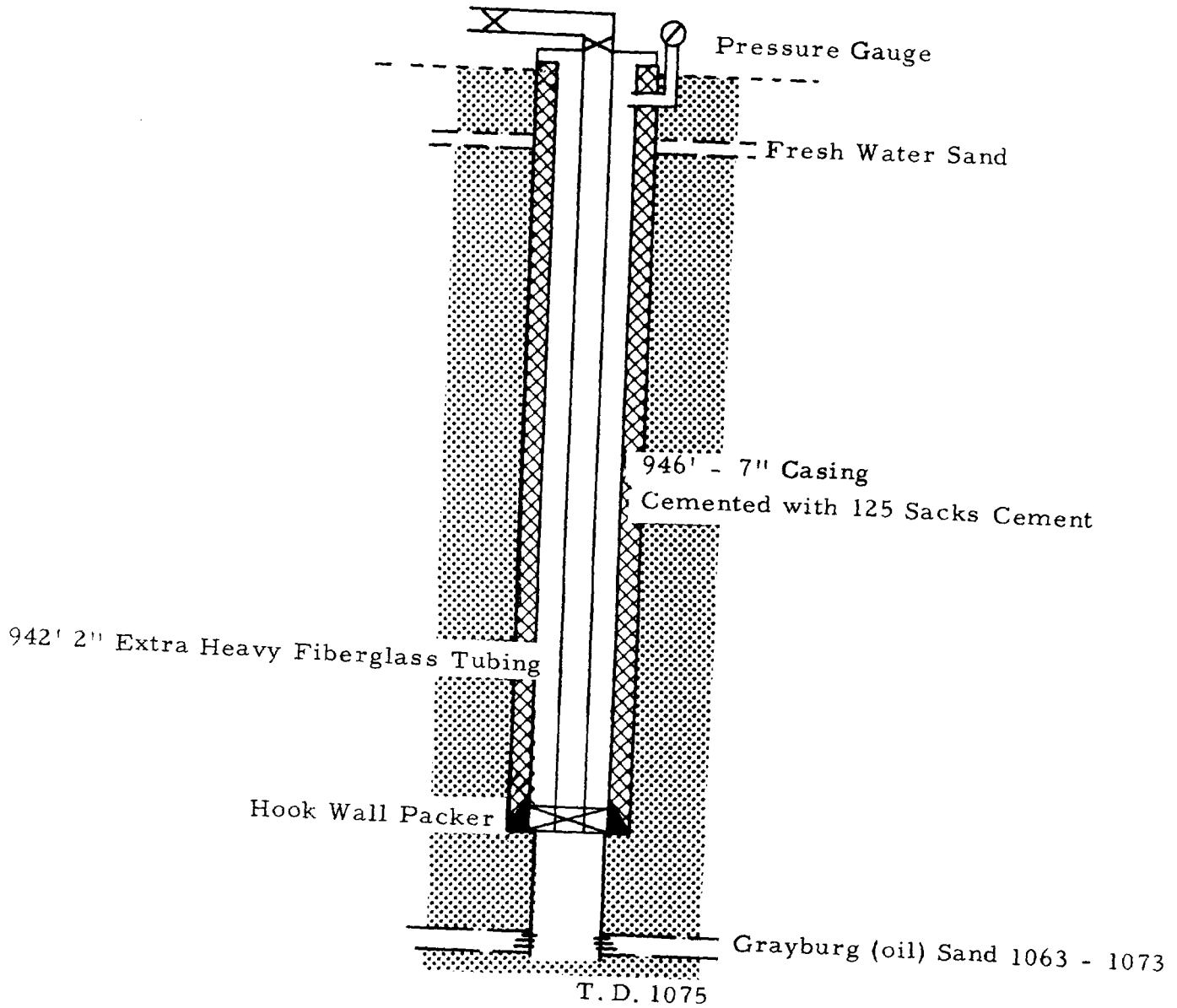


EXHIBIT C
PROPOSED WATER INPUT WELL

Kewanee Oil Company
Dayton Grayburg Field
Eddy County, New Mexico

Williams #6
NW/4 of NE/4
Section 25, T-18-N, R-26-E

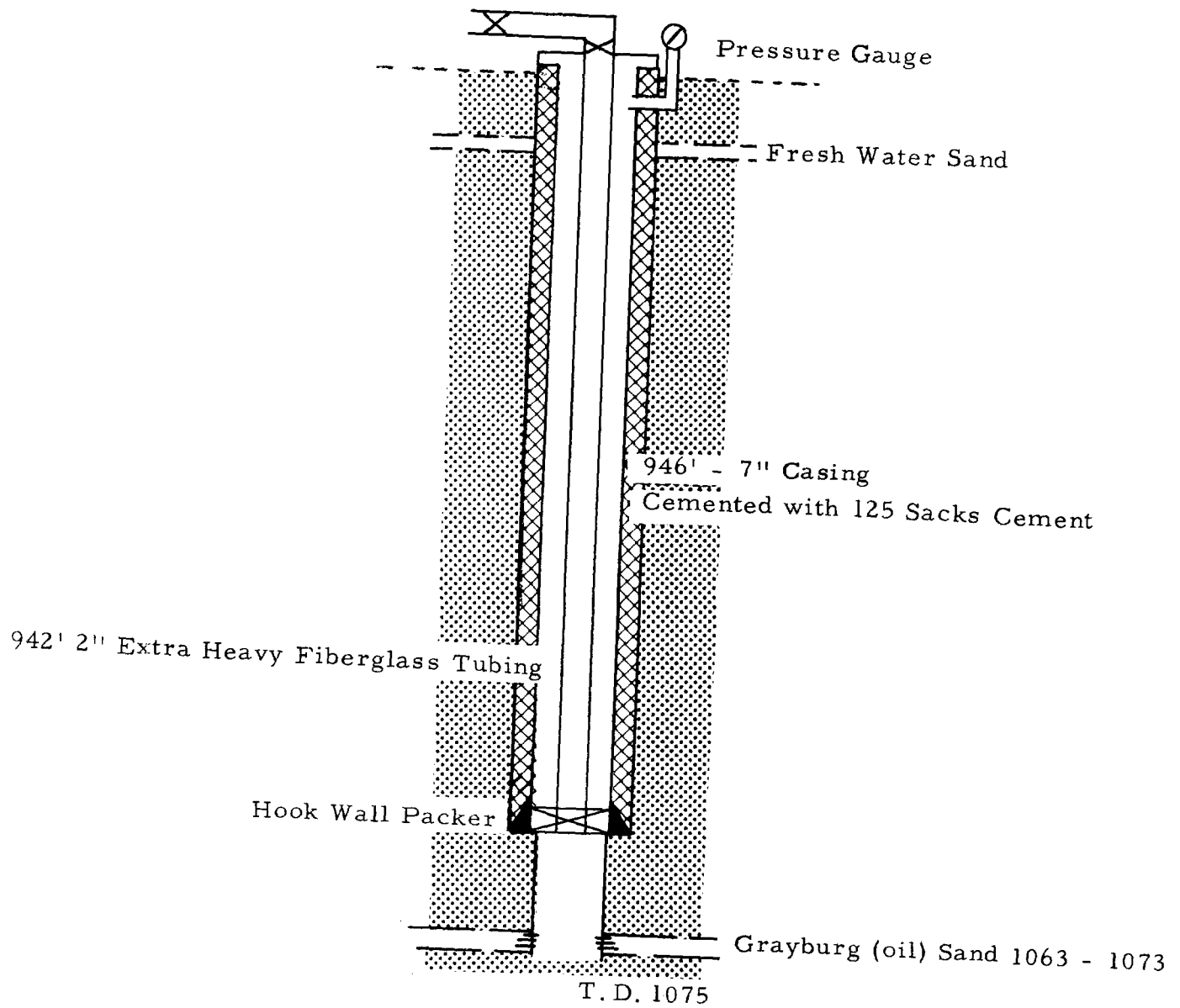


EXHIBIT C
PROPOSED WATER INPUT WELL

Kewanee Oil Company
Dayton Grayburg Field
Eddy County, New Mexico