

JUSTIS MCREE UNIT  
ENGINEERING SUBCOMMITTEE MEETING  
January 15, 1971

ATTENDANCE LIST

Bill Southerland	Getty Oil Co.	Midland
Eugene Miller	Getty Oil Co.	Hobbs
J. W. Freeman	Gulf Oil Co.	Roswell
C. D. Thompson	Getty Oil Co.	Midland
George Hicks	ARCO	Midland
Phil Tomlinson	ARCO	Midland
B. A. Wilkinson	Texaco	Hobbs
Keith E. Bohrer	Skelly	Midland
Walter Newman	Getty Oil Co.	Midland
L. B. Lindahl	Getty Oil Co.	Midland
Howard Perdue	Union Texas Petr.	Midland
M. J. DeMarco	Tenneco	Midland
Harold G. Vest	Getty Oil Co.	Midland

B A L L O T

TO: Getty Oil Company  
P. O. Box 1231  
Midland, Texas 79701

Attention: Mr. J. E. Pierce

Re: Justis McKee Unit  
Termination

The undersigned hereby approves termination of the  
Justis McKee Unit in accordance with Section 21 of  
the Unit Agreement.

Signed \_\_\_\_\_

Company \_\_\_\_\_

Date \_\_\_\_\_

Southern Division

December 31, 1970

WORKING INTEREST OWNERS  
JUSTIS MCKEE UNIT  
LEA COUNTY, NEW MEXICO

Gentlemen:

The Engineering Subcommittee recommended, at the last meeting, May 8, 1970, that Getty Oil Company, as JMU operator, request a change of operating plan from the New Mexico Oil Conservation Commission and that an injectivity test on Well No. 108 be made after which another meeting would be called to examine the results and recommend the next course of action. Approval was received by ballot from the Working Interest Owners.

Sufficient data has been collected from the four-months injectivity test to consider the test finished; therefore, a meeting of the Engineering Subcommittee is called for 1:30 P.M., CST, January 15, 1971 in Getty Oil Company's Conference Room, 10th Floor of the Vaughn Building, Midland, Texas.

Getty Oil's request to convert to injection, Well Nos. 108, 117, 305 and 701 was heard by the NMOCC on July 2, 1970. Wells 108 and 701 were granted but 117 and 305 were denied by the NMOCC. No. 108 was temporarily converted and the injectivity test began in August, 1970 with an initial rate of 1133 BWPD at 1750 psi. This rate dropped rapidly the first month and to date is still slowly decreasing. Figure 1 shows barrels per psi versus time for Well No. 108 compared to the early months of Well No. 404.

No. 108 appears to be following the same curve as 404. By extrapolating the curve of 108 it can be seen that after one year the injectivity of 108 would be approximately 0.19 barrels per psi, or 418 BWPD at 2200 psi. This is a better rate than any of the other injection wells but it is still not enough for an effective sweep.

Since the injectivity of No. 108 is not satisfactory, it is Getty Oil Company's opinion that the Justis McKee reservoir cannot be economically flooded. Capital investments for the JMU so far amounts to approximately \$460,300. Operating costs have averaged \$59,100 per year. An additional \$75,000 will be required for conversion of 4 wells if we proceed as previously proposed. Wells 117 and 305 cannot be converted until their lower zones (Ellenburger) are depleted and plugged off. Cumulative oil production from the effective date

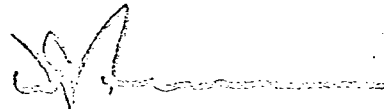
Working Interest Owners  
Justis McKee Unit  
Lea County, New Mexico

December 31, 1970

through October, 1970, is 74,837 barrels. Remaining primary at unitization was estimated at 123,396 barrels.

At the meeting January 15, 1971, Getty Oil Company will propose to terminate the Justis McKee Unit, and ask the Engineering Subcommittee members to make a firm recommendation to the Working Interest Owners concerning this proposal.

Very truly yours,



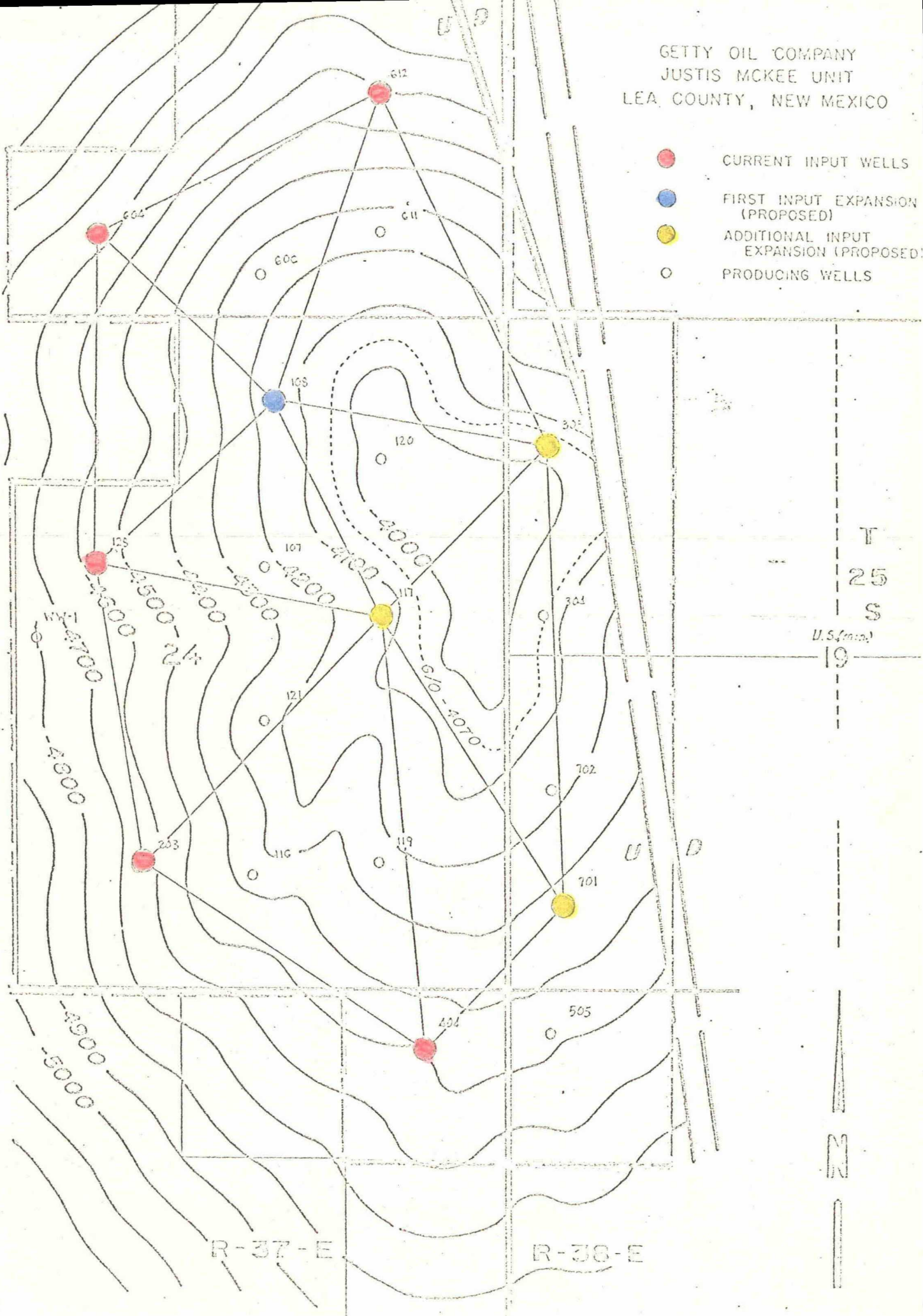
Walter J. Newman,  
Chairman, Engineering  
Subcommittee

WCS:rt

Attach.

GETTY OIL COMPANY  
JUSTIS MCKEE UNIT  
LEA COUNTY, NEW MEXICO

- CURRENT INPUT WELLS
- FIRST INPUT EXPANSION (PROPOSED)
- ADDITIONAL INPUT EXPANSION (PROPOSED)
- PRODUCING WELLS



Southern Division

June 2, 1970

290-18-15

TO ALL WORKING INTEREST OWNERS  
JUSTIS MCKEE UNIT  
LEA COUNTY, NEW MEXICO

Gentlemen:

JEP	WJN
WCP	HGV
TEL	WCS
VLA	SMB
BJJ	QFW
GSO	LWW
DB	N & D
Circ	N & R
F - #	

An Engineering Subcommittee meeting was held May 28, 1970, in Getty Oil Company's Conference Room, 10th Floor of the Vaughn Building, Midland, Texas. The attendance list is attached. Purpose of the meeting was to review past performance of the flood and to consider a change of the operating plan.

After considerable discussion of the injectivity problems experienced to date, it was concluded that the best possible solution would be to change the injection pattern. The problem of limited injectivity into the McKee Sand is not unique with the Justis McKee Unit. The problem exists in other McKee Floods in Southeast Lea County, however, response has been satisfactory in some cases where the injection pattern is similar to a five-spot. Current pattern of the Justis McKee flood is a peripheral pattern involving five down-structure injection wells.

Because of the known injectivity problems, Getty Oil Company proposes to temporarily connect Well No. 108 to the pump station for an injectivity test. This cost, \$2500, is within the limit of authority of the unit operator and will not require an AFE. The Engineering Subcommittee approved this proposal. When the injectivity test is finished, another engineering subcommittee meeting will be called to examine the results and recommend the next course of action.

In accordance with Article 3.2.3 and 3.2.6 of the Unit Operating Agreement a ballot is attached for Working Interest Owner approval for Getty Oil Company to change the status of Well No. 108 and to appear before the New Mexico Oil Conservation Commission. Preparations are being made for a hearing before the NMOCC to seek approval of a change in the Operating Plan.

Very truly yours,



Walter J. Newman,  
Chairman, Engineering  
Subcommittee

WCS:rlt

Attach.

# Getty Oil Company

P.O. Box 1231, Midland, Texas 79701

Southern Division

May 19, 1970

290-18-15

TO ALL WORKING INTEREST OWNERS  
JUSTIS MCKEE UNIT  
LEA COUNTY, NEW MEXICO

JEP	WJN
WCI	HGV
TEL	WCS
VLA	SMB
BJJ	QTV
GSO	LWW
DB	N & D
Circ	N & R
F - #	

Gentlemen:

A meeting of the Engineering Subcommittee is called for 1:30 P.M., May 28, 1970 in Getty Oil Company's Conference Room, 10th Floor of the Vaughn Building, Midland, Texas. Purpose of this meeting will be to review past performance of the flood and to consider a change of the operating plan.

Attached for your review is a brief history of the unit and a proposed change in the injection pattern.

Very truly yours,



Walter J. Newman,  
Chairman, Engineering  
Subcommittee

WCS:rlt

Attachments

## JUSTIS MCKEE UNIT

The Justis McKee Unit became effective January 1, 1966 with Getty Oil Company as Operator. Cumulative oil production before that time was 1,231,244 BO. Cumulative production as of April 1, 1970 was 1,298,590 BO. The Engineering Committee estimated Ultimate Primary to be 1,355,000 BO. Therefore, 123,756 STBO of Primary Oil remain to be produced. The original Engineering estimate of Secondary Oil was 2,837,000 STBO.

The original Engineering Study proposed that water be injected at the rate of 5165 BPD until fillup of over 2,000,000 barrels, then the rate could be reduced to 1641 BPD (until 6,219,630 barrels were injected).

Water injection began October 10, 1967. The maximum beginning rate into four (4) wells was 1590 BWPD for one day. The average rate for October 1967 was 732 BWPD at 900 PSI. Since that time, the pressure has been increased in stages to 2200 PSI and one additional injector has been drilled (No. 128). The present injection rate is between 500-900 BWPD. Cumulative injection to April 1, 1970 was 685,408 BW. The injection rate continues to drop and no response has occurred to date. The injection pressure is at the maximum design pressure of much of the equipment and is probably near the fracture pressure of the formation.

The injection wells have been back-flowed; treated with scale converter, H Cl Acid, and Acetic Acid; each time the improvement in injectivity lasted less than one month.

A chemical to combat swelling clays was added to the injection water early in the flood life. This chemical was found ineffective and has been discontinued. Every effort possible has been made to reduce the solids content of the injection water.

The water injection plant consists of two (2) Ajax DP-115's with Triplex Pumps. The foundation of one of these pumps has given away and the estimated cost of repair is \$2 to 5,000. (The second pump is not being used at the present time, due to the lower volume being injected).

It is apparent that we will not be able to flood the Justis McKee Sand under the current plan of operation. All efforts to improve the injectivity of the input wells have been unsuccessful. Analysis of core data, taken from wells centrally located in the field, show an average permeability of 50.7 md. Average permeability from cored section in injection Well #128 was 5.2 md. It is evident that injection into wells with more favorable permeabilities is desirable and may be the only chance to save the project.

We therefore propose to temporarily connect Well #108 to the pump station for an injectivity test at a minimum cost of \$2500. If



Unit Name JUSTIS WCKEE UNIT - WATERFLOOD  
 Operator TIDEWATER OIL COMPANY  
 County LEA

0000

DATE	OCC CASE NO. 3300	EFFECTIVE DATE	TOTAL ACREAGE	STATE	FEDERAL	INDIAN-FEE	SEGREGATION CLAUSE	TERM
APPROVED	OCC ORDER NO. R-2965	January 1, 1966	880.00	80.00	520.00	-0-	280.00	Yes so long as

COMMISSIONER: OCC: Sept. 13, 1965  
 September 24, 1965  
 UNITED STATES GEOLOGICAL SURVEY:  
 November 29, 1965

UNIT AREA

TOWNSHIP 25 SOUTH, RANGE 37 EAST, NEW MEXICO PRINCIPAL MERIDIAN

Section 13: SE 1/4, SE/4SW/4  
 Section 24: E/2, E/2SW/4, SE/4NW/4  
 Section 25: NE/4NE/4

TOWNSHIP 25 SOUTH, RANGE 38 EAST, NEW MEXICO PRINCIPAL MERIDIAN

Section 19: W/2W/2  
 Section 30: NW/4NW/4

TERMINATED  
 88: 7-1-71

Unit Name JUSTIS MCKEE UNIT - WATERBURY  
Operator TIDEWATER OIL COMPANY  
County IMA

STATE TRACT NO.	LEASE NO.	INSTI-TUTION	SEC.	TWP.	RGE.	SUBSECTION	RATIFIED DATE	ACRES	ACREAGE NOT RATIFIED	LESSOR
4	B-11478-0	C.S.	25	25S	37E	NE/4NE/4	2-23-65	40.00		THE ATLANTIC REFINING COMPANY
5	B-9521-0	C.S.	30	25S	38E	NW/4NW/4	4-27-65	40.00		SKELLY OIL COMPANY

TERMINATED

CH 7-1-71