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COMMERCIAL SCALE DEMONSTRATION—ENHANCED OIL RECOVERY BY MICELLAR-POLYMER FLOOD

Annual Report, October 1980—September 1981

By
J. C. Howell
Roy E. Porter

May 1982
Date Published

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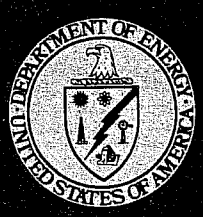
Marathon Oil Company
Bridgeport, Illinois

and

Bartlesville Energy Technology Center
Bartlesville, Oklahoma



U. S. DEPARTMENT OF ENERGY

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Annual Report, October 1980-September 1981

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INTRODUCTION

A contract was executed between the United States Energy Research and Development Administration (now Department of Energy) and Marathon Oil Company, Findlay, Ohio, on September 30, 1976, for the purpose of a commercial scale test of enhanced oil recovery by the Maraflood™ oil recovery process.

This commercial scale test, known as the M-1 Project, is located in Crawford County, Illinois. It encompasses 407 acres of Robinson sand reservoir and covers portions of several waterflood projects that were approaching economic limit. The project includes 248 acres developed on a 2.5-acre five-spot pattern and 159 acres developed on a 5.0-acre five-spot pattern.

Development work commenced in late 1974 and has previously been reported.[1,2] Micellar solution (slug) injection was initiated on February 10, 1977, and is now completed. After 10% of a pore volume of micellar slug was injected, injection of 11% pore volume of Dow 700 Pusher™ polymer was conducted at a concentration of 1156 ppm. At the end of this reporting period, 625 ppm polymer was being injected into the 2.5-acre pattern and 800 ppm polymer was being injected into the 5.0-acre pattern.

The oil cut of the 2.5-acre pattern has decreased from 11.0% in September, 1980, to 7.9% in September, 1981. The 2.5-acre pattern had been on a plateau since May, 1980, and as of May, 1981 appears to be on a decline.

The oil cut of the 5.0-acre pattern has increased from 5.9% in September, 1980, to 10.9% in September, 1981. The 5.0-acre pattern experienced a sharp increase in oil cut after 34% of a pore volume of total fluid had been injected and appears to be continuing its incline.

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[1] Commercial Scale Demonstration - Enhanced Oil Recovery by Micellar-Polymer Flooding, M-1 Project - Facilities Report (BERC/TPR-77/2), DOE Technical Information Center (Bartlesville, Oklahoma, 4/77).

[2] Commercial Scale Demonstration - Enhanced Oil Recovery by Micellar-Polymer Flooding, M-1 Project - Design Report (BERC/TPR-77/1), DOE Technical Information Center (Bartlesville, Oklahoma, 4/77).

Pusher™ - Trademark of Dow Chemical Company
Maraflood™ - Trademark of Marathon Oil Company

SUMMARY

This Fifth Annual Report covers the interim from October 1, 1980, through September 30, 1981. The report is organized under three Work Breakdown Structures (WBS) which are summarized below.

WBS No. 2100 - Fluid Injection

1) Polymer injection has continued in varying concentrations. At the end of the reporting period, the polymer concentrations were 625 and 800 ppm in the 2.5-and 5.0-acre patterns, respectively.

WBS No. 2200 - Production

1) A more rigorous fluid treatment program has been instituted for the separation of surfactant-stabilized emulsions.

WBS No. 2300 - Performance Monitoring

1) Subsequent to injection of tritiated water into ten injection wells, produced fluids from all oil wells have been analyzed monthly for the presence of tritiated water. As of August, 1981, 97 wells have shown the presence of tritiated water.

2) Samples of produced water have been collected monthly and analyzed for sulfonate (a slug component) content. In September, 1981, 119 wells indicated sulfonate levels higher than background levels.

3) Presently the 2.5- and 5.0-acre patterns are producing at oil cuts of 7.9% and 10.9%, respectively.

4) Six injection wells and six production wells have been transient tested. The latest series of tests indicate little change when compared to last year's data.

5) In order to monitor the movement of fluids during slug and polymer injection, three logging observation wells were selected. The Dual Induction tool has proven to be capable of monitoring fluid movement in a micellar-polymer project.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
DE-AC19-78ET-13077-61

Fluid Summary Data Sheet
September, 1981

	2.5-Acre Spacing	5.0-Acre Spacing	Total Project
Oil Production			
B/D	306	196	502
B/M	9,183	5,891	15,074
Cumulative, Bbls.	481,100	177,351	658,451
% PV	4.53	2.96	3.96
Oil Cut - %			
This Month	7.9	10.9	8.8
Last Month	9.1	10.6	9.6
Cumulative	8.3	5.4	7.2
Total Fluid Production			
B/D	3,894	1,805	5,699
B/M	116,818	54,151	170,969
Cumulative, Bbls.	5,829,485	3,286,804	9,116,289
% PV	54.9	54.8	54.8
Fluid Injection			
B/D	4,680	1,485	6,165
B/M	140,428	44,472	184,900
Cumulative, Bbls.	6,513,783	2,193,827	8,707,610
% PV	61.3	36.6	52.4
Injection/Production Ratio*			
This Month	1.13	1.11	1.12
Last Month	1.21	1.12	1.18
Cumulative	1.04	0.94	1.00

*Injection includes allocated peripheral water injection and allocated micellar-polymer injection. Production is actual production as shown above.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
DE-AC19-78ET-13077-61

Fluid Summary Data Sheet (Cont'd.)
September, 1981

	2.5-Acre Spacing	5.0-Acre Spacing	Total Project
Reservoir Pore Volume	10,627,513	5,996,535	16,624,048
Plant Pressure, psig	640	634	--
Polymer Viscosity, cp @ 77° F	19.9	29.3	--
Polymer Screen Factor @ 77° F	17.9	23.8	--
Injection Rate (BPDNF)	1.80	1.99	--
Wells			
Producers	91	41	132
Injectors			
Micellar Fluid	85	29	114
Water	6	6	12
Water Disposal	1	1	2
Abandoned	6	0	6

Fluid Injection Schedule		Polymer, ppm		
	Slug	1156	800	625
2.5-Acre				
Starting Date	2/10/77	11/21/78	5/20/79	7/28/80
% PV Actual	10.0	11.0	19.0	21.3
% PV Ultimate	10.0	11.0	19.0	32.0
Cumulative, Bbls.	1,063,446	1,169,677	2,019,170	2,261,490
5.0-Acre				
Starting Date	2/10/77	11/21/78	1/14/80	
% PV Actual	10.0	11.0	15.6	
% PV Ultimate	10.0	11.0	19.0	
Cumulative, Bbls.	599,679	658,999	935,149	

POLYMER INJECTION

Introduction

Polymer injection was initiated November 21, 1978, and has continued in varying concentrations. A table of polymer concentrations injected to date is included in the Fluid Summary Data Sheet.

Discussion

A polymer concentration of 625 ppm is being injected into the 2.5-acre pattern at an average injection rate of 4,680 BPD (1.80 barrels per day per net foot (B/D/NF)) and an average plant pressure of 638 psig. The Brookfield viscosity at 6 rpm and 72° F averaged 19.9 cp. The screen factor averaged 17.9 at 77° F. This compares to September, 1980, data of 5,165 BPD (1.99 B/D/NF) and an average plant pressure of 655 psig, a Brookfield viscosity of 19.2 cp, and a screen factor of 19.7.

A polymer concentration of 800 ppm is being injected into the 5.0-acre pattern at an average injection rate of 1,485 BPD (1.99 B/D/NF) and an average plant pressure of 641 psig. The Brookfield viscosity at 6 rpm and 72° F averaged 29.3 cp. The screen factor averaged 23.8. This compares to September, 1980, data of 1,648 BPD (2.21 B/D/NF) and an average plant pressure of 667 psig, a Brookfield viscosity of 27.9 cp, and a screen factor of 23.8.

On March 28, 1981, plant pressure was reduced from 670 psig to 650 psig (+/- 10 psig) in order to prevent pressure parting of injection wells. The result of the pressure decrease was a drop in the 2.5- and 5.0-acre injection rates of approximately 890 and 150 BPD, respectively.

WBS. No. 2200 - Fluid Production

FLUID TREATING

Introduction

Produced fluids in a micellar-polymer project exist in various combinations of emulsified phases. Present production at the M-1 Project exists in three phases: an oil phase (or water-in-oil emulsion), a sulfonate-rich, middle-phase emulsion, and a brine (or oil-in-water emulsion). Sulfonate-stabilized emulsions present a different treatment problem than ordinary oil field emulsions, and hence require a non-conventional treatment scheme.

Discussion

On May 3, 1980, the 2.5- and 5.0-acre pattern produced fluids were combined to reduce costs and provide a more efficient treating process. As shown in Figure 17, the 2.5- and 5.0-acre pattern fluids flow separately through gas eliminators to vent any associated gas prior to flow through the net oil computers.

The incoming fluid is treated with a demulsifier prior to the gas eliminators to remove oil from the brine and prepare the brine for disposal. The 2.5-acre and 5.0-acre pattern production is combined after flow through their respective net oil computers and discharged into a 10,000-barrel receiving tank. This allows sufficient retention for separation of the phases.

The produced brine, or lower-phase emulsion, flows from the bottom portion of the 10,000-barrel tank to disposal.

Oil, or upper-phase emulsion, flows from the upper portion of the receiver. Thereafter, it is water washed with a demulsifying chemical. The oil is heated, separated, and sold. Karl Fischer aqua test titration and a simulated desalter test using electrostatic coalescence are performed to determine if the oil is of sellable quality.

The middle-phase emulsion is treated through a separate facility shown in Figure 18. The middle-phase emulsion is drawn out of the mid portion of the 10,000-barrel tank. The emulsion pad is flowed to a battery of 300-barrel tanks and treated in batches. Several steps are used in treating the emulsion pad. These steps involve various additions of caustic, water, demulsifier and heat. Sellable oil quality is determined using Karl Fischer titration and the simulated desalter test.

WBS. No. 2300 - Performance Monitoring

TRITIATED WATER INJECTION PROGRAM

Introduction

In order to analyze the parameters controlling fluid communication, such as directional permeability, fracture orientation, and fluid conformance, a radioactive tracer (tritiated water) was injected into selected injection wells in the M-1 Project prior to slug injection. Produced fluid samples from wells are analyzed monthly to determine the presence of radioactive material.

Discussion

A computer printout listing all wells showing tritiated water contents higher than background levels is shown on pages 112 to 125. Fifty-three wells indicated the presence of tritiated water in the produced fluid stream in August, 1981. As of August, 1981, 97 wells have shown the presence of tritiated water. Of these 97 wells, 43 wells have shown a tritiated water content higher than background levels for six or more months. Thirty-eight of the 97 wells are adjacent to a well in which tritiated water was injected. No conclusions have been developed as a result of this data.

The location of the tritiated water injection wells are shown in Figure 19. Additional information can be found in Table 1.

HIGH SULFONATE CONTENT WELLS

Introduction

As part of routine performance analysis, produced water from each oil well is sampled monthly and analyzed for sulfonate at Marathon's Denver Research Center.

Discussion

Beginning in March, 1977, produced water samples from each M-1 Project well have been analyzed to determine sulfonate content. Pages 65 to 87 list the results of this monthly analysis. The values found on these pages are equivalent to the concentration of sulfonate in water divided by the concentration of standard 1% solution of crude oil sulfonate slug (COSS). Because of the characteristics of surfactant components interacting with the reservoir, these analytical data are not suitable for exact material balance calculations. However, these data are useful for observing trends.

For the month of August, 1981, 87 wells in the 2.5-acre pattern showed sulfonate levels higher than the background level (.5%). This compares to 88 wells in September, 1980. Every oil well on the 2.5-acre pattern has shown sulfonate levels greater than the background level for at least three months.

WBS. No. 2300 - Performance Monitoring

HIGH SULFONATE CONTENT WELLS - (Continued)

Discussion - (Continued)

Thirty-eight wells in the 5.0-acre pattern showed sulfonate levels higher than background levels during the month of August. This compares with 31 wells in September, 1980. Sulfonate data for the 2.5- and 5.0-acre patterns are shown on pages 65 to 87.

OIL CUT MONITORING

Introduction

In order to detect production responses resulting from the Maraflood process, individual oil cuts are being monitored on a monthly basis.

Discussion

During September, 1981, 69 wells on the 2.5-acre pattern and 34 wells on the 5.0-acre pattern produced at or above a 5% oil cut. This compares to 73 wells and 35 wells, respectively, in August, 1981. Currently, the 2.5- and 5.0-acre patterns are producing oil cuts of 7.9% and 10.9%, respectively. Individual well oil cuts are reported on the five-spot reports, pages 50 - 64.

TRANSIENT TESTING

Introduction

In compliance with contractual requirements, transient testing is conducted on six injection wells and six producing wells.

Discussion

During the third quarter of 1981, six injection wells (C-3, I-7, O-13, S-7, GG-13, and OO-13) were transient tested. These tests were conducted as part of the continuing effort to determine the effect of Maraflood fluids on well conditions and reservoir parameters. Amerada pressure gauges were set at an approximate depth of 800 feet below the surface to enable pressure falloff and buildup data to be collected for each injection well. Results were then analyzed using a Miller-Dyes-Hutchinson plot.

Tables 2 and 3 summarize the results of the transient tests. Also included in these tables are the results of past transient tests conducted on the injection wells.

WBS. No. 2300 - Performance Monitoring

TRANSIENT TESTING - (Continued)

Discussion - (Continued)

The latest series of transient tests were conducted during the injection of 625 ppm and 800 ppm polymer into the 2.5- and 5.0-acre patterns, respectively. Five of the six wells have interpretable data. One injection well (QQ-13) pressure parted during testing. The results of this year's testing show little change in fluid mobility and skin factor when compared to last year's data.

Oil well pressure transient tests are based on fluid level measurements obtained by echometer readings. This eliminates the need to pull rods as would be necessary if a pressure bomb were used. These results are also analyzed using a Miller-Dyes-Hutchinson plot.

Table 4 summarizes the results of this year's and previous years' production well transient tests. The latest tests show the continuation of relatively low mobility. Three wells had a decrease in skin factor while three wells have an increase in skin factor.

Figure 20 shows the location of these transient tested wells.

LOGGING OBSERVATION WELLS

Introduction

In order to monitor the movement of fluids during slug and polymer injection, three logging observation wells were selected. Two of these wells were drilled and completed with fiberglass casing. The third well had been temporarily abandoned and was reworked and completed open hole to be used as an observation well. The locations of wells are shown in Figure 21. Dual Induction Logs have been run at selected intervals since January of 1978 to monitor changes in resistivity with time.

Discussion

To date sixteen Dual Induction logs have been run in GI-3, seventeen in GI-7 and fifteen in GI-8. In Figures 22, 23, and 24, the changes in resistivity with time are shown. Figure 22 indicates that a significant portion of the Robinson sand has been contacted by the higher salinity micellar slug in GI-3. This is shown by the decrease in resistivity as compared to the base log run on January 5, 1978. In Figure 23, the comparison of the logs run on GI-7 to the base log of January 5, 1978, the Dual Induction log has shown the development of a lower resistivity bank followed by the development of the higher resistivity fluid bank caused by the low salinity fresh water used in the polymer mobility buffer. As shown on Figure 24, GI-8 has not shown as

WBS. No. 2300 - Performance Monitoring

LOGGING OBSERVATION WELLS - (Continued)

Discussion - (Continued)

great a decrease in resistivity as measured in GI-3 and GI-7. However a measurable decrease in resistivity has been detected followed by the increase in resistivity expected from the fresh water used in the polymer mobility buffer.

At this point the Dual Induction tool has proven to be capable of monitoring fluid movement in a micellar polymer project. Continued surveillance of the observation wells is planned.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
DE-AC19-78ET-13077-61

TABLE 1

Tritiated Water Injection Wells

	Isogeometric Permeability k, md	Net Thickness h, ft	Pre-Slug Stimulation*	Well Status	Dosage Curies
2.5 Acre					
A-13	85	21	S, ST	New well	10
E-5	115	11	S, H	New well	5
I-7	75	29	S, L	Conv. oil well	10
K-13	85	29	S	New well	10
O-13	100	54	S	Conv. WF inj.	20
M-5	70	46	S, ST	New well	15
S-5	30	16	S, ST	New well	5
5.0 Acre					
GG-15	90	39	S	New well	25
SS-3	65	21	G, H	New well	15
QQ-13	60	32	G, H	New well	25

*G = Gauge
S = Shot
L = Fractured with low viscosity fluids
H = Fractured with high viscosity fluids
ST = Staged frac

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TABLE 2

Injection Well Transient Tests
Mobility, K/u (md/cp)

Well No.	Stimulation[1]	Test[2]	Water	Slug				1156 ppm	800 ppm	625 ppm[3]
			12/76	4/77	10/77	3/78	10/78	6/79	8/80	9/81
S-7	S, F	BU	10.4	8.1	4.8	2.4	4.0	2.4	1.6	2.9
		FO	7.1	5.3	5.4	2.3	4.0	1.8	1.2	1.6
GG-13	S, F	BU	7.8	1.0	2.5	0.6	1.8	1.1	2.0	2.2
		FO	6.2	3.0	3.5	0.5	2.7	1.2	1.4	1.3
C-3	S, F	BU	5.0	1.0	2.3	1.4	1.7	3.8	2.7	1.9
		FO	6.5	2.5	0.7	0.4	0.4	3.2	2.6	1.2
QQ-13	F, F	BU	2.7	0.6	0.7	0.9	2.5	3.4	7.5	--*
		FO	3.8	0.8	0.6	0.6	2.5	2.3	8.1	--*
O-13	S	BU	5.8	3.2	0.9	1.1	4.5	--*	2.3	2.3
		FO	5.2	2.2	0.8	1.7	2.8	1.9	2.8	1.4
I-7	S, F, D	BU	4.6	3.4	1.4	1.7	1.8	1.3	0.63	1.0
		FO	3.9	3.5	3.7	3.3	2.5	1.2	0.99	0.6

[1] S - Shot
F - Fracture
D - Decentralized Jetting

[2] BU - Buildup
FO - Falloff

[3] 5.0-acre pattern still being tested with 800 ppm polymer.

*Data uninterpretable.

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MARAFLOOD™ PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
DE-AC19-78ET-13077-61

TABLE 3

Injection Well Transient Tests
Skin Factor, S

Well No.	Stimulation[1]	Test[2]	Water 12/76	Slug 4/77	Slug 10/77	Slug 3/78	Slug 10/78	1156 ppm 6/79	800 ppm 8/80	625 ppm[3] 9/81
S-7	S, F	BU	-4.0	-1.2	-2.1	-3.5	0.74	-2.1	-2.2	0.4
		FO	-2.5	0.6	-3.0	-3.2	0.64	-3.3	-2.2	-2.6
GG-13	S, F	BU	-2.7	-2.6	3.4	-2.4	-2.23	-2.7	-1.8	-3.4
		FO	-3.0	1.4	6.9	-2.6	-0.75	-2.9	-3.3	-3.7
C-3	S, F	BU	-3.1	-2.5	1.5	1.6	-0.19	-3.6	-2.1	-2.0
		FO	-3.2	3.7	-2.7	-3.8	-4.18	-3.8	-2.3	-3.1
QQ-13	F, F	BU	-4.9	-5.1	-4.7	-4.4	-4.08	-4.2	-4.1	--*
		FO	-4.8	-5.0	-4.6	-4.7	-4.69	-5.3	-4.7	--*
O-13	S	BU	-4.1	0.7	-2.3	-2.4	2.67	--*	1.8	-2.3
		FO	-3.5	-2.0	-3.4	-2.7	-1.31	-3.5	-1.6	-3.4
I-7	S, F, D	BU	-3.7	-2.6	-3.1	-2.9	-1.55	-2.0	-2.1	-1.1
		FO	-4.0	-2.4	1.0	-0.5	-1.08	-2.4	-1.4	-2.8

[1] S - Shot
F - Fracture
D - Decentralized Jetting

[2] BU - Buildup
FO - Falloff

[3] 5.0-acre pattern still being tested with 800 ppm polymer.

*Data uninterpretable.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
DE-AC19-78ET-13077-61

Table 4

Production Well Transient Tests

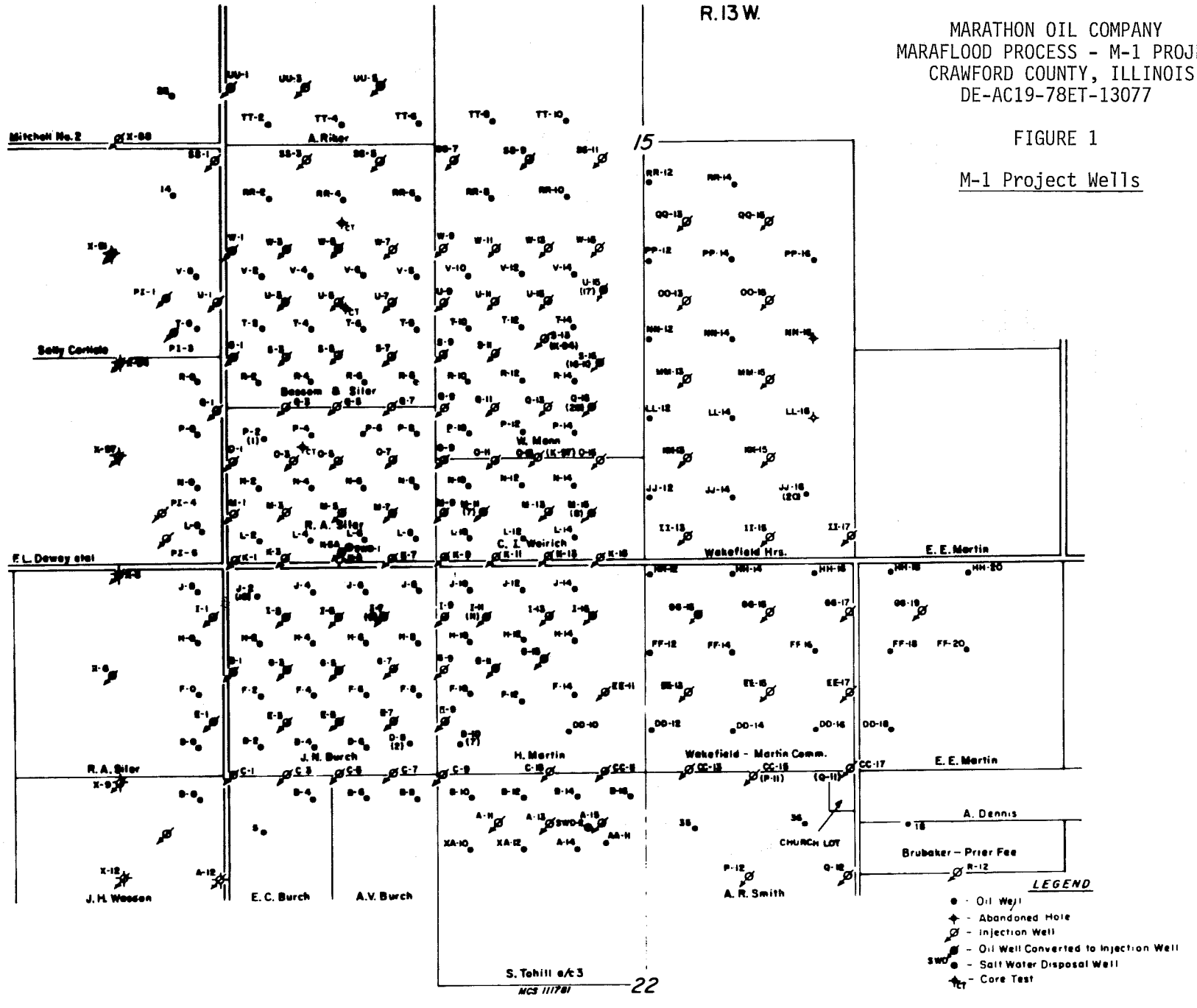
Well No.	Test Date	Test Type[1]	Mobility K/u (md/cp)	Skin Factor S	Stimulation
D-4	11/76	BU	6.4	2.4	None
	12/77	BU	1.3	-5.2	Frac
	11/78	BU	1.1	-5.6	
	8/79	BU	0.5	-4.8	
	9/80	BU	0.6	-4.4	
	9/81	BU	0.5	-4.6	
H-8	11/76	BU	2.6	0.9	None
	11/77	BU	5.4	-4.9	Frac
	11/78	BU	2.0	-5.7	
	8/79	BU	3.6	-3.8	
	9/80	BU	0.6	-3.7	
	9/81	BU	0.9	-1.8	
P-12	11/76	BU	11.3	-1.3	Shot
	12/77	BU	4.1	-3.6	Shot
	11/78	BU	1.8	-5.3	
	8/79	BU	2.2	-3.3	
	9/80	BU	1.1	-1.0	
	9/81	BU	2.2	-4.3	
PP-12	11/76	BU	1.9	0.8	None
	11/77	BU	5.9	-6.5	Frac
	11/78	BU	6.2	-6.7	
	8/79	BU	2.0	-5.6	
	9/80	BU	4.4	-3.9	
	9/81	BU	2.0	-4.7	
HH-12	11/76	BU	5.5	1.7	None
	11/77	BU	19.8	-6.4	Frac
	11/78	BU	9.4	-6.3	
	8/79	BU	8.8	-4.9	
	9/80	BU	4.7	-4.5	
	9/81	BU	4.1	-2.0	
T-8	11/76	BU	15.0	*	
	11/77	BU	*	*	
	11/78	BU	4.2	-2.7	None
	8/79	BU	5.3	-0.5	
	9/80	BU	1.2	-2.8	
	9/81	BU	1.1	.07	

[1]BU - Buildup
*Data uninterpretable.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
DE-AC19-78ET-13077

FIGURE 1

M-1 Project Wells



MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
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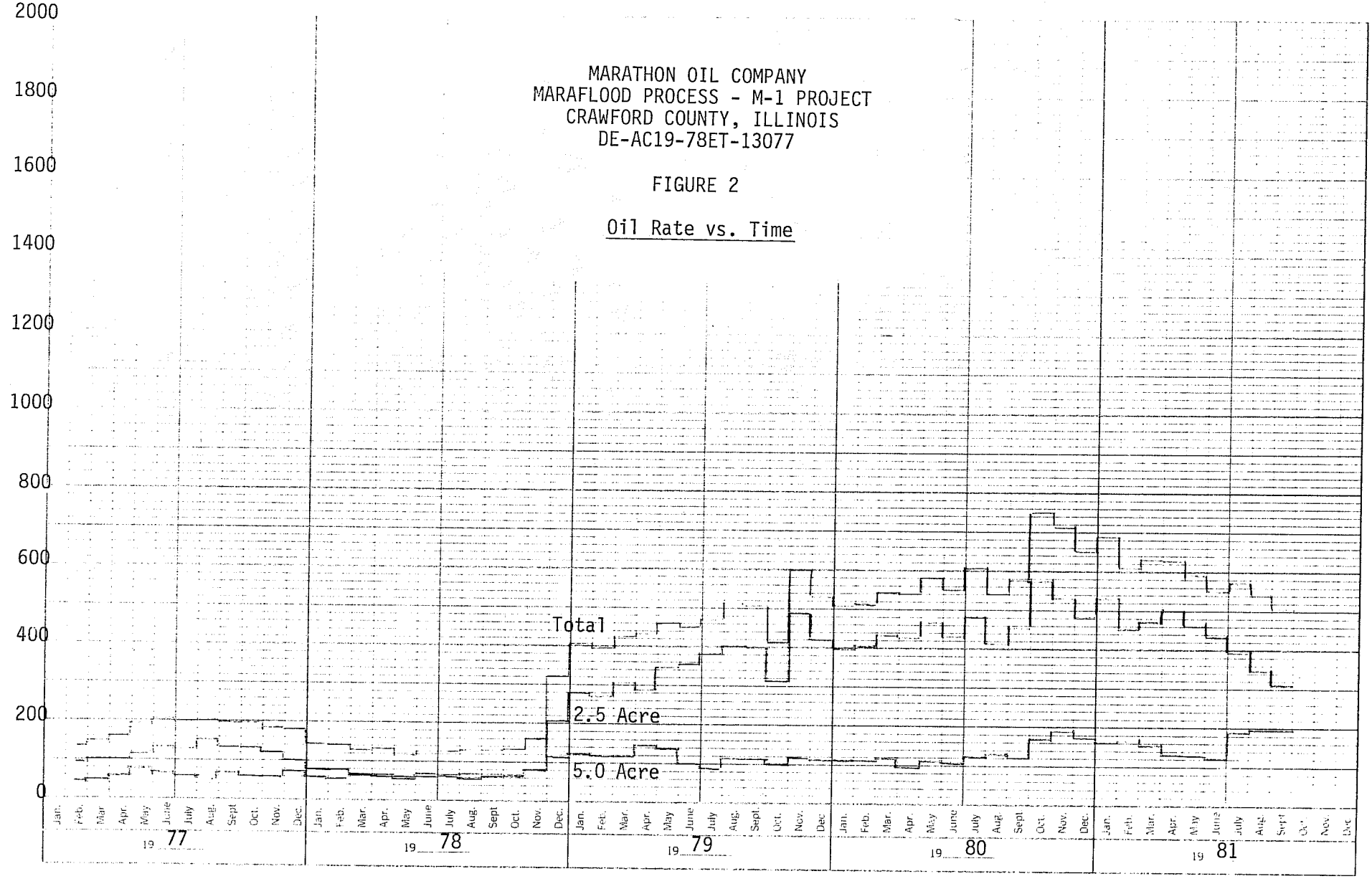
FIGURE 2

Oil Rate vs. Time



MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
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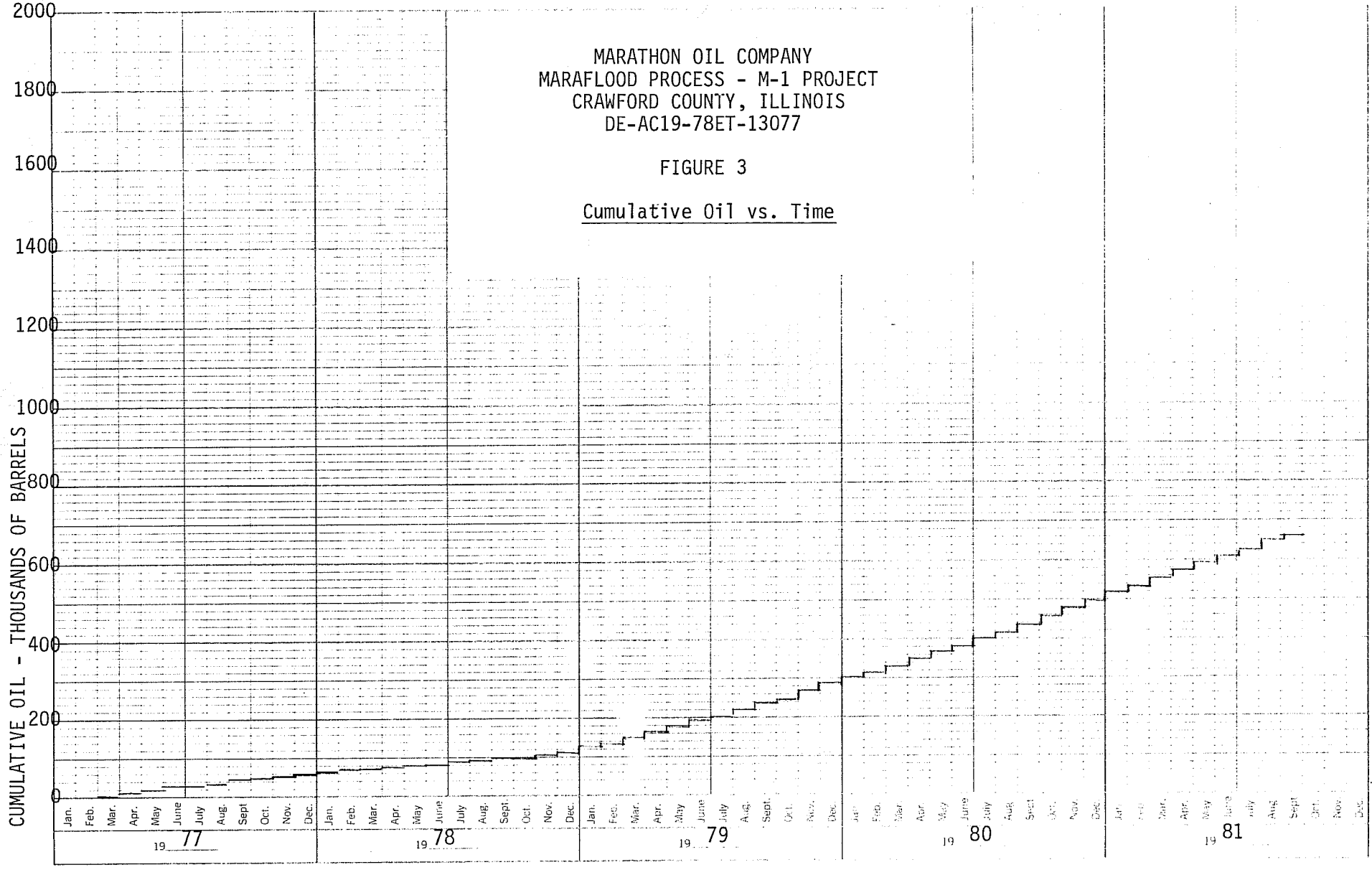
FIGURE 3

Cumulative Oil vs. Time



MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
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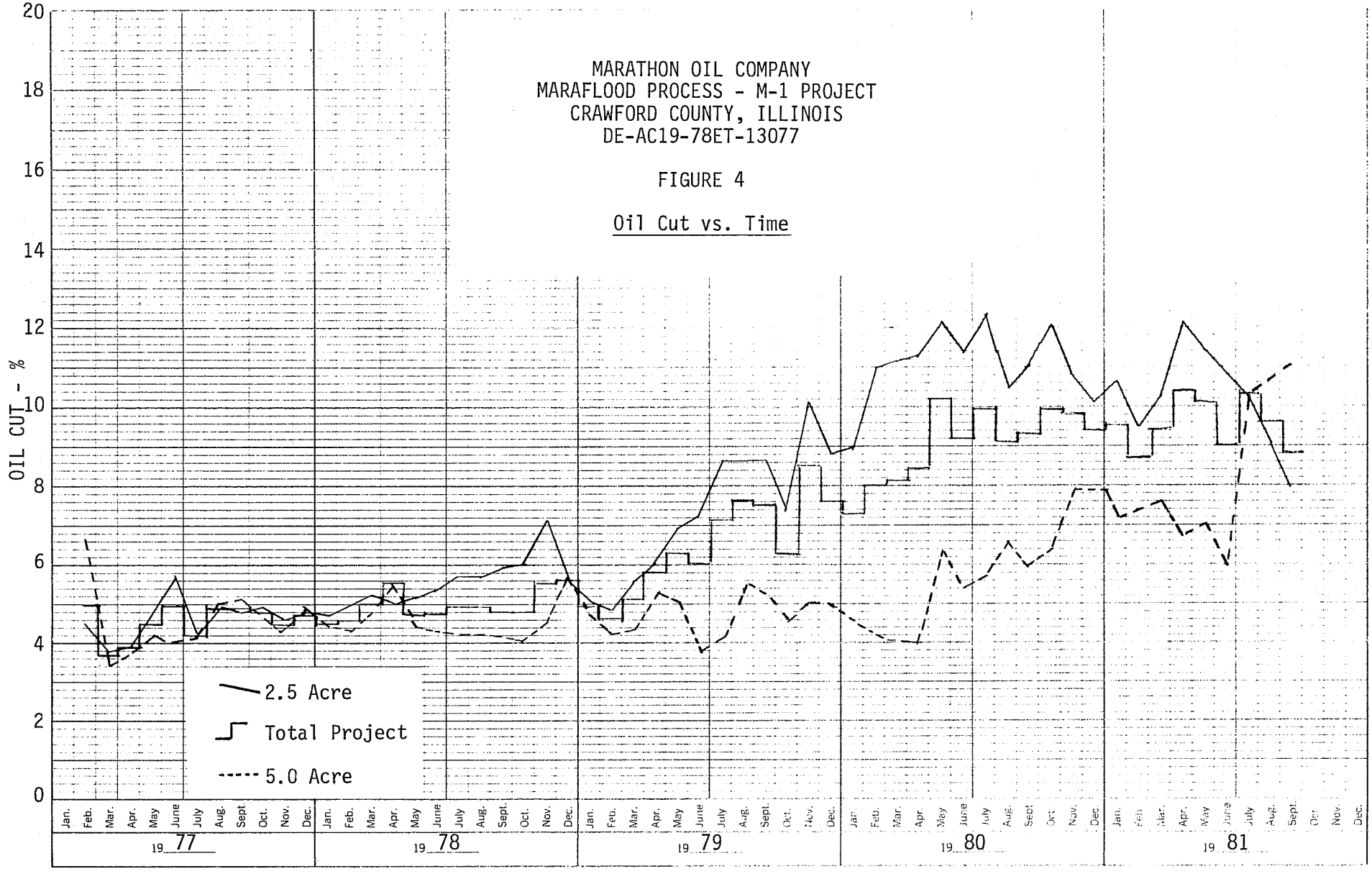
FIGURE 4

Oil Cut vs. Time



MARATHON OIL COMPANY
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CRAWFORD COUNTY, ILLINOIS
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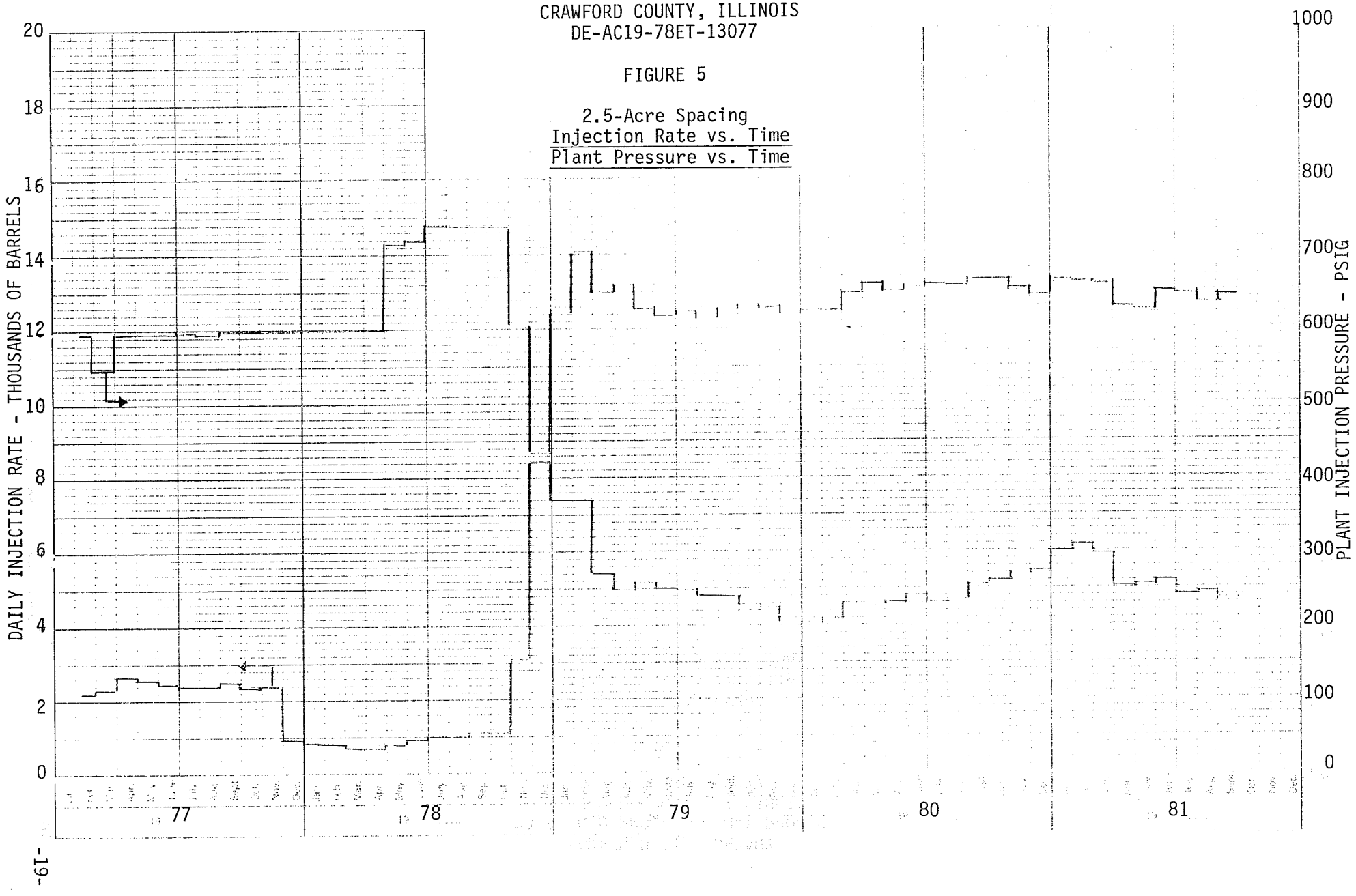
FIGURE 5

2.5-Acre Spacing
Injection Rate vs. Time
Plant Pressure vs. Time



MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
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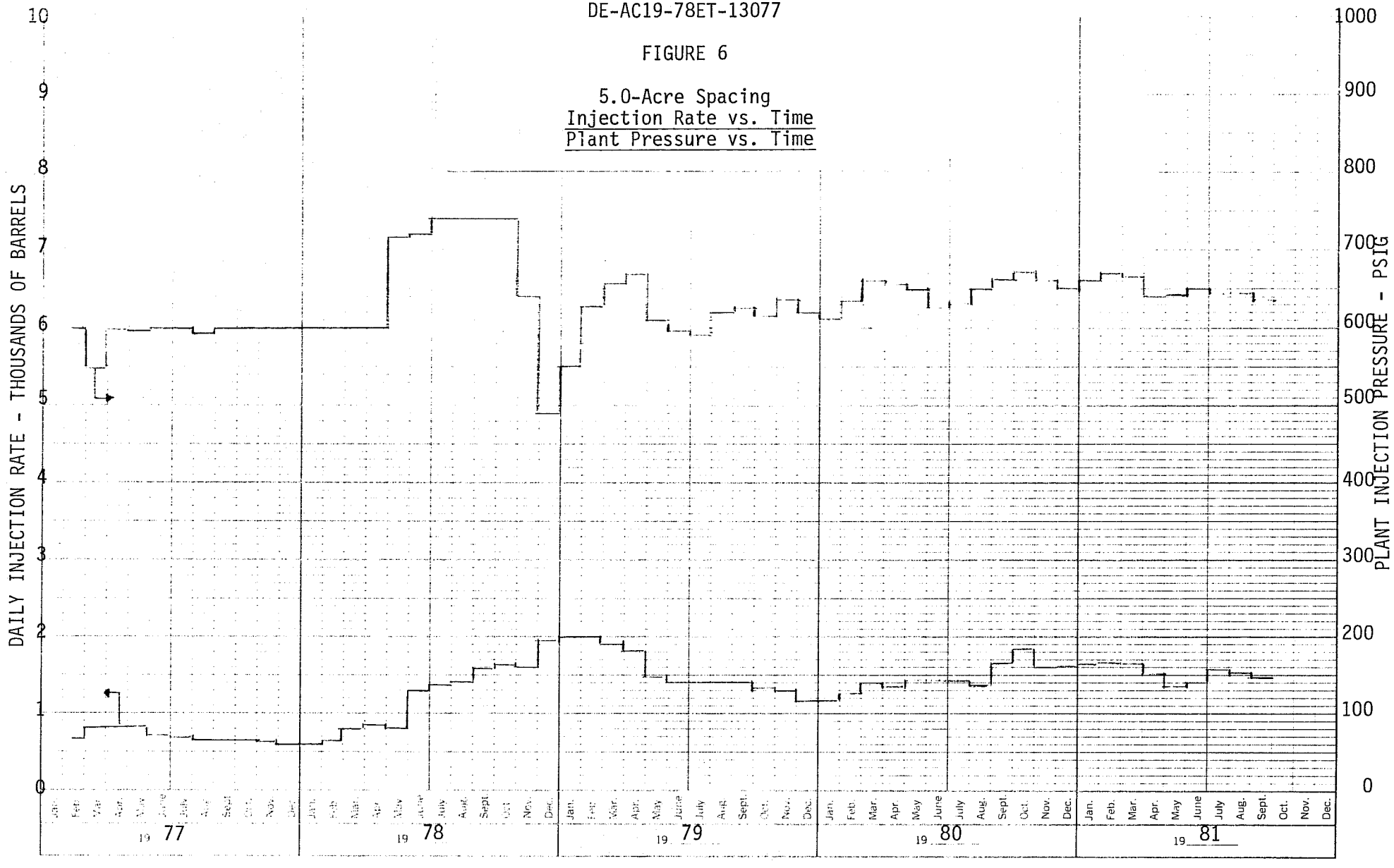
FIGURE 6

5.0-Acre Spacing
Injection Rate vs. Time
Plant Pressure vs. Time



MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
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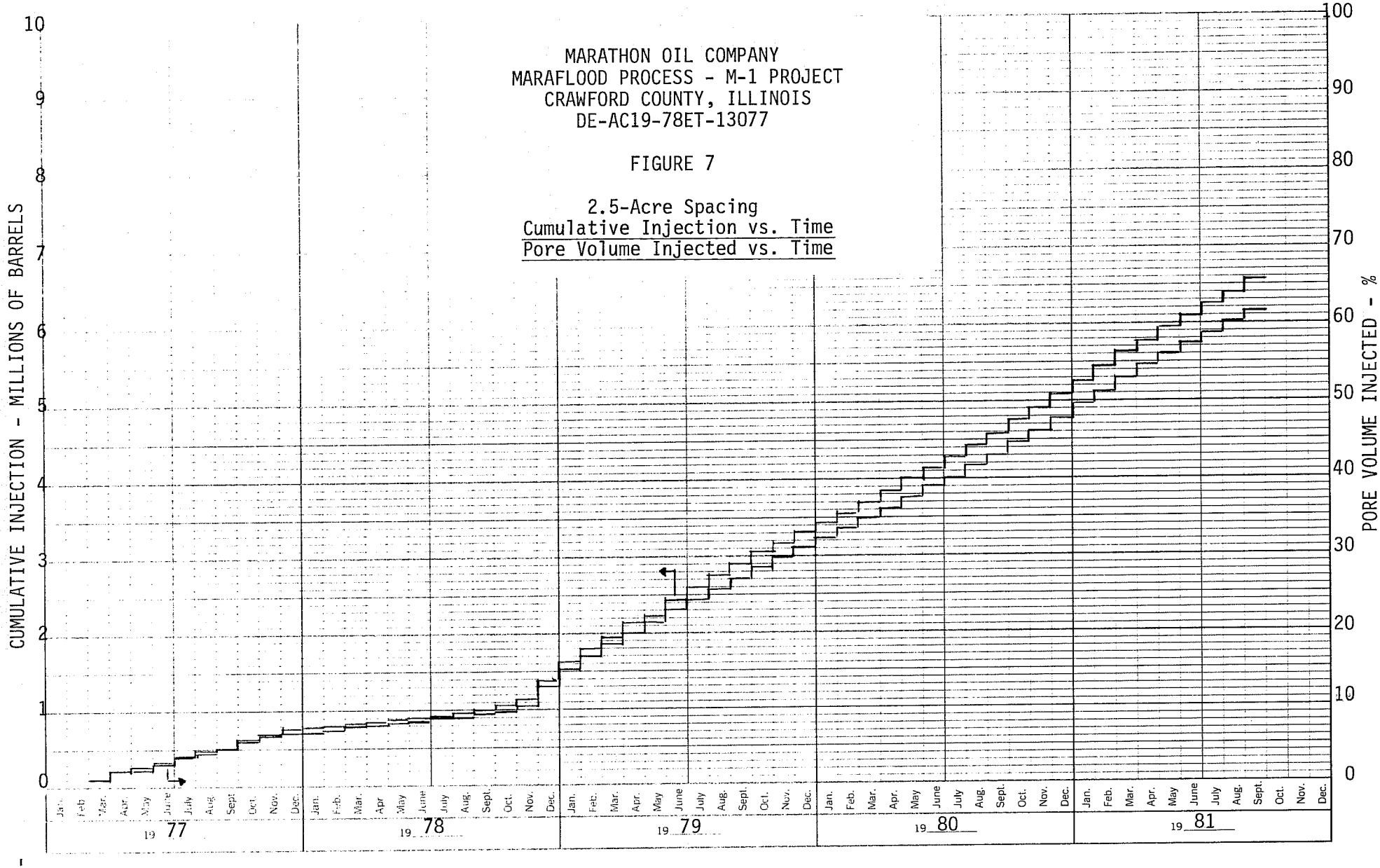
FIGURE 7

2.5-Acre Spacing
Cumulative Injection vs. Time
Pore Volume Injected vs. Time



MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
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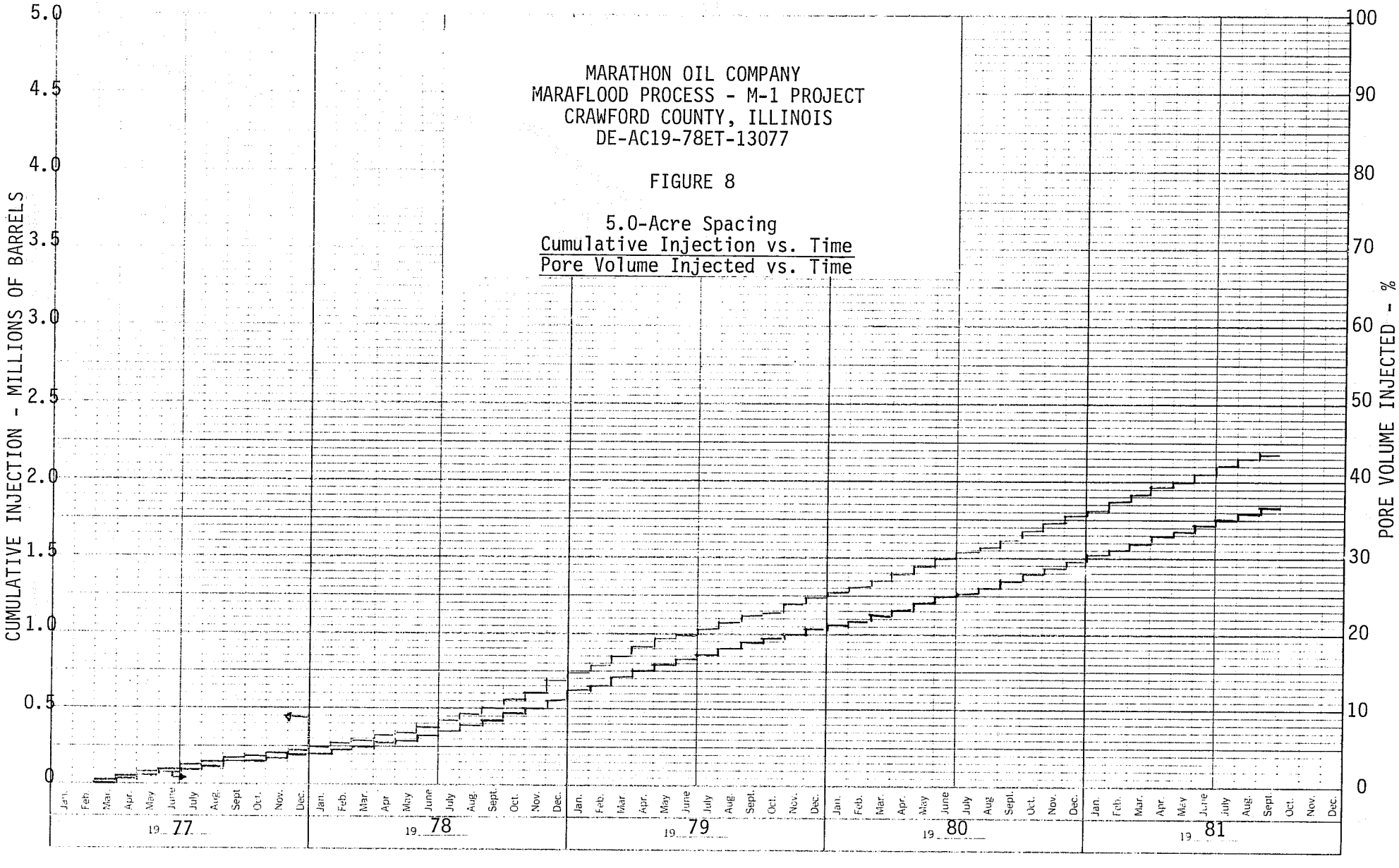
FIGURE 8

5.0-Acre Spacing
Cumulative Injection vs. Time
Pore Volume Injected vs. Time



MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
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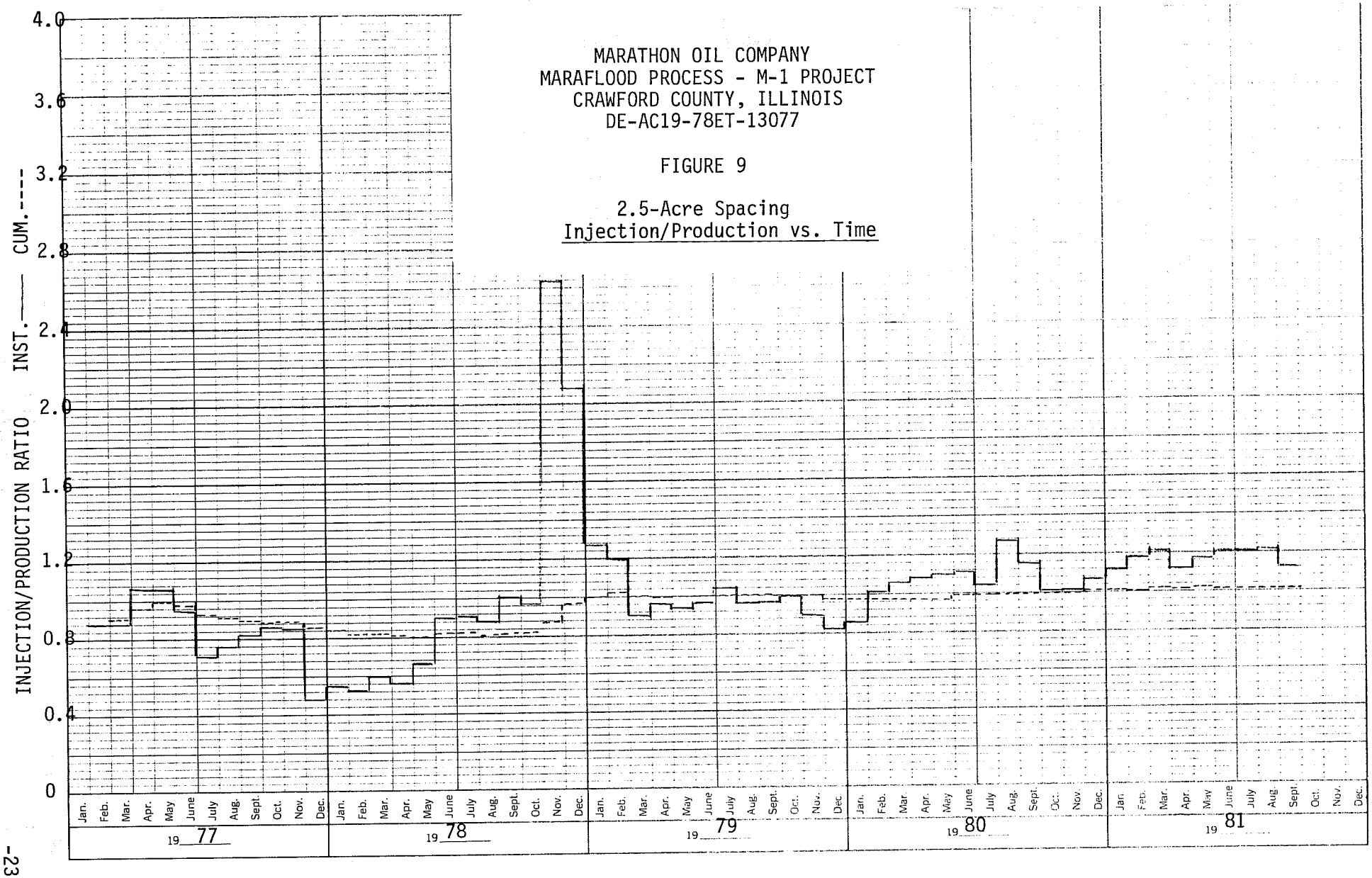
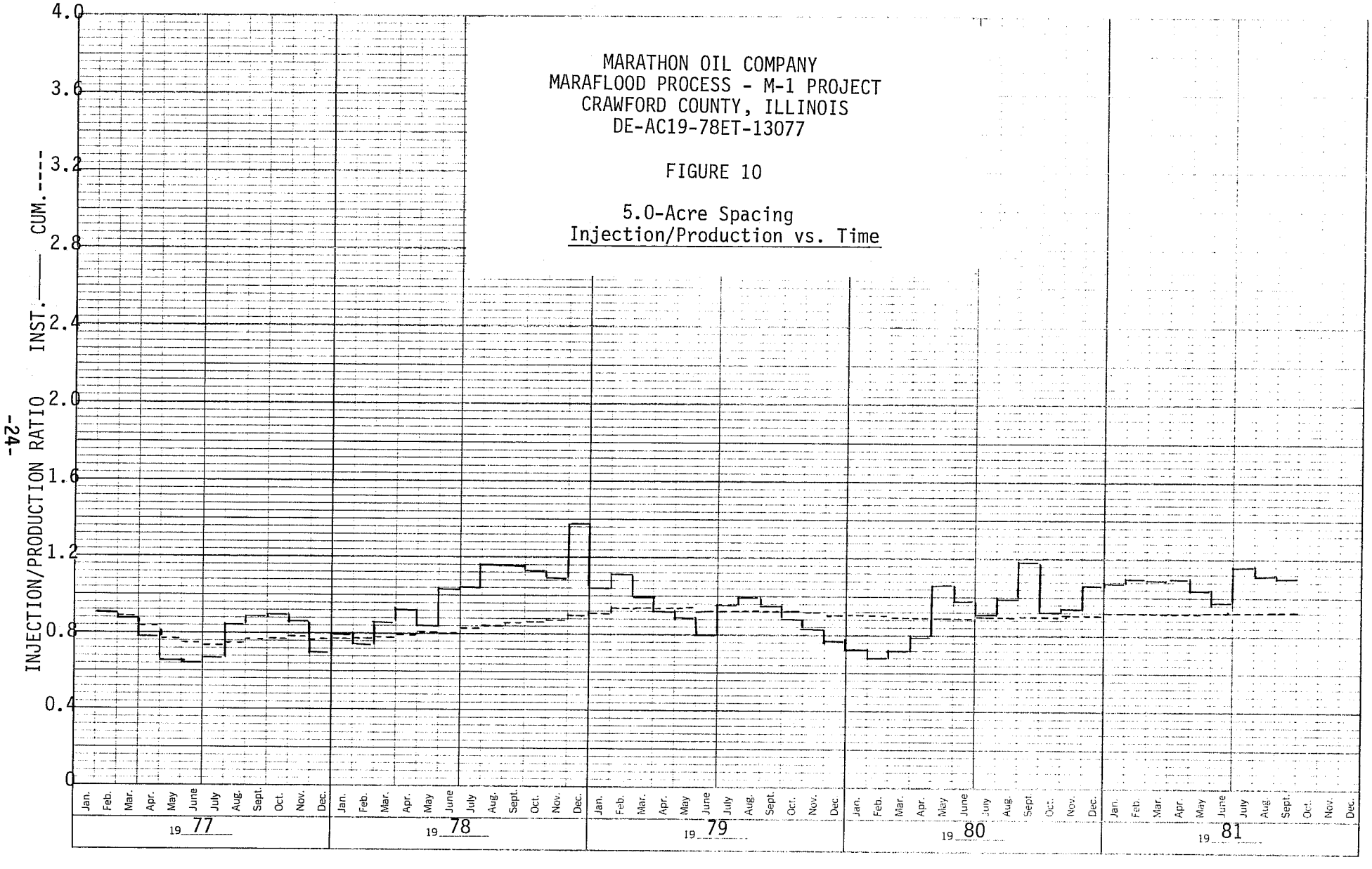
FIGURE 9

2.5-Acre Spacing
Injection/Production vs. Time




MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
DE-AC19-78ET-13077
FIGURE 10
5.0-Acre Spacing
Injection/Production vs. Time
INJECTION/PRODUCTION RATIO INST.—— CUM.----
4.0
3.6
3.2
2.8
2.4
2.0
1.6
1.2
0.8
0.4
0
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
19 77
19 78
19 79
19 80
19 81

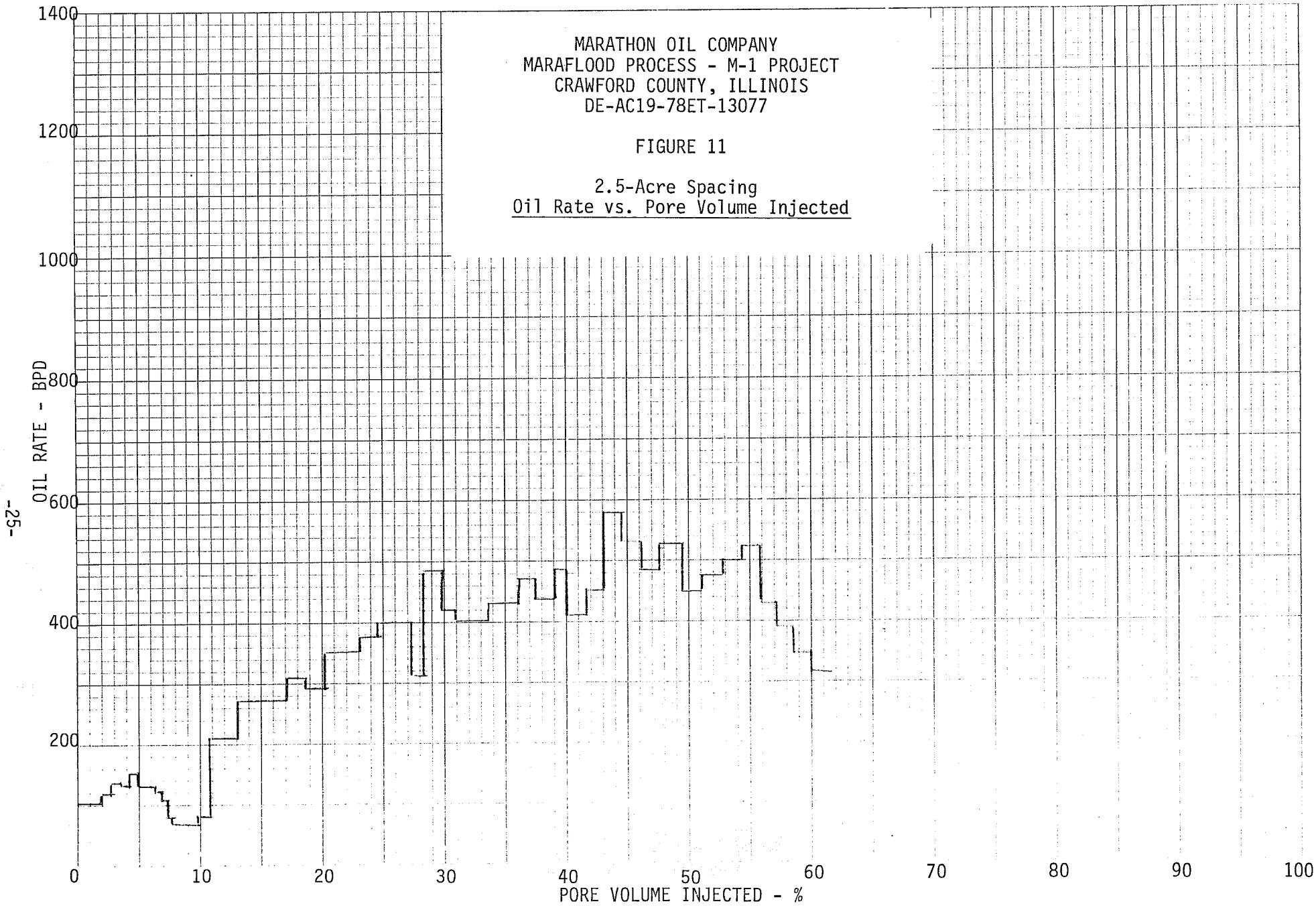

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
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FIGURE 11
2.5-Acre Spacing
Oil Rate vs. Pore Volume Injected
OIL RATE - BPD
1400
1200
1000
800
600
400
200
0
10
20
30
40
50
60
70
80
90
100
PORE VOLUME INJECTED - %

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
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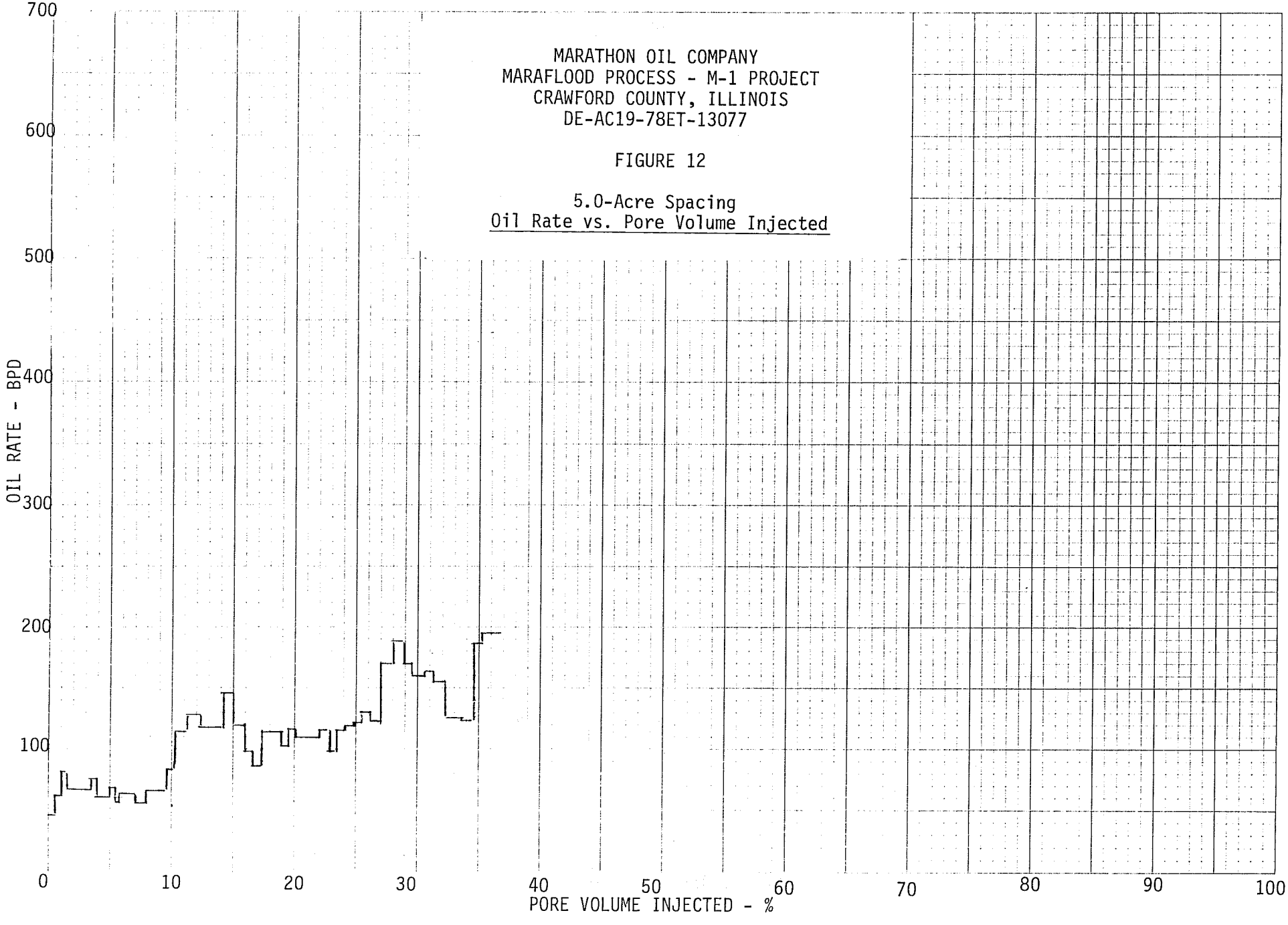
DE-AC19-78ET-13077

FIGURE 12

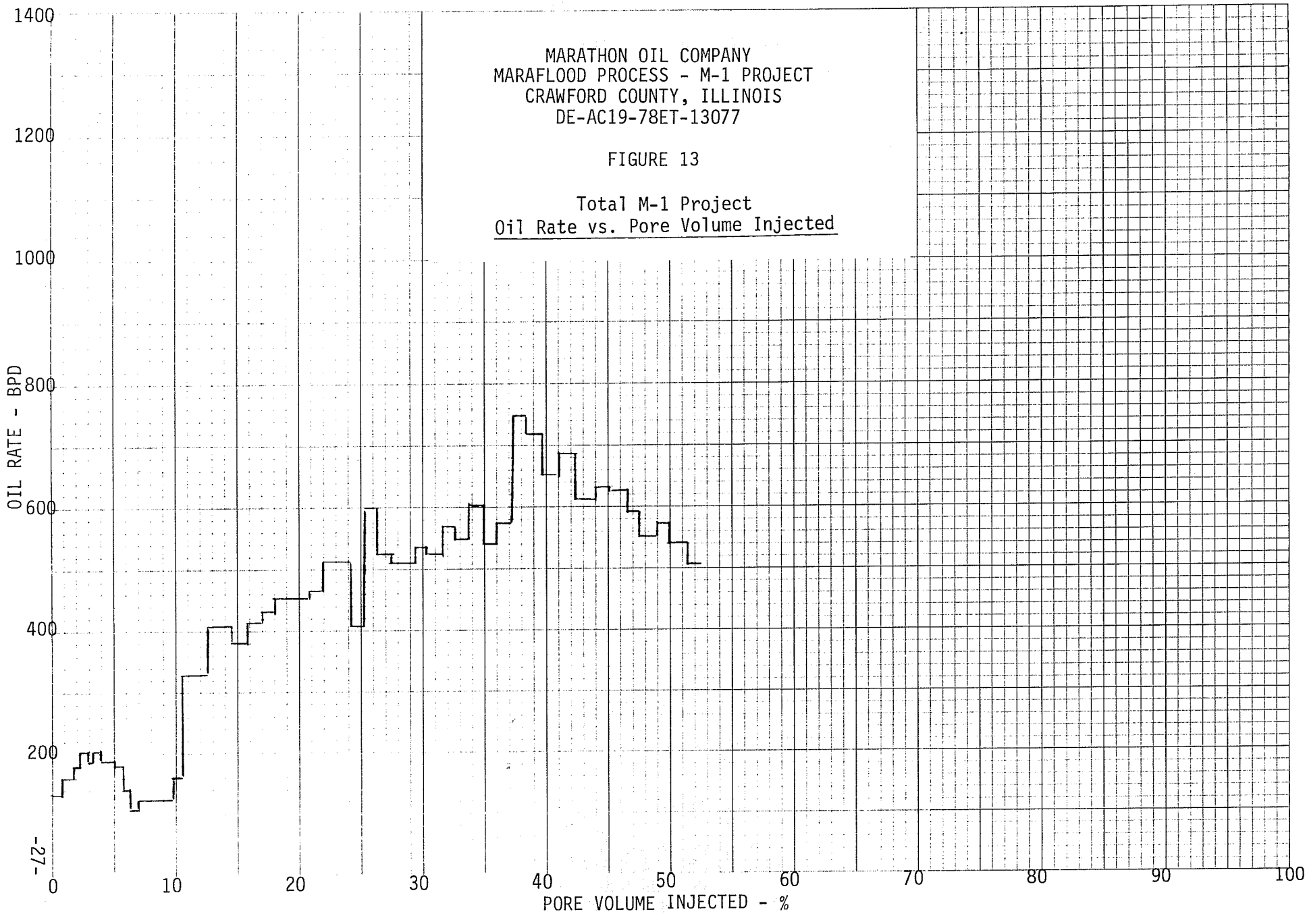
5.0-Acre Spacing
Oil Rate vs. Pore Volume Injected



MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
DE-AC19-78ET-13077

FIGURE 13

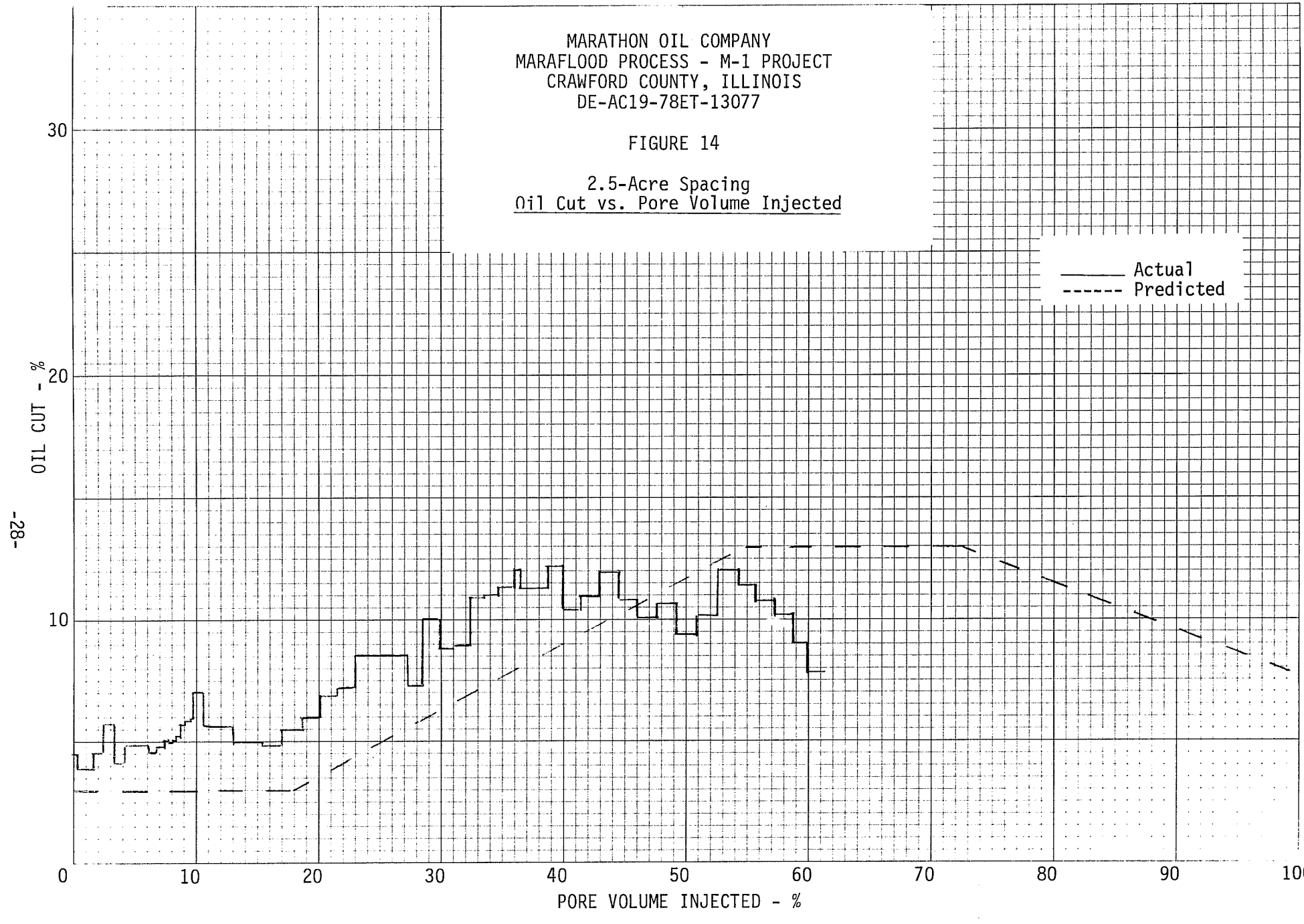
Total M-1 Project
Oil Rate vs. Pore Volume Injected



MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
DE-AC19-78ET-13077

FIGURE 14

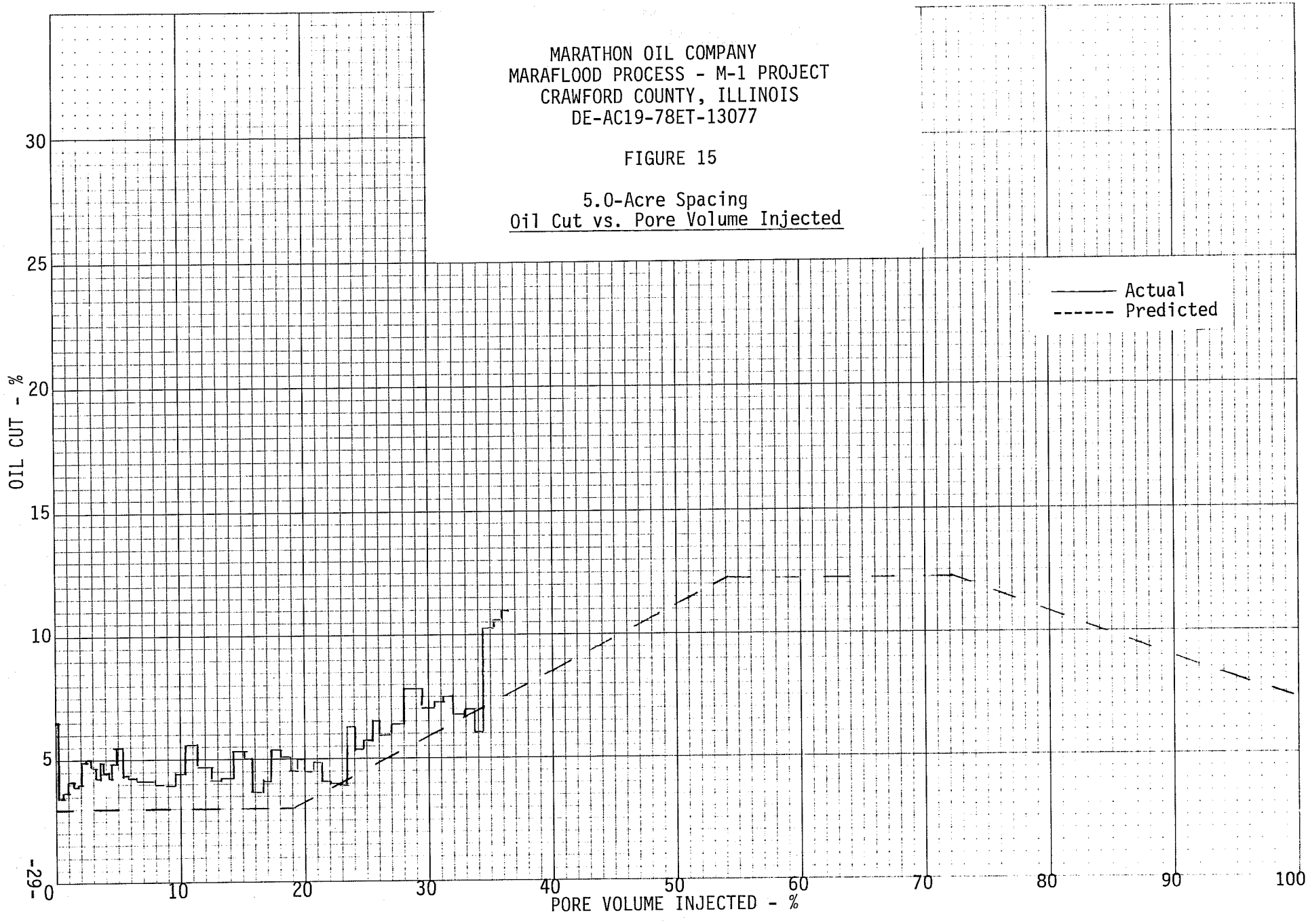
2.5-Acre Spacing
Oil Cut vs. Pore Volume Injected



MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
DE-AC19-78ET-13077

FIGURE 15

5.0-Acre Spacing
Oil Cut vs. Pore Volume Injected



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MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
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FIGURE 16

Total M-1 Project
Oil Cut vs. Pore Volume Injected

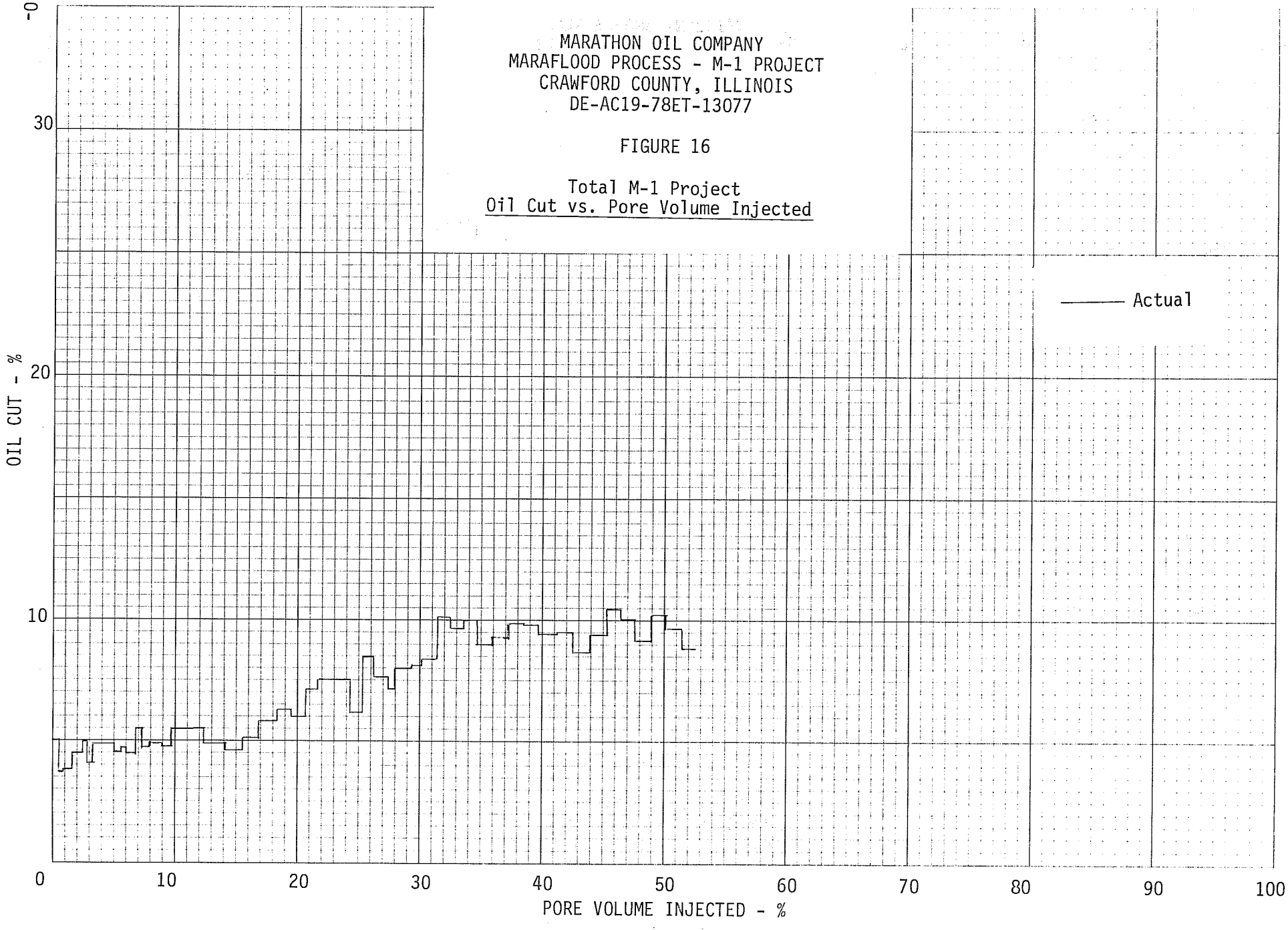

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FIGURE 17

Schematic of 2.5- and 5.0-Acre
Combined Stream Production Facility

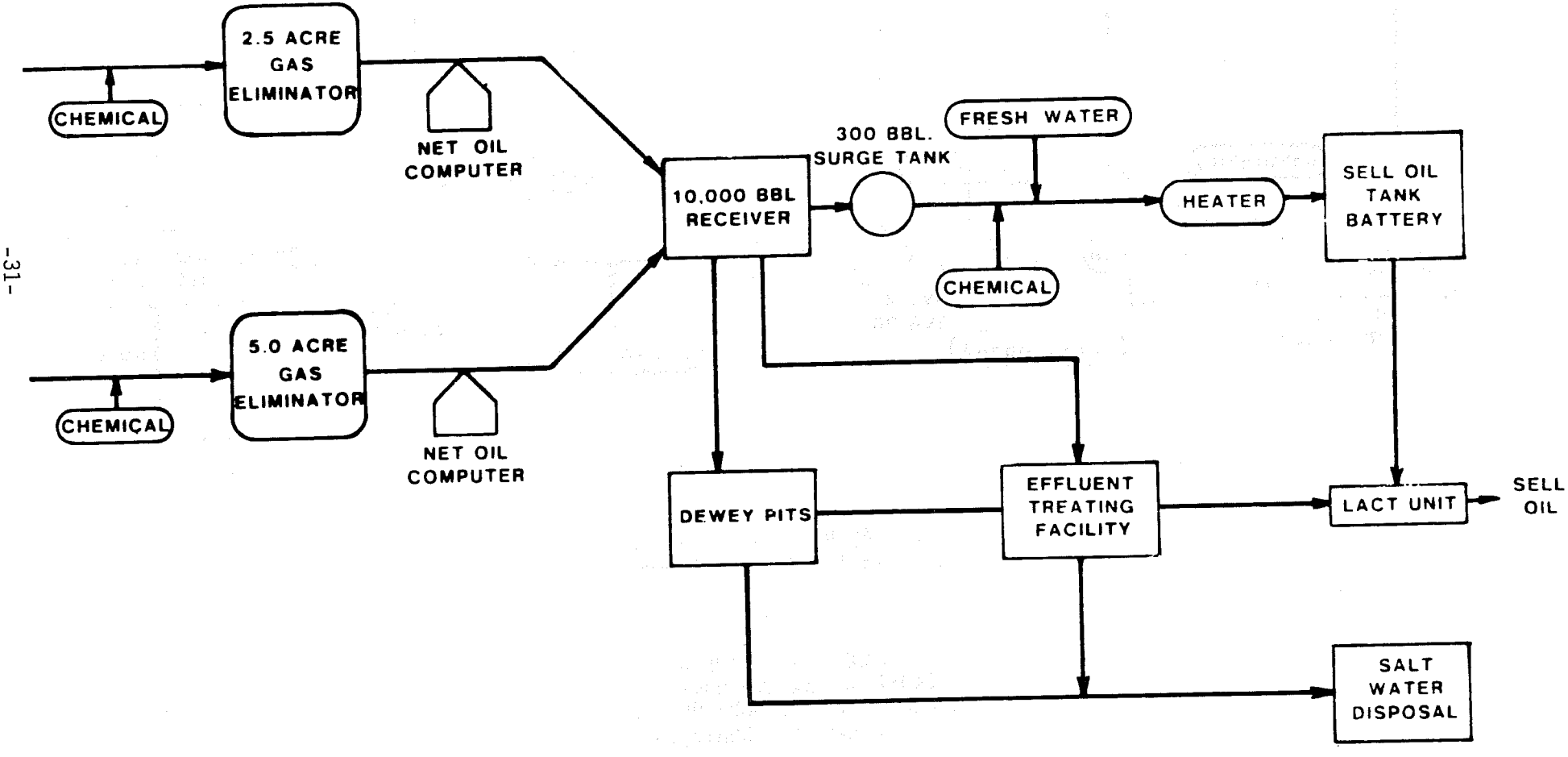

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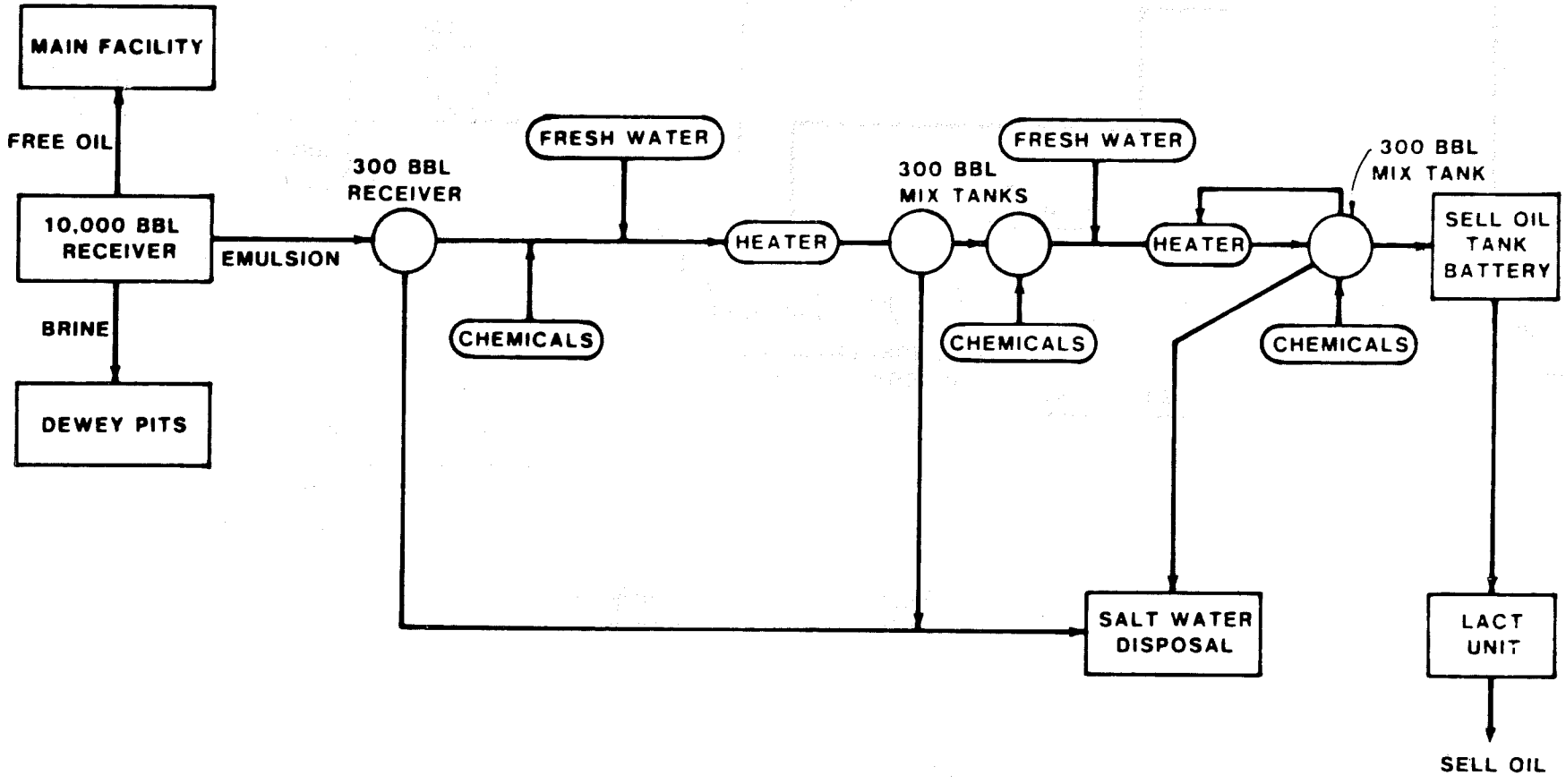
FIGURE 18

Schematic of the M-1 Project
Emulsion Treating System



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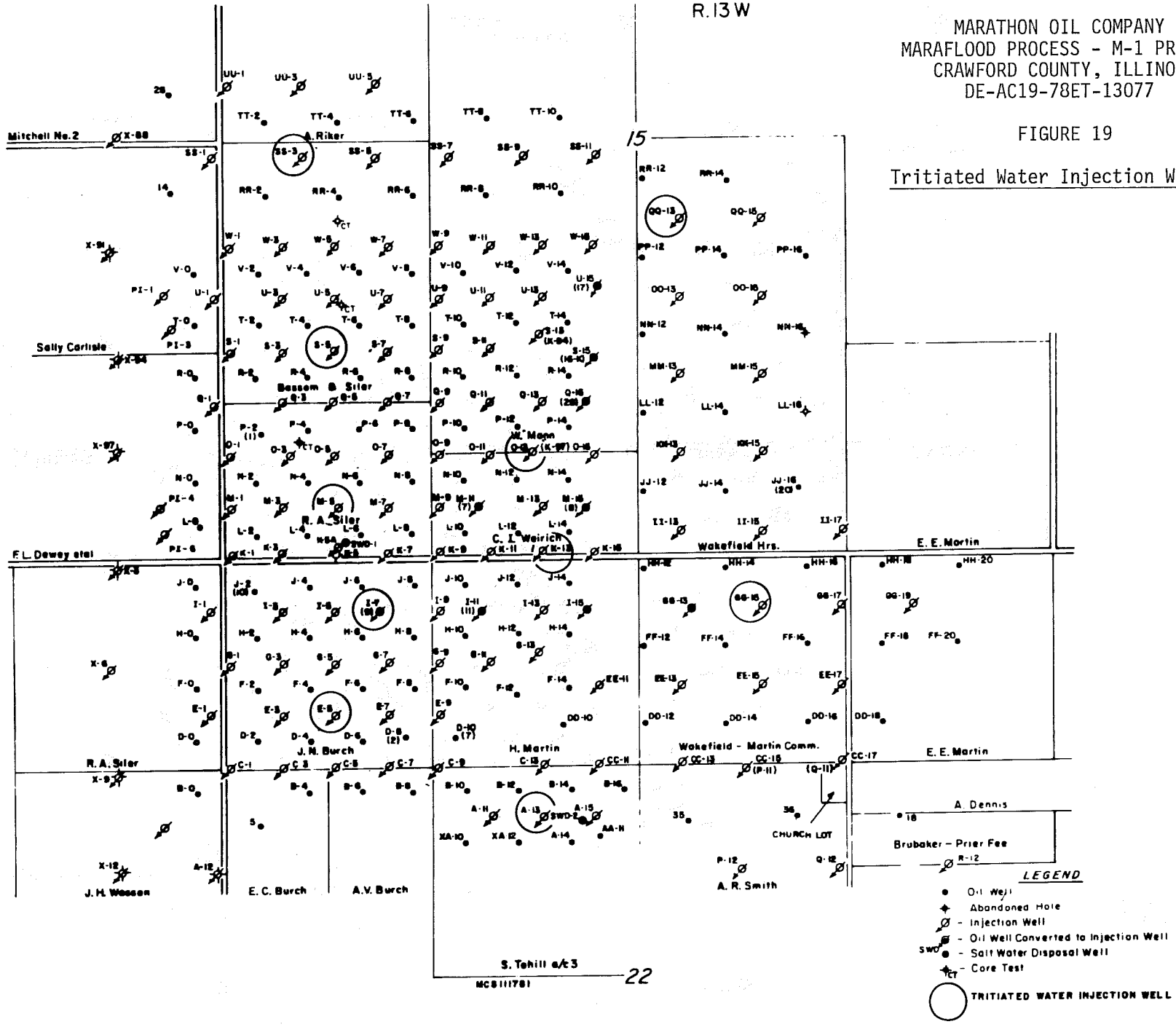
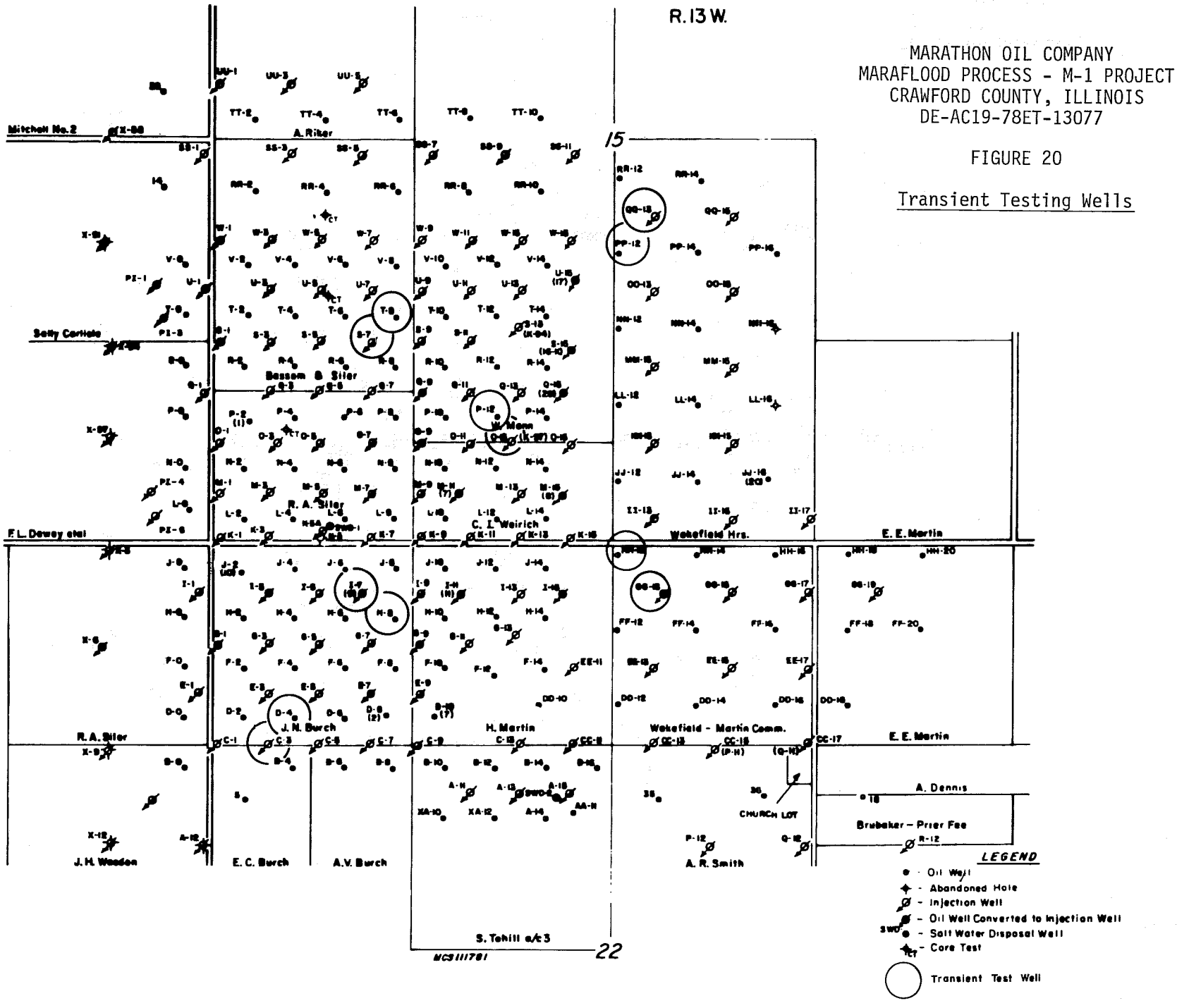
MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
DE-AC19-78ET-13077

FIGURE 19

Tritiated Water Injection Wells





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MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
DE-AC19-78ET-13077

FIGURE 20

Transient Testing Wells

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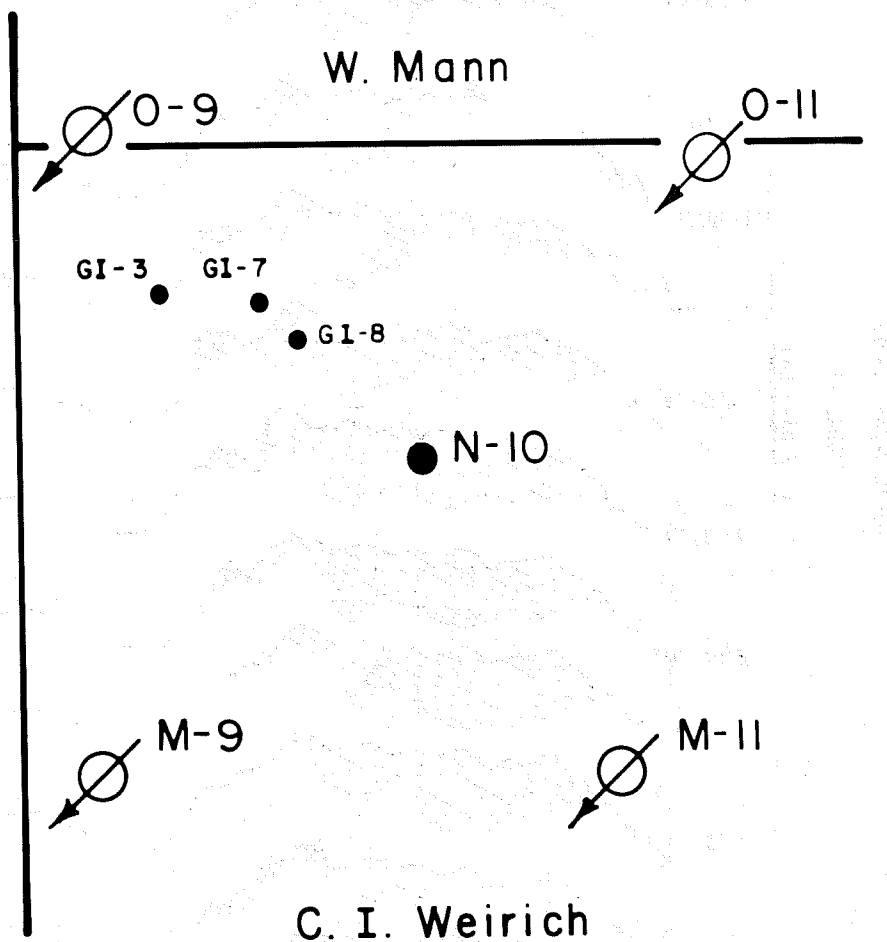
MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
DE-AC19-78ET-13077

FIGURE 21

2.5-Acre Spacing
M-1 Observation Wells



MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
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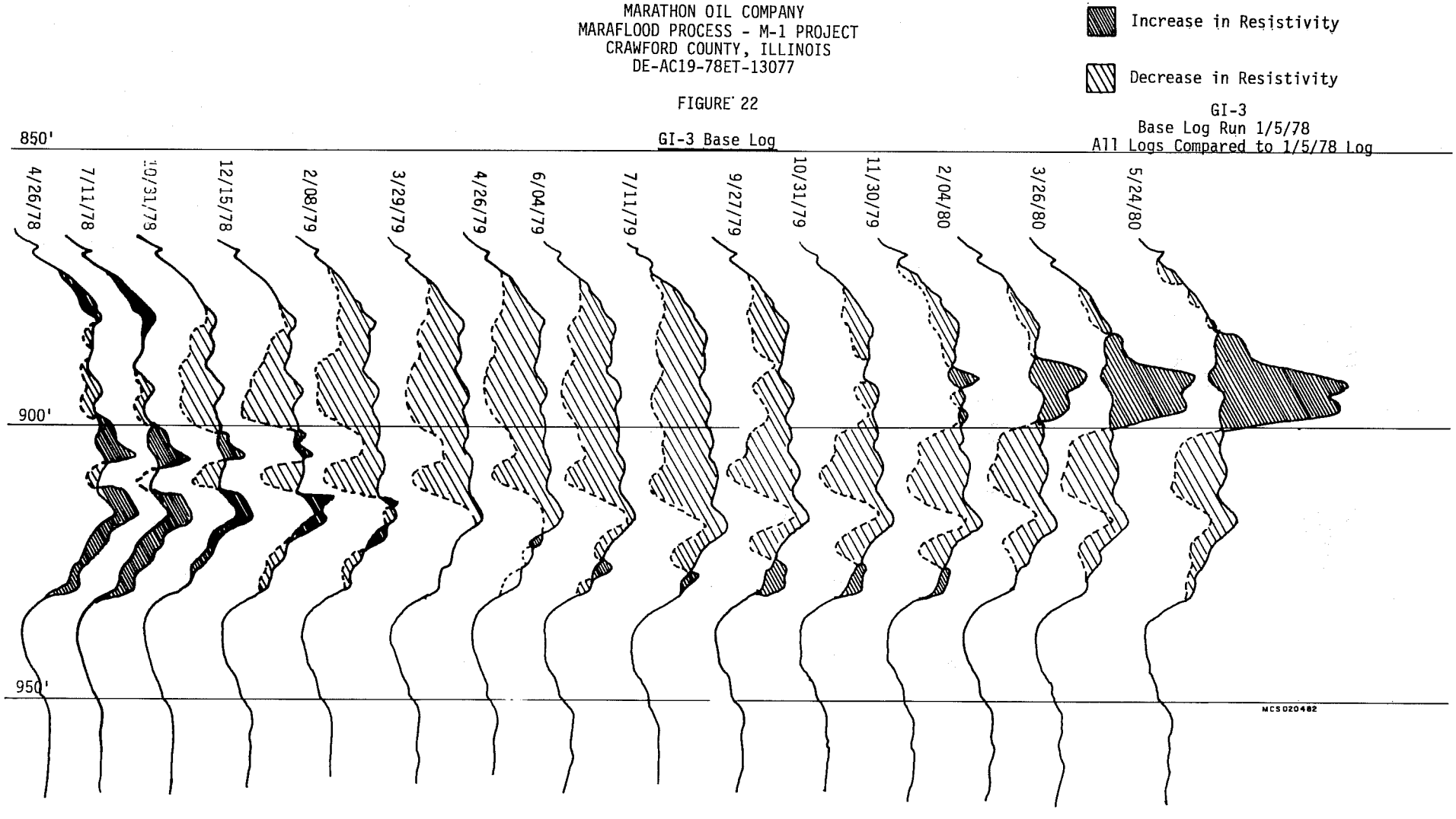
FIGURE 22



MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
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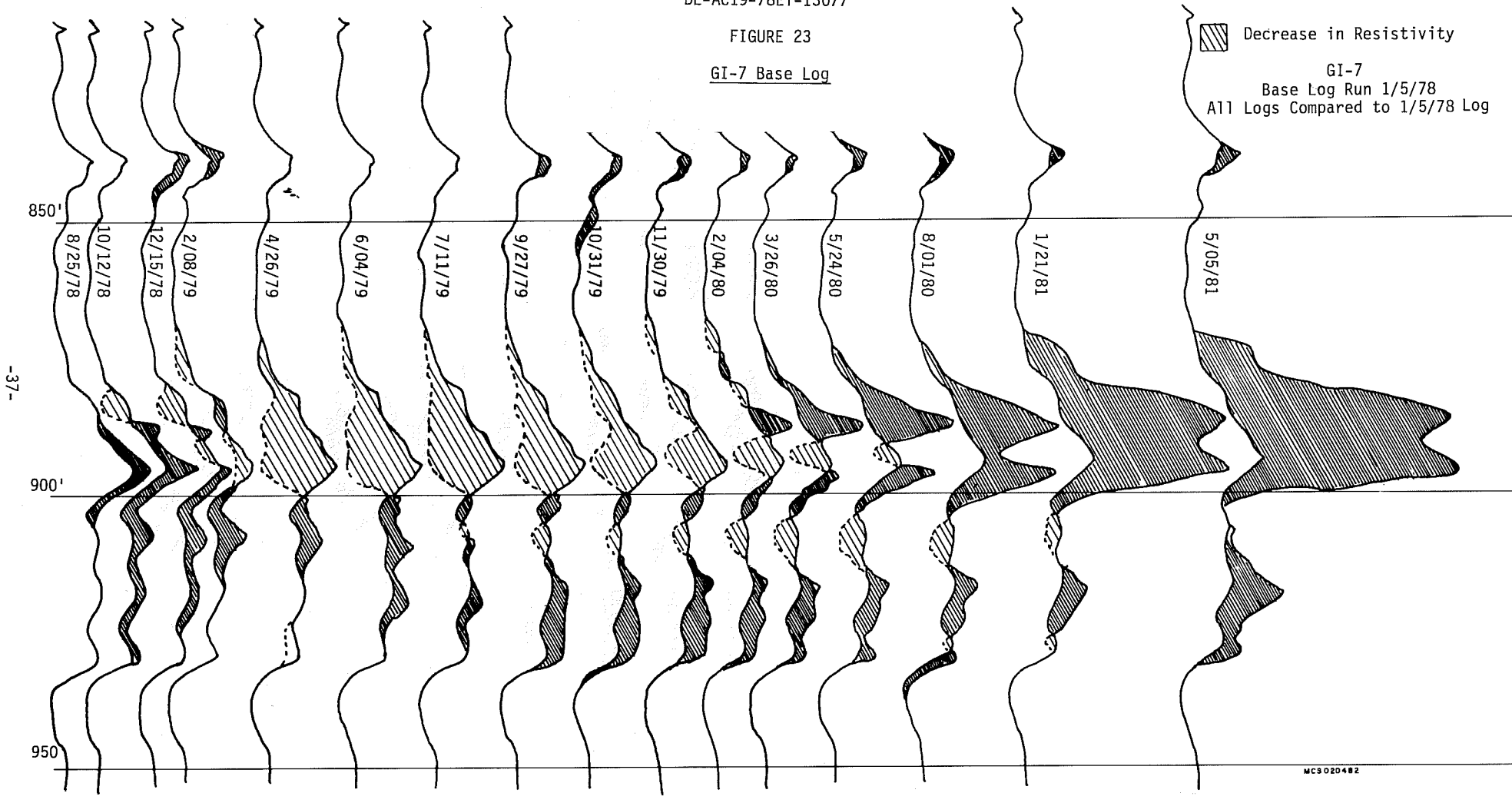
DE-AC19-78ET-13077

FIGURE 23

GI-7 Base Log



MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
CRAWFORD COUNTY, ILLINOIS
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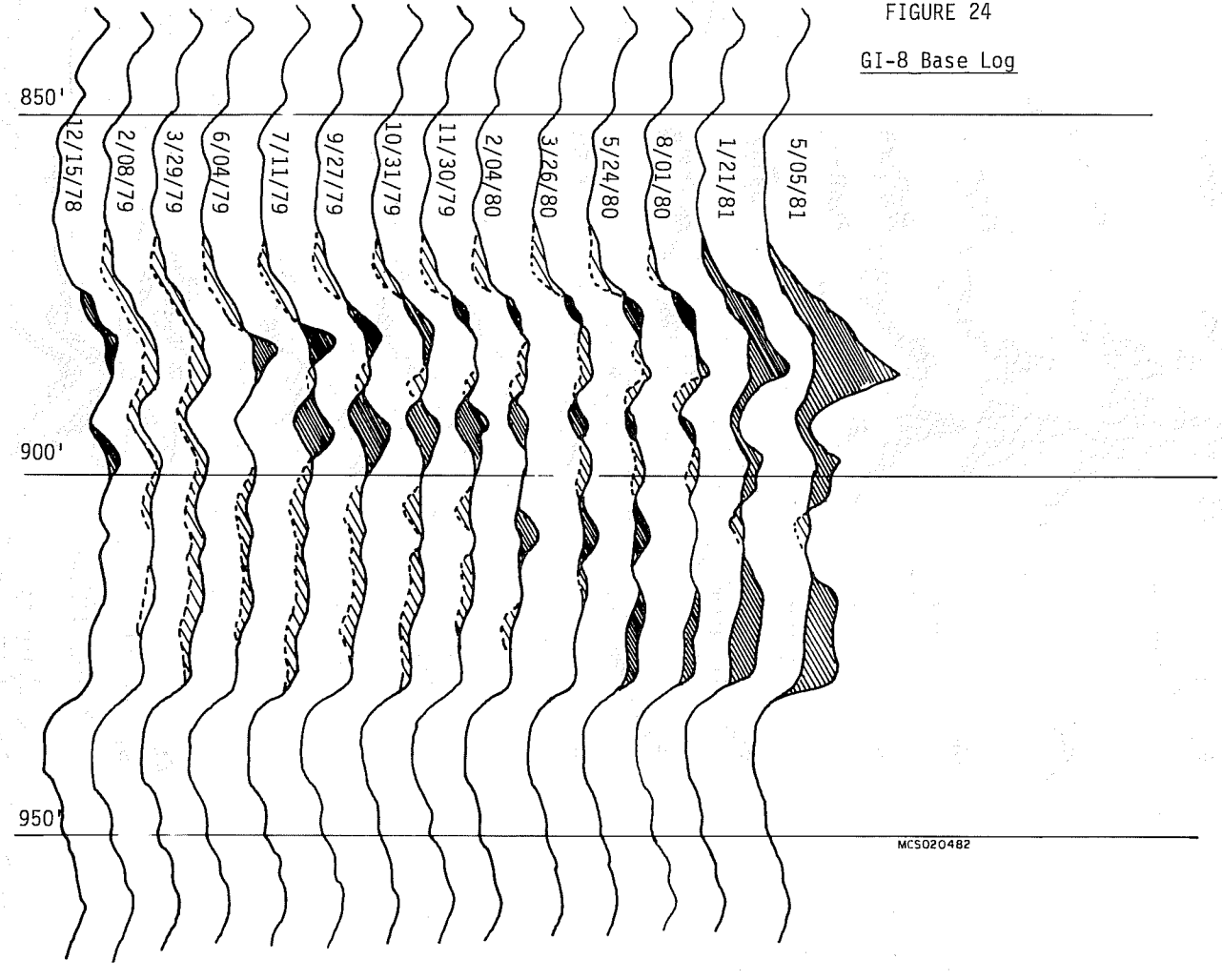
FIGURE 24

GI-8 Base Log



Increase in Resistivity

Decrease in Resistivity

GI-8
Base Log 1/13/78
All Logs Compared to 1/13/78 Log

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE PATTERN
DATA SUMMARY

MONTH AND YEAR		INJ. RATE (B/D)	CUM. INJ. (BBLS)	% CUM.INJ./ PORE VOL.	WGTD. AVG. BHP.	CUMULATIVE (BHP*DAYS)	INJ. (B/D) /BHP	% POLY CUT	% SLUG CUT	% OIL CUT	OIL RATE (B/D)	INJ./ PROD. RATIO	WGTD.AVG. CHLD.CONT. (PPM)	VISC. (CP)	SCREEN FACTOR
FEB.	1977	2246	40428	0.4	588	10584	3.82		.09	4.5	102	0.89	9586	36.0	
MAR.	1977	2392	114580	1.1	633	30207	3.78		.39	3.8	102	0.90	9709	30.7	
APR.	1977	2547	190990	1.8	665	50157	3.83		.07	3.9	103	1.08	9179	32.5	
MAY	1977	2642	279108	2.6	653	70400	4.05		.11	4.7	117	1.08	9282	35.5	
JUN.	1977	2488	353736	3.3	628	89240	3.96		.14	5.8	136	0.96	9469	34.4	
JUL.	1977	2487	430820	4.1	630	108770	3.95		.08	4.2	129	0.73	8954	31.9	
AUG.	1977	2451	506787	4.8	633	128393	3.87		.12	4.9	150	0.77	9185	35.3	
SEP.	1977	2372	577961	5.4	621	147023	3.82		.10	4.8	132	0.82	9524	32.1	
OCT.	1977	2418	652907	6.1	612	165995	3.95		.07	4.9	132	0.86	9495	32.6	
NOV.	1977	2448	726345	6.8	525	181745	4.66		.13	4.6	122	0.85	9773	31.0	
DEC.	1977	977	756628	7.1	433	195168	2.26		.13	4.8	106	0.48	9358	30.0	
JAN.	1978	928	785397	7.4	456	209304	2.04		.27	4.7	81	0.55	8814	28.9	
FEB.	1978	912	810925	7.6	440	221624	2.07		.17	4.9	80	0.54	9550	28.0	
MAR.	1978	791	835457	7.9	428	234892	1.85		.12	5.2	66	0.60	9488	27.0	
APR.	1978	730	857365	8.1	444	248212	1.64		.22	5.0	62	0.56	10033	26.7	
MAY	1978	825	882933	8.3	522	264394	1.58		.21	5.1	58	0.66	9604	59.3	
JUN.	1978	994	912743	8.6	522	280054	1.90		.24	5.3	65	0.90	9534	69.6	
JUL.	1978	1030	944661	8.9	494	295368	2.09		.26	5.7	65	0.91	9818	77.1	
AUG.	1978	1017	976185	9.2	512	311240	1.99		.29	5.7	67	0.88	9764	79.4	
SEP.	1978	1084	1008699	9.5	516	326720	2.10		.31	5.9	67	1.01	10277	78.7	
OCT.	1978	1114	1043246	9.8	492	341972	2.26		.41	6.0	66	0.97	10185	71.4	
NOV.	1978	3162	1138100	10.7	722	363632	4.64		.32	7.1	80	2.63	9452	54.1	22.9
DEC.	1978	8247	1393747	13.1	852	390044	9.68		.47	5.6	206	2.08	10191	52.3	28.4
JAN.	1979	7480	1625621	15.3	816	415340	9.17		.54	5.0	275	1.27	9589	51.1	29.6
FEB.	1979	7436	1811525	17.0	791	435115	9.40		.49	4.8	271	1.19	9445	52.0	28.7
MAR.	1979	5454	1980605	18.6	702	456877	7.77		.92	5.5	306	0.90	9072	52.5	29.9
APR.	1979	5020	2131216	20.1	762	479737	6.59		1.10	6.0	287	0.97	9275	54.9	28.7
MAY	1979	5018	2286412	21.5	774	503731	6.48		1.58	6.9	341	0.94	9364	36.1	23.3
JUN.	1979	5099	2439395	23.0	791	527461	6.45		1.97	7.2	352	0.97	9426	31.4	23.3
JUL.	1979	4977	2593670	24.4	858	554059	5.80		2.48	8.6	378	1.04	9626	31.5	24.8
AUG.	1979	4865	2744493	25.8	856	580595	5.68		2.91	8.6	400	0.96	9220	33.2	24.8
SEP.	1979	4820	2889080	27.2	863	606485	5.59		3.89	8.6	395	0.97	9204	30.0	23.8
OCT.	1979	4598	3031613	28.5	842	632587	5.46	2.77	3.86	7.3	310	1.00	8673	30.2	25.8
NOV.	1979	4524	3167322	29.8	851	658117	5.32	2.03	4.60	10.1	483	0.89	8652	32.0	25.6
DEC.	1979	4168	3296543	31.0	833	683940	4.99	3.84	4.26	8.8	418	0.82	8512	30.6	22.5
JAN.	1980	4147	3425101	32.2	819	709329	5.06	4.73	3.81	8.9	398	0.86	8466	30.9	21.9
FEB.	1980	4217	3547393	33.4	800	732529	5.27	1.83	5.06	10.9	404	1.00	8618	30.1	24.0
MAR.	1980	4631	3690934	34.7	873	759592	5.30	5.40	6.16	11.0	425	1.06	8130	29.5	20.8
APR.	1980	4571	3828057	36.0	861	785422	5.31	4.41	7.36	11.3	431	1.08	8103	29.3	22.0
MAY	1980	4716	3974314	37.4	889	812981	5.30	8.35	5.69	12.1	463	1.10	7852	30.2	23.2

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE PATTERN
DATA SUMMARY

MONTH AND YEAR	INJ. RATE (B/D)	CUM. INJ. (BBLS)	% CUM.INJ./ PORE VOL.	WGTD. AVG. BHP.	CUMULATIVE (BHP*DAYS)	INJ. (B/D) /BHP	% POLY CUT	% SLUG CUT	% OIL CUT	OIL RATE (B/D)	INJ./ PROD. RATIO	WGTD.AVG. CHLD.CONT. (PPM)	VISC. (CP)	SCREEN FACTOR
JUN. 1980	4837	4119350	38.8	926	840761	5.22	10.81	5.61	11.3	437	1.11	7616	28.0	21.4
JUL. 1980	4646	4263438	40.1	915	869126	5.08	11.83	5.49	12.2	484	1.04	7503	28.8	21.5
AUG. 1980	4690	4408805	41.5	912	897398	5.14	10.52	4.67	10.4	408	1.27	7761	19.2	18.5
SEP. 1980	5165	4563717	42.9	975	926648	5.30	17.16	4.99	11.0	452	1.15	7023	19.2	19.7
OCT. 1980	5248	4726222	44.5	970	956718	5.41	16.63	5.08	12.0	577	1.01	7152	19.8	19.4
NOV. 1980	5425	4889007	46.0	974	985938	5.57	19.56	5.26	10.8	529	1.02	6837	19.6	19.6
DEC. 1980	5454	5058019	47.6	981	1016349	5.56	17.11	4.89	10.1	481	1.07	7119	19.7	19.8
JAN. 1981	6066	5246059	49.4	985	1046884	6.16	20.13	4.81	10.6	528	1.12	6821	20.0	20.5
FEB. 1981	6209	5419879	51.0	972	1074100	6.39	19.31	4.94	9.4	447	1.19	6891	20.5	20.3
MAR. 1981	5944	5604076	52.7	960	1103860	6.19	26.80	4.76	10.2	473	1.20	6149	20.7	19.2
APR. 1981	5056	5755701	54.2	925	1131610	5.47	29.19	5.21	12.1	500	1.13	5858	20.9	21.3
MAY 1981	5136	5914897	55.7	966	1161556	5.32	29.90	4.78	11.4	461	1.18	5827	20.7	17.6
JUN. 1981	5236	6071874	57.1	979	1190926	5.35	31.90	4.97	10.8	428	1.21	5603	20.0	17.1
JUL. 1981	4823	6221446	58.5	939	1220035	5.14	31.12	5.60	10.2	386	1.19	5616	21.3	16.7
AUG. 1981	4903	6373355	60.0	957	1249702	5.12	35.39	5.63	9.1	343	1.21	5179	19.5	17.5
SEP. 1981	4680	6513783	61.3	964	1278622	4.85			7.9	306	1.13		19.9	17.9

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE PATTERN
DATA SUMMARY

MONTH AND YEAR		INJ. RATE (B/D)	CUM. INJ. (BBLS)	% CUM.INJ./ PORE VOL.	WGTD. AVG. BHP.	CUMULATIVE (BHP*DAYS)	INJ. (B/D) /BHP	% POLY CUT	% SLUG CUT	% OIL CUT	OIL RATE (B/D)	INJ./ PROD. RATIO	WGTD.AVG. CHLD.CONT. (PPM)	VISC. (CP)	SCREEN FACTOR
FEB.	1977	675	12150	0.2	585	10530	1.15		.15	6.6	44	0.90	8319	36.0	
MAR.	1977	822	37632	0.6	575	28535	1.43		.33	3.5	44	0.87	9776	30.7	
APR.	1977	826	62412	1.0	634	47375	1.30		.24	3.7	60	0.78	9920	32.5	
MAY	1977	818	88069	1.5	633	66998	1.29		.28	4.2	79	0.65	9918	35.5	
JUN.	1977	738	110196	1.8	624	85718	1.18		.26	4.0	68	0.64	8551	34.4	
JUL.	1977	709	132173	2.2	648	105806	1.09		.20	4.1	65	0.67	9221	31.9	
AUG.	1977	666	152823	2.5	579	123755	1.15		.18	5.0	65	0.85	9560	35.3	
SEP.	1977	652	172381	2.9	603	141845	1.08		.15	5.1	67	0.88	9132	32.1	
OCT.	1977	670	193151	3.2	589	160104	1.14		.12	4.7	64	0.89	10556	32.6	
NOV.	1977	647	212554	3.5	543	176394	1.19		.19	4.3	62	0.86	8089	31.0	
DEC.	1977	622	231830	3.9	564	193878	1.10		.11	4.9	74	0.69	9517	30.0	
JAN.	1978	627	251261	4.2	564	211362	1.11		.21	4.4	62	0.79	9362	28.9	
FEB.	1978	670	270012	4.5	560	227042	1.20		.18	4.3	59	0.74	9503	28.0	
MAR.	1978	810	295132	4.9	614	246076	1.32		.15	4.8	63	0.85	10260	27.0	
APR.	1978	862	320987	5.4	615	264526	1.40		.15	5.5	68	0.92	11115	26.7	
MAY	1978	823	346499	5.8	570	282196	1.44		.20	4.4	56	0.84	10177	59.3	
JUN.	1978	1302	385567	6.4	576	299476	2.26		.21	4.3	63	1.03	12675	69.9	
JUL.	1978	1382	428403	7.1	639	319285	2.16		.23	4.2	62	1.04	10269	77.1	
AUG.	1978	1402	471866	7.9	723	341698	1.94		.27	4.2	57	1.16	9885	79.4	
SEP.	1978	1599	519836	8.7	755	364348	2.12		.24	4.1	63	1.15	10537	78.7	
OCT.	1978	1642	570751	9.5	782	388590	2.10		.37	4.0	67	1.13	10336	71.4	
NOV.	1978	1610	619060	10.3	819	413160	1.97		.26	4.5	82	1.09	9995	49.8	22.9
DEC.	1978	1978	680367	11.3	843	439293	2.35		.32	5.6	115	1.37	9881	51.7	27.2
JAN.	1979	2007	742572	12.4	840	465333	2.39		.62	4.7	129	1.04	10111	51.3	28.2
FEB.	1979	2024	793171	13.2	851	486608	2.38		.64	4.2	119	1.11	10080	51.8	26.7
MAR.	1979	1927	852907	14.2	857	513175	2.25		.90	4.3	117	0.99	9982	52.5	28.8
APR.	1979	1812	907262	15.1	845	538525	2.14		.86	5.3	144	0.92	10289	55.6	27.6
MAY	1979	1486	953342	15.9	761	562116	1.95		.93	5.0	119	0.89	10348	56.0	28.9
JUN.	1979	1425	996090	16.6	768	585156	1.86		.86	3.7	99	0.80	10113	54.1	28.8
JUL.	1979	1406	1039687	17.3	792	609708	1.78		.88	4.1	87	0.95	9996	54.1	29.6
AUG.	1979	1418	1083641	18.1	804	634632	1.76		.75	5.4	112	0.99	9603	54.4	28.7
SEP.	1979	1417	1126151	18.8	829	659502	1.71		1.13	5.2	111	0.95	10451	51.1	27.9
OCT.	1979	1332	1167457	19.5	809	684581	1.65		.89	4.5	101	0.89	9314	52.1	30.5
NOV.	1979	1296	1206352	20.1	813	708971	1.59		1.45	5.1	115	0.83	9993	51.1	29.8
DEC.	1979	1174	1242731	20.7	789	733430	1.49		1.14	4.9	110	0.77	9896	51.7	27.8
JAN.	1980	1182	1279404	21.3	787	757827	1.50		.92	4.5	110	0.72	9993	39.4	23.4
FEB.	1980	1261	1315963	21.9	753	779664	1.67		.93	4.0	111	0.68	9790	30.7	21.2
MAR.	1980	1393	1359156	22.7	868	806572	1.60		1.52	4.0	114	0.72	9816	29.3	19.7
APR.	1980	1354	1399726	23.3	839	831742	1.61		2.78	3.9	97	0.79	9849	30.5	22.2
MAY	1980	1410	1443464	24.1	877	858929	1.61		1.09	6.3	116	1.06	10239	29.9	21.5

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE PATTERN
DATA SUMMARY

MONTH AND YEAR	INJ. RATE (B/D)	CUM. INJ. (BBLS)	% CUM.INJ./ PORE VOL.	WGTD. AVG. BHP.	CUMULATIVE (BHP*DAYS)	INJ. (B/D) /BHP	% POLY CUT	% SLUG CUT	% OIL CUT	OIL RATE (B/D)	INJ./ PROD. RATIO	WGTD.AVG. CHLD.CONT. (PPM)	VISC. (CP)	SCREEN FACTOR
JUN. 1980	1408	1485710	24.8	893	885719	1.58		1.49	5.3	109	0.98	9773	29.5	21.3
JUL. 1980	1404	1529241	25.5	892	913371	1.57		1.35	5.7	121	0.91	10069	29.9	21.3
AUG. 1980	1373	1571844	26.2	860	940031	1.60		1.32	6.5	130	0.98	9637	28.3	21.0
SEP. 1980	1648	1621322	27.0	924	967751	1.78		1.31	5.9	122	1.18	9548	27.9	21.5
OCT. 1980	1828	1677919	28.0	950	997201	1.92		1.46	6.3	170	0.92	9669	29.6	21.3
NOV. 1980	1600	1725913	28.8	924	1024921	1.73		1.20	7.8	188	0.94	9876	29.4	20.7
DEC. 1980	1608	1775716	29.6	953	1054464	1.69		1.58	7.8	170	1.06	9751	29.7	20.8
JAN. 1981	1644	1826651	30.5	949	1083883	1.73		1.49	7.1	160	1.08	9827	28.1	21.2
FEB. 1981	1675	1873591	31.2	949	1110455	1.77		1.55	7.3	163	1.10	9696	29.3	20.1
MAR. 1981	1664	1925064	32.1	949	1139874	1.75		1.70	7.5	156	1.08	10441	31.1	22.1
APR. 1981	1517	1970519	32.9	938	1168014	1.62		2.31	6.7	126	1.10	9227	30.0	21.2
MAY 1981	1344	2012203	33.6	941	1197185	1.43	1.52	2.46	7.0	126	1.05	9013	31.0	19.6
JUN. 1981	1401	2054224	34.3	953	1225775	1.47	0.68	3.21	6.0	122	0.98	9021	29.0	19.1
JUL. 1981	1553	2102369	35.1	952	1255287	1.63	0.37	3.47	10.3	188	1.17	9027	30.5	18.6
AUG. 1981	1515	2149355	35.8	954	1284861	1.59	0.0	5.31	10.6	197	1.12	8931	29.5	20.1
SEP. 1981	1485	2193827	36.6	968	1313901	1.53			10.9	196	1.11		29.3	23.8

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE INJECTION REPORT
SEPTEMBER 1981 (30 DAYS)

WELL		DAYS ACTIVE	(FT) NET SAND	PRESS	(BBLS) PORE VOL	****PERCENT INJECTED**** PV SLUG	PV 1156	PV 800	PV 625	PV TOTAL	PREV MON. RATE	(B/D) CURRENT RATE	REC RATE (B/D)
A-11	*	30	25	650	96308	9.5	10.7	21.9	11.9	54.0	21	18	28
A-13		30	21	380	126637	9.7	11.5	20.3	30.2	71.8	66	104	48
A-15		30	45	380	144717	9.4	12.4	21.4	28.2	71.4	84	85	57
C-1	*	30	37	640	217157	9.7	9.6	17.0	15.6	51.9	79	74	84
C-3	*	30	14	640	65219	8.8	9.0	15.7	16.5	50.0	20	18	28
C-5	*	30	14	640	63152	9.0	8.7	12.5	10.5	40.7	17	14	24
C-7	*	30	13	650	67774	5.8	1.1	2.6	3.9	13.4	40	4	14
C-9	*	30	19	0	78428	9.2	2.5	5.4	3.5	20.7	8	5	15
C-13	*	30	28	600	115337	9.8	13.1	18.2	16.2	57.4	49	35	45
E-1	*	30	18	640	53939	11.5	8.5	14.2	10.2	44.4	15	13	23
E-3	*	30	11	600	40348	14.7	11.0	19.1	28.4	73.3	25	24	34
E-5		30	11	540	57323	12.0	12.8	24.8	20.8	70.4	53	50	26
E-7		30	31	520	99647	10.6	11.6	20.8	30.5	73.5	40	60	28
E-9	*	30	23	650	90585	10.9	3.2	6.3	3.5	23.9	6	5	15
G-1	*	30	19	650	73828	12.0	6.4	12.9	6.3	37.6	24	22	32
G-3		30	26	520	68910	11.6	10.0	16.3	12.3	50.2	23	21	108
G-5	*	30	32	640	99291	10.1	14.1	17.6	33.5	75.3	42	37	47
G-7		30	31	600	106308	10.5	9.3	19.4	26.4	65.6	75	68	76
G-9	*	30	20	650	74975	11.5	8.2	13.5	4.9	38.1	8	7	17
G-11	*	30	18	650	74257	10.8	10.2	18.8	11.5	51.3	16	12	22
G-13	*	30	9	650	43871	11.2	8.8	21.8	21.4	63.1	29	26	36
I-1		30	20	580	88728	10.2	8.3	17.1	15.3	50.9	22	21	135
I-3		30	21	500	75579	11.5	11.6	18.0	33.5	74.6	49	44	17
I-5	*	30	30	520	108764	10.0	13.3	18.1	18.3	59.7	36	33	43
I-7	*	30	29	640	107842	10.0	7.4	14.9	9.9	42.2	23	21	31
I-9	*	30	29	640	96849	9.6	11.7	19.2	24.2	64.7	52	48	58
I-11	*	30	23	650	84025	9.8	14.7	17.1	17.0	58.5	28	24	34
I-13	*	30	17	650	76063	11.2	12.1	16.8	8.9	49.0	10	4	14
I-15	*	30	37	640	241350	9.6	10.6	21.6	17.7	59.5	86	74	84
K-1		30	20	520	127844	9.5	12.6	16.7	13.7	52.5	32	33	184
K-3		30	40	580	94488	10.0	12.6	18.8	26.6	68.0	47	49	56
K-5A		30	35	520	121286	9.7	12.9	18.2	28.2	69.0	66	63	65
K-7	*	30	39	620	136240	10.4	9.7	17.1	13.7	50.9	44	42	52
K-9	*	30	22	640	100351	10.2	11.5	16.4	10.8	48.9	17	12	22
K-11	*	30	24	640	98538	9.8	13.4	15.4	14.2	52.7	21	21	31
K-13		30	29	580	121990	9.5	10.6	20.9	32.4	73.4	75	72	35
K-15	*	30	31	640	172949	9.9	11.8	21.1	15.4	58.1	45	38	48
M-1	*	30	32	640	111924	9.9	11.8	19.3	23.2	64.2	57	52	62
M-3		30	32	560	114918	10.1	11.4	20.5	23.2	65.2	93	82	85
M-5		30	46	460	161274	10.0	9.2	22.9	28.5	70.5	121	114	72
M-7		30	49	640	175213	9.9	10.9	23.0	24.7	68.5	111	103	98

MARATHON OIL COMPANY
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SEPTEMBER 1981 (30 DAYS)

WELL		DAYS ACTIVE	(FT) NET SAND	PRESS	(BBLS) PORE VOL	****PERCENT INJECTED**** PV SLUG	PV 1156	PV 800	PV 625	PV TOTAL	PREV MON. RATE	(B/D) CURRENT RATE	REC RATE (B/D)
M-9	*	30	55	640	192610	9.9	11.7	20.8	14.6	57.0	51	50	60
M-11	*	30	42	640	175452	9.7	10.7	20.5	23.1	63.9	74	88	98
M-13		30	56	580	205655	9.4	8.6	25.7	25.7	69.4	89	92	105
M-15		30	43	560	156515	9.8	12.8	18.9	27.4	69.0	85	78	83
O-1		30	21	560	96744	9.6	12.1	23.7	21.9	67.3	74	79	61
O-3		30	23	560	84546	11.3	11.6	3.2	17.0	43.1	31	30	165
O-5		30	47	640	153062	9.9	15.1	17.8	25.8	68.7	118	114	84
O-7	*	30	47	640	182713	9.9	13.1	19.2	18.9	61.1	55	53	63
O-9		30	48	600	199141	9.8	12.9	19.5	25.4	67.6	114	110	120
O-11		30	53	520	213746	9.7	11.8	20.3	25.4	67.1	147	116	135
O-13		30	54	600	197371	10.0	12.4	19.4	21.7	63.3	89	94	166
O-15	*	30	46	640	276396	9.8	11.8	19.6	23.6	64.7	124	116	126
Q-1		30	22	560	113178	9.7	12.7	20.8	25.9	69.1	80	86	60
Q-3		30	19	420	73931	10.6	3.8	26.1	35.9	76.5	42	36	9
Q-5	*	30	29	640	99629	10.0	7.1	12.2	9.8	39.1	16	13	23
Q-7		30	48	560	156289	9.8	16.3	15.2	28.3	69.6	94	77	78
Q-9		30	48	320	172832	10.3	11.2	19.3	22.9	63.7	61	66	140
Q-11		30	45	400	178375	9.9	12.5	21.1	24.6	68.2	77	81	101
Q-13		30	37	500	148301	9.9	12.5	19.6	27.0	69.1	82	85	77
Q-15		30	52	600	160565	9.6	11.9	20.5	25.1	67.2	61	54	100
S-1		30	23	500	105303	10.3	10.9	19.5	26.2	66.9	77	70	67
S-3		30	19	500	54587	11.1	11.6	18.0	35.9	76.5	35	38	6
S-5		30	16	640	53993	11.4	10.8	22.6	20.3	65.0	42	41	40
S-7		30	37	360	119153	9.9	12.6	20.6	20.4	63.5	26	13	98
S-9		30	47	420	170003	9.8	13.6	19.6	26.1	69.2	104	84	87
S-11		30	45	500	168556	10.1	11.1	21.3	24.5	67.1	137	132	106
S-13	*	30	43	300	150413	10.1	12.6	19.0	9.0	50.7	26	26	36
S-15		30	44	600	261128	9.9	11.6	21.2	24.6	67.2	151	141	163
U-1		30	21	580	83846	11.9	9.5	19.8	24.2	65.4	47	58	60
U-3		30	18	640	57713	10.8	9.0	26.6	19.9	66.2	30	31	39
U-5		30	12	500	53089	13.8	9.4	23.0	29.3	75.5	30	30	9
U-7		30	19	520	77484	11.3	10.6	21.0	30.7	73.5	30	28	21
U-9		30	32	460	123821	10.4	12.3	18.9	24.0	65.7	60	82	88
U-11		30	47	500	161693	10.1	12.9	18.1	29.0	70.0	82	84	76
U-13		30	43	500	151555	9.3	9.6	22.5	28.3	69.6	81	85	74
U-15		30	29	580	172084	9.8	12.5	19.8	24.1	66.1	109	96	117
W-1	*	30	26	640	184594	9.6	5.6	15.1	14.9	45.1	59	58	68
W-3	*	30	19	640	125054	9.8	4.2	0.4	5.1	19.6	11	11	21
W-5		30	19	360	65971	10.2	13.4	21.2	24.9	69.7	54	47	32
W-7		30	14	500	86599	9.5	11.9	20.9	24.1	66.5	59	64	57
W-9		30	17	580	89129	9.7	9.9	22.3	29.3	71.3	49	53	35

MARATHON OIL COMPANY
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2.5-ACRE INJECTION REPORT
SEPTEMBER 1981 (30 DAYS)

WELL		DAYS ACTIVE	(FT) NET SAND	PRESS	(BBLS) PORE VOL	****PERCENT INJECTED**** PV SLUG	PV 1156	PV 800	PV 625	PV TOTAL	PREV MON. RATE	(B/D) CURRENT RATE	REC RATE (B/D)
W-11	*	30	35	640	177292	9.8	11.5	21.5	15.9	58.8	80	58	68
W-13	*	30	37	640	187643	9.4	8.7	23.1	20.6	61.8	80	72	82
W-15		30	31	620	235533	9.9	11.6	22.0	21.0	64.4	105	108	183
TOTAL			2598		10627513	10.0	11.0	19.0	21.3	61.3	4903	4680	5520
TARGETS (P.V.INJECTED):						10.0	11.0	19.0	32.0				

BBLS.OF 625 PPM POLYMER REMAINING TO BE INJECTED: 1138765.0
DAYS REMAINING TO COMPLETE 625 PPM POLYMER INJECTION: 206.3

* DENOTES PROBLEM WELL.

2.5-ACRE INJECTION DATA SUMMARY

FLUID TYPE	PV	PROJECTED INJECTION HISTORY START	FINISH	INJECTION RATE DEVIATION REC RATE BASIS	THIS REPORT	LAST REPORT
SLUG	10	2/10/77	11/20/78	NO. WELLS WITHIN 5 % OF REC. RATE:	7	6
1156	11	11/20/78	5/20/79	NO. WELLS WITHIN 20 % OF REC. RATE:	34	36
800	19	5/20/79	7/28/80	NO. WELLS WITHIN 50 % OF REC. RATE:	64	66
625	32	7/28/80	5/14/82			

AVERAGE VISCOSITY	: 19.9
AVERAGE SCREEN FACTOR	: 17.9
TOTAL POLYMER INJECTED (LBS.)	: 30718
TOTAL POLYMER CONCENTRATION (PPM):	640

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE INJECTION REPORT
SEPTEMBER 1981 (30 DAYS)

WELL		DAYS ACTIVE	(FT) NET SAND	PRESS	(BBLS) PORE VOL	****PERCENT INJECTED**** PV SLUG	PV 1156	PV 800	PV TOTAL	PREV MON. RATE	(B/D) CURRENT RATE	REC RATE (B/D)
CC-11		30	32	500	179070	9.9	11.2	20.3	41.4	78	61	42
CC-13		30	36	520	330722	10.1	12.0	17.1	39.2	105	98	118
CC-15		30	10	540	166984	10.0	11.2	17.5	38.7	65	64	64
CC-17	*	30	21	680	232323	9.9	11.9	15.7	37.5	51	53	63
EE-11		30	24	520	186979	9.9	12.6	15.8	38.3	40	49	76
EE-13		30	45	380	335370	10.0	11.5	14.8	36.4	87	82	170
EE-15		30	42	440	313883	9.9	11.3	16.4	37.7	91	106	138
EE-17		30	22	480	149259	10.1	10.7	21.5	42.3	64	61	27
GG-13		30	33	480	290091	10.1	10.8	20.6	41.5	103	101	64
GG-15		30	39	440	310349	10.1	11.3	18.9	40.3	101	98	90
GG-17		30	25	400	196177	10.2	12.4	18.2	40.8	68	74	52
GG-19		30	35	520	271277	10.2	11.8	17.3	39.4	83	92	93
II-13	*	30	24	650	208574	10.1	11.6	8.3	30.0	10	8	18
II-15		30	20	620	203893	9.9	11.9	16.6	38.4	57	46	80
II-17		30	13	540	130776	10.0	14.8	15.1	40.0	26	23	40
KK-13	*	30	13	650	149688	10.2	11.9	14.9	36.9	27	21	31
KK-15	*	30	23	650	162784	10.0	10.7	15.2	36.0	36	27	37
MM-13	*	30	20	650	175026	10.3	9.4	12.7	32.4	18	15	25
MM-15	*	30	19	650	121753	10.1	8.1	21.8	40.0	53	39	49
OO-13	*	30	29	650	254995	10.0	11.6	12.8	34.4	50	35	45
OO-15	*	30	28	650	185573	10.0	11.5	14.1	35.7	17	28	38
QQ-13	*	30	32	650	249117	10.2	11.0	14.9	36.1	65	58	68
QQ-15	*	30	28	650	153960	10.2	11.0	13.9	35.1	34	30	40
SS-1	*	30	18	650	162464	8.3	5.3	5.7	19.3	12	17	27
SS-3	*	30	21	650	170972	9.9	8.3	14.4	32.6	42	49	59
SS-5		30	15	560	122640	10.3	10.4	17.4	38.1	34	40	50
SS-7		30	15	460	115206	10.0	9.9	23.8	43.7	43	46	12
SS-9	*	30	38	650	263508	9.9	9.8	8.0	27.7	25	27	37
SS-11	*	30	25	650	203122	10.0	9.4	12.1	31.5	30	37	47
TOTAL			745		5996535	10.0	11.0	15.6	36.6	1515	1485	1700
TARGETS (P.V.INJECTED):						10.0	11.0	19.0				

BBLS.OF 800 PPM POLYMER REMAINING TO BE INJECTED: 204823.0
DAYS REMAINING TO COMPLETE 800 PPM POLYMER INJECTION: 120.5

* DENOTES PROBLEM WELL.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE INJECTION DATA SUMMARY

FLUID TYPE	PV	PROJECTED INJECTION HISTORY START	FINISH	INJECTION RATE DEVIATION REC RATE BASIS	THIS REPORT	LAST REPORT
SLUG	10	2/10/77	11/20/78	NO. WELLS WITHIN 5 % OF REC. RATE:	2	2
1156	11	11/20/78	1/14/80	NO. WELLS WITHIN 20 % OF REC. RATE:	8	7
800	19	1/15/80	3/ 1/82	NO. WELLS WITHIN 50 % OF REC. RATE:	24	25

AVERAGE VISCOSITY	: 29.3
AVERAGE SCREEN FACTOR	: 23.8
TOTAL POLYMER INJECTED (LBS.)	: 12452
TOTAL POLYMER CONCENTRATION (PPM)	: 634

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
PERIPHERAL INJECTION WELL REPORT
SEPTEMBER 1981 (30 DAYS)

WELL		DAYS ACTIVE	(FT) NET SAND	PRESS	CUM.# PROJECT INJ.	PREV. RATE (B/D)	CURRENT RATE (B/D)	RECD RATE (B/D)
UU-1	*	30	11	0	15327	0	0	56
UU-5	*	30	10	520	48343	34	34	66
X-88	*	30	19	600	18946	15	19	13
X-91	**	--	30	--	97	--	--	--
X-94	**	--	23	--	11498	--	--	--
X-97	**	--	27	--	8596	--	--	--
X-3	**	--	29	--	12202	--	--	--
X-6		30	26	500	21236	7	10	55
X-9	**	--	9	--	17020	--	--	--
X-12	**	--	32	--	3868	--	--	--
A-12	**	--	51	--	48185	--	--	--
P-12		30	13	700	79346	25	27	107
Q-12	*	30	9	700	89551	65	54	63
R-12	*	30	26	680	32154	16	15	63
CF-6		30	40	50	82767	149	139	29
PI-1		30	17	0	12792	33	21	18
PI-3		30	25	180	11271	41	35	18
PI-4		30	32	20	15293	51	45	16
PI-6		30	26	40	17405	56	49	16
PERIPHERAL TOTALS		455			545897	492	448	520
5.0-ACRE TOTALS					225209	130	122	261
2.5-ACRE TOTALS					320688	362	326	259

* INDICATES 5.0-ACRE WELLS

** INDICATES WELLS PLUGGED AND ABANDONED

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE FIVE SPOT REPORT
SEPTEMBER 1981 (30 DAYS)

WELL	DAYS ACTIVE	OIL PROD CUM OIL DAILY AVE	WATER PROD CUM WATER DAILY AVE	FLUID PROD CUM FLUID DAILY AVE	FLD(PV) CUM FLD(PV)	INJECTION CUM INJ DAILY AVE	PORE VOL	OIL CUT	CUM OIL/ PORE VOL	CUM INJ/ PORE VOL	FLD/INJ CUM FLD/ CUM INJ
XA-10	30	27.0 1076.0 0.9	2.6 61.8 0.1	29.6 1137.7 1.0	0.001 0.049	132.8 13363.0 4.4	23252	0.911	0.046	0.575	0.22 0.09
XA-12	30	108.0 13332.8 3.6	740.7 33823.2 24.7	848.7 47156.0 28.3	0.015 0.818	909.8 35798.5 30.3	57623	0.127	0.231	0.621	0.93 1.32
XA-14	30	83.5 5212.5 2.8	328.0 26514.5 10.9	411.5 31726.9 13.7	0.006 0.442	1411.7 48706.1 47.1	71828	0.203	0.073	0.678	0.29 0.65
AA-11	30	108.0 11357.4 3.6	1364.9 67227.1 45.5	1472.9 78584.4 49.1	0.047 2.498	634.7 26090.4 21.2	31456	0.073	0.361	0.829	2.32 3.01
B-0	30	29.5 2091.4 1.0	343.9 93977.8 11.5	373.3 96069.1 12.4	0.006 1.517	1269.9 81122.2 42.3	63309	0.079	0.033	1.281	0.29 1.18
EB-5	30	14.7 2103.7 0.5	616.3 65109.9 20.5	631.1 67213.6 21.0	0.008 0.815	696.1 60592.7 23.2	82486	0.023	0.026	0.735	0.91 1.11
B-4	30	4.9 1068.2 0.2	79.4 10015.9 2.6	84.3 11084.1 2.8	0.003 0.440	243.8 15002.8 8.1	25188	0.058	0.042	0.596	0.35 0.74
B-6	30	12.3 598.5 0.4	29.1 2734.1 1.0	41.4 3332.6 1.4	0.002 0.121	133.0 8978.9 4.4	27488	0.297	0.022	0.327	0.31 0.37
B-8	30	4.9 1537.7 0.2	60.8 5554.4 2.0	65.7 7092.1 2.2	0.002 0.230	67.0 6743.3 2.2	30786	0.075	0.050	0.219	0.98 1.05
B-10	30	22.1 796.4 0.7	2.6 564.3 0.1	24.7 1360.7 0.8	0.001 0.058	172.0 17055.3 5.7	23297	0.893	0.034	0.732	0.14 0.08

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE FIVE SPOT REPORT
SEPTEMBER 1981 (30 DAYS)

WELL	DAYS ACTIVE	OIL PROD CUM OIL DAILY AVE	WATER PROD CUM WATER DAILY AVE	FLUID PROD CUM FLUID DAILY AVE	FLD(PV) CUM FLD(PV)	INJECTION CUM INJ DAILY AVE	PORE VOL	OIL CUT	CUM OIL/ PORE VOL	CUM INJ/ PORE VOL	FLD/INJ CUM FLD/ CUM INJ
B-12	30	66.3 14411.2 2.2	420.6 38832.8 14.0	486.9 53244.0 16.2	0.005 0.554	1257.4 57471.5 41.9	96079	0.136	0.150	0.598	0.39 0.93
B-14	30	360.8 9677.3 12.0	3470.5 80398.7 115.7	3831.3 90076.0 127.7	0.028 0.651	2213.1 79768.9 73.8	138324	0.094	0.070	0.577	1.73 1.13
B-16	30	56.5 2387.0 1.9	396.8 50344.1 13.2	453.2 52731.1 15.1	0.003 0.370	1822.7 76990.4 60.8	142341	0.125	0.017	0.541	0.25 0.68
D-0	30	29.5 1189.0 1.0	164.0 34065.1 5.5	193.5 35254.1 6.4	0.004 0.699	1033.8 54850.8 34.5	50426	0.152	0.024	1.088	0.19 0.64
D-2	30	31.9 2702.5 1.1	235.4 24684.6 7.8	267.3 27387.1 8.9	0.003 0.304	974.6 50156.7 32.5	90143	0.119	0.030	0.556	0.27 0.55
D-4	30	9.8 6074.1 0.3	764.5 32285.3 25.5	774.3 38359.4 25.8	0.016 0.801	798.0 32105.2 26.6	47861	0.013	0.127	0.671	0.97 1.19
D-6	30	108.0 6495.9 3.6	1481.3 61346.3 49.4	1589.3 67842.2 53.0	0.017 0.709	957.7 37009.7 31.9	95658	0.068	0.068	0.387	1.66 1.83
D-8	30	31.9 1398.4 1.1	298.9 16039.8 10.0	330.8 17438.1 11.0	0.004 0.218	551.8 30249.8 18.4	79988	0.096	0.017	0.378	0.60 0.58
D-10	30	12.3 1967.4 0.4	253.9 17639.6 8.5	266.2 19606.9 8.9	0.007 0.532	75.1 9961.6 2.5	36821	0.046	0.053	0.271	3.55 1.97
F-0	30	36.8 4036.8 1.2	238.1 26460.9 7.9	274.9 30497.6 9.2	0.007 0.770	345.6 22401.5 11.5	39598	0.134	0.102	0.566	0.80 1.36

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE FIVE SPOT REPORT
SEPTEMBER 1981 (30 DAYS)

WELL	DAYS ACTIVE	OIL PROD CUM OIL DAILY AVE	WATER PROD CUM WATER DAILY AVE	FLUID PROD CUM FLUID DAILY AVE	FLD(PV) CUM FLD(PV)	INJECTION CUM INJ DAILY AVE	PORE VOL	OIL CUT	CUM OIL/ PORE VOL	CUM INJ/ PORE VOL	FLD/INJ CUM FLD/ CUM INJ
F-2	30	93.3 5454.3 3.1	407.4 19536.4 13.6	500.6 24990.7 16.7	0.009 0.427	605.2 30074.4 20.2	58501	0.186	0.093	0.514	0.83 0.83
F-4	30	14.7 516.3 0.5	632.2 9823.4 21.1	646.9 10339.7 21.6	0.015 0.235	991.3 44866.8 33.0	43996	0.023	0.012	1.020	0.65 0.23
F-6	30	36.8 3204.4 1.2	1637.4 89677.2 54.6	1674.2 92881.6 55.8	0.017 0.922	1614.1 64387.6 53.8	100749	0.022	0.032	0.639	1.04 1.44
F-8	30	54.0 538.5 1.8	1060.7 26276.7 35.4	1114.7 26815.1 37.2	0.013 0.309	1052.7 48979.9 35.1	86889	0.048	0.006	0.564	1.06 0.55
F-10	30	24.5 963.1 0.8	314.8 13139.1 10.5	339.3 14102.2 11.3	0.007 0.274	179.0 22649.9 6.0	51403	0.072	0.019	0.441	1.90 0.62
F-12	30	19.6 527.1 0.7	124.3 10599.7 4.1	144.0 11126.9 4.8	0.004 0.344	281.8 16388.1 9.4	32366	0.136	0.016	0.506	0.51 0.68
F-14	30	4.9 1196.0 0.2	150.8 8640.1 5.0	155.7 9836.1 5.2	0.004 0.244	781.9 35575.1 26.1	40285	0.032	0.030	0.883	0.20 0.28
H-0	30	98.2 12996.2 3.3	529.0 73466.9 17.6	627.2 86463.1 20.9	0.016 2.251	368.4 25744.8 12.3	38404	0.157	0.338	0.670	1.70 3.36
H-2	30	24.5 3193.9 0.8	253.9 12781.9 8.5	278.5 15975.8 9.3	0.004 0.210	821.0 41034.0 27.4	76083	0.088	0.042	0.539	0.34 0.39
H-4	30	73.6 6562.6 2.5	1089.8 62440.8 36.3	1163.5 69003.4 38.8	0.012 0.734	1020.8 58480.8 34.0	94033	0.063	0.070	0.622	1.14 1.18

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE FIVE SPOT REPORT
SEPTEMBER 1981 (30 DAYS)

WELL	DAYS ACTIVE	OIL PROD CUM OIL DAILY AVE	WATER PROD CUM WATER DAILY AVE	FLUID PROD CUM FLUID DAILY AVE	FLD(PV) CUM FLD(PV)	INJECTION CUM INJ DAILY AVE	PORE VOL	OIL CUT	CUM OIL/ PORE VOL	CUM INJ/ PORE VOL	FLD/INJ CUM FLD/ CUM INJ
H-6	30	66.3 1416.5 2.2	642.8 52886.2 21.4	709.1 54302.6 23.6	0.006 0.494	1193.5 64496.6 39.8	109986	0.093	0.013	0.586	0.59 0.84
H-8	30	66.3 1792.5 2.2	296.3 46555.4 9.9	362.5 48347.8 12.1	0.004 0.504	1078.7 52156.5 36.0	95901	0.183	0.019	0.544	0.34 0.93
H-10	30	44.2 2358.9 1.5	473.5 36350.2 15.8	517.7 38709.1 17.3	0.007 0.506	679.8 44807.9 22.7	76555	0.085	0.031	0.585	0.76 0.86
H-12	30	17.2 3838.5 0.6	552.8 43411.8 18.4	570.0 47250.3 19.0	0.010 0.816	491.1 38000.0 16.4	57907	0.030	0.066	0.656	1.16 1.24
H-14	30	73.6 8305.1 2.5	1597.7 74829.1 53.3	1671.3 83134.2 55.7	0.019 0.924	976.5 66039.4 32.6	90003	0.044	0.092	0.734	1.71 1.26
J-0	30	17.2 1660.0 0.6	113.7 16550.4 3.8	130.9 18210.4 4.4	0.003 0.438	1455.8 43550.3 48.5	41558	0.131	0.040	1.048	0.09 0.42
J-2	30	73.6 5359.0 2.5	759.2 41983.8 25.3	832.8 47342.8 27.8	0.010 0.582	1111.1 58658.0 37.0	81310	0.088	0.066	0.721	0.75 0.81
J-4	30	34.4 3630.6 1.1	978.7 70970.4 32.6	1013.1 74600.9 33.8	0.008 0.589	1426.9 68298.5 47.6	126673	0.034	0.029	0.539	0.71 1.09
J-6	30	51.5 10785.0 1.7	947.0 55506.8 31.6	998.5 66291.7 33.3	0.008 0.520	1194.1 66666.6 39.8	127371	0.052	0.085	0.523	0.84 0.99
J-8	30	135.0 7016.7 4.5	973.4 60856.4 32.4	1108.4 67873.1 36.9	0.009 0.545	919.9 56949.1 30.7	124459	0.122	0.056	0.458	1.20 1.19

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE FIVE SPOT REPORT
SEPTEMBER 1981 (30 DAYS)

WELL	DAYS ACTIVE	OIL PROD CUM OIL DAILY AVE	WATER PROD CUM WATER DAILY AVE	FLUID PROD CUM FLUID DAILY AVE	FLD(PV) CUM FLD(PV)	INJECTION CUM INJ DAILY AVE	PORE VOL	OIL CUT	CUM OIL/ PORE VOL	CUM INJ/ PORE VOL	FLD/INJ CUM FLD/ CUM INJ
J-10	30	12.3 2523.3 0.4	296.3 18987.8 9.9	308.5 21511.1 10.3	0.003 0.212	783.9 52606.9 26.1	101349	0.040	0.025	0.519	0.39 0.41
J-12	30	36.8 957.8 1.2	1013.1 37232.4 33.8	1049.9 38190.2 35.0	0.011 0.388	902.6 56466.0 30.1	98442	0.035	0.010	0.574	1.16 0.68
J-14	30	108.0 2346.6 3.6	1288.2 108410.9 42.9	1396.2 110757.5 46.5	0.010 0.828	1637.4 108852.4 54.6	133805	0.077	0.018	0.814	0.85 1.02
L-0	30	144.8 3759.3 4.8	3586.9 68327.4 119.6	3731.7 72086.7 124.4	0.065 1.264	1087.1 47992.2 36.2	57036	0.039	0.066	0.841	3.43 1.50
L-2	30	27.0 2426.3 0.9	428.5 29843.8 14.3	455.5 32270.0 15.2	0.006 0.418	1623.8 70378.2 54.1	77129	0.059	0.031	0.912	0.28 0.46
L-4	30	216.0 5251.2 7.2	1637.4 56534.5 54.6	1853.4 61785.7 61.8	0.014 0.462	2312.3 84736.4 77.1	133876	0.117	0.039	0.633	0.80 0.73
L-6	30	108.0 8676.3 3.6	1092.5 62370.9 36.4	1200.5 71047.2 40.0	0.009 0.508	2412.3 96991.7 80.4	139935	0.090	0.062	0.693	0.50 0.73
L-8	30	144.8 7799.2 4.8	2806.6 63122.1 93.6	2951.4 70921.3 98.4	0.021 0.494	1552.3 88055.9 51.7	143466	0.049	0.054	0.614	1.90 0.81
L-10	30	144.8 4965.3 4.8	1325.2 68614.5 44.2	1470.1 73579.7 49.0	0.014 0.701	1280.2 81060.5 42.7	105002	0.099	0.047	0.772	1.15 0.91
L-12	30	326.5 14356.1 10.9	1753.8 84790.6 58.5	2080.2 99146.7 69.3	0.015 0.702	2039.2 99477.2 68.0	141141	0.157	0.102	0.705	1.02 1.00

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE FIVE SPOT REPORT
SEPTEMBER 1981 (30 DAYS)

WELL	DAYS ACTIVE	OIL PROD CUM OIL DAILY AVE	WATER PROD CUM WATER DAILY AVE	FLUID PROD CUM FLUID DAILY AVE	FLD(PV) CUM FLD(PV)	INJECTION CUM INJ DAILY AVE	PORE VOL	OIL CUT	CUM OIL/ PORE VOL	CUM INJ/ PORE VOL	FLD/INJ CUM FLD/ CUM INJ
L-14	30	108.0	1909.8	2017.8	0.015	2127.3	132995	0.054	0.036	0.835	0.95
		4758.1	93075.2	97833.3	0.736	111057.7					0.88
		3.6	63.7	67.3		70.9					
N-0	30	39.3	457.6	496.9	0.007	1937.8	76442	0.079	0.022	0.612	0.26
		1657.6	42690.0	44347.5	0.580	46803.0					0.95
		1.3	15.3	16.6		64.6					
N-2	30	73.6	1402.0	1475.6	0.015	1824.7	97694	0.050	0.056	0.639	0.81
		5429.8	104028.3	109458.1	1.120	62399.4					1.75
		2.5	46.7	49.2		60.8					
N-4	30	397.7	4131.8	4529.5	0.033	2554.2	138627	0.088	0.196	0.601	1.77
		27181.5	138106.1	165287.5	1.192	83379.7					1.98
		13.3	137.7	151.0		85.1					
N-6	30	289.7	3195.4	3485.1	0.021	2878.5	169978	0.083	0.108	0.668	1.21
		18273.2	137212.6	155485.7	0.915	113529.7					1.37
		9.7	106.5	116.2		95.9					
N-8	30	144.8	2182.3	2327.1	0.012	2368.1	187415	0.062	0.057	0.640	0.98
		10772.9	122690.5	133463.4	0.712	119912.9					1.11
		4.8	72.7	77.6		78.9					
N-10	30	289.7	1714.1	2003.7	0.011	2732.5	175851	0.145	0.060	0.720	0.73
		10524.0	122771.1	133295.1	0.758	126682.5					1.05
		9.7	57.1	66.8		91.1					
N-12	30	181.6	2182.3	2363.9	0.012	2922.5	204686	0.077	0.014	0.640	0.81
		2795.2	125429.1	128224.2	0.626	130985.8					0.98
		6.1	72.7	78.8		97.4					
N-14	30	36.8	2182.3	2219.1	0.010	3207.5	229987	0.017	0.019	0.676	0.69
		4414.0	133749.9	138163.8	0.601	155487.3					0.89
		1.2	72.7	74.0		106.9					
P-0	30	44.2	349.2	393.4	0.008	1642.8	46305	0.112	0.045	0.934	0.24
		2089.9	30379.0	32468.9	0.701	43267.5					0.75
		1.5	11.6	13.1		54.8					

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE FIVE SPOT REPORT
SEPTEMBER 1981 (30 DAYS)

WELL	DAYS ACTTVE	OIL PROD CUM OIL DAILY AVE	WATER PROD CUM WATER DAILY AVE	FLUID PROD CUM FLUID DAILY AVE	FLD(PV) CUM FLD(PV)	INJECTION CUM INJ DAILY AVE	PORE VOL	OIL CUT	CUM OIL/ PORE VOL	CUM INJ/ PORE VOL	FLD/INJ CUM FLD/ CUM INJ
P-2	30	88.4 3918.4 2.9	716.8 50845.7 23.9	805.2 54764.1 26.8	0.009 0.589	1728.0 59413.1 57.6	92938	0.110	0.042	0.639	0.47 0.92
P-4	30	61.4 3161.4 2.0	462.9 26956.5 15.4	524.3 30117.9 17.5	0.005 0.298	1453.8 59669.9 48.5	100901	0.117	0.031	0.591	0.36 0.50
P-6	30	144.8 1102.1 4.8	1248.5 72127.1 41.6	1393.4 73229.2 46.4	0.008 0.438	1936.6 91803.0 64.6	167022	0.104	0.007	0.550	0.72 0.80
P-8	30	0.0 556.7 0.0	1716.7 86743.1 57.2	1716.7 87299.8 57.2	0.010 0.526	2298.2 116582.0 76.6	166037	0.0	0.003	0.702	0.75 0.75
P-10	30	108.0 3988.4 3.6	1637.4 76940.4 54.6	1745.4 80928.7 58.2	0.009 0.429	2803.9 128303.7 93.5	188735	0.062	0.021	0.680	0.62 0.63
P-12	30	108.0 3832.7 3.6	4563.0 104370.9 152.1	4671.0 108203.6 155.7	0.030 0.685	2821.9 123622.0 94.1	157985	0.023	0.024	0.782	1.66 0.88
P-14	30	216.0 4754.8 7.2	1833.1 149029.6 61.1	2049.1 153784.4 68.3	0.010 0.768	2889.3 143700.2 96.3	200173	0.105	0.024	0.718	0.71 1.07
R-0	30	110.5 1608.4 3.7	1481.3 61561.9 49.4	1591.8 63170.3 53.1	0.032 1.265	1595.3 48909.6 53.2	49932	0.069	0.032	0.980	1.00 1.29
R-2	30	108.0 2611.3 3.6	3118.7 58947.9 104.0	3226.7 61559.2 107.6	0.035 0.659	1719.5 61424.6 57.3	93453	0.033	0.028	0.657	1.88 1.00
R-4	30	29.5 2828.5 1.0	222.2 18507.0 7.4	251.7 21335.4 8.4	0.004 0.379	959.9 42951.6 32.0	56261	0.117	0.050	0.763	0.26 0.50

MARATHON OIL COMPANY
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2.5-ACRE FIVE SPOT REPORT
SEPTEMBER 1981 (30 DAYS)

WELL	DAYS ACTIVE	OIL PROD CUM OIL DAILY AVE	WATER PROD CUM WATER DAILY AVE	FLUID PROD CUM FLUID DAILY AVE	FLD(PV) CUM FLD(PV)	INJECTION CUM INJ DAILY AVE	PORE VOL	OIL CUT	CUM OIL/ PORE VOL	CUM INJ/ PORE VOL	FLD/INJ CUM FLD/ CUM INJ
R-6	30	181.6 6384.1 6.1	973.4 48360.8 32.4	1155.1 54744.8 38.5	0.012 0.549	1087.8 64340.0 36.3	99678	0.157	0.064	0.645	1.06 0.85
R-8	30	326.5 14446.0 10.9	2751.0 122712.9 91.7	3077.5 137158.9 102.6	0.019 0.869	1804.3 103516.9 60.1	157827	0.106	0.092	0.656	1.71 1.32
R-10	30	326.5 8104.3 10.9	2454.7 112561.7 81.8	2781.2 120666.1 92.7	0.017 0.754	2725.8 116568.6 90.9	160116	0.117	0.051	0.728	1.02 1.04
R-12	30	144.8 8806.3 4.8	1909.8 86479.7 63.7	2054.7 95286.0 68.5	0.013 0.587	2432.3 103526.4 81.1	162359	0.070	0.054	0.638	0.84 0.92
R-14	30	181.6 16727.6 6.1	1597.7 106156.4 53.3	1779.3 122883.9 59.3	0.011 0.746	2677.6 134665.1 89.3	164729	0.102	0.102	0.817	0.66 0.91
T-0	30	24.5 1061.1 0.8	108.5 27720.9 3.6	133.0 28781.9 4.4	0.003 0.728	1603.6 42943.6 53.5	39555	0.185	0.027	1.086	0.08 0.67
T-2	30	2.5 412.0 0.1	10.6 24673.5 0.4	13.0 25085.6 0.4	0.000 0.340	1481.1 51003.3 49.4	73817	0.188	0.006	0.691	0.01 0.49
T-4	30	27.0 1225.9 0.9	291.0 19901.8 9.7	318.0 21127.7 10.6	0.005 0.354	1049.2 38707.5 35.0	59636	0.085	0.021	0.649	0.30 0.55
T-6	30	95.7 6019.4 3.2	976.1 35171.5 32.5	1071.8 41190.9 35.7	0.014 0.549	842.1 51840.5 28.1	74961	0.089	0.080	0.692	1.27 0.79
T-8	30	71.2 4062.2 2.4	775.0 51777.4 25.8	846.2 55839.5 28.2	0.006 0.397	1560.1 82659.8 52.0	140819	0.084	0.029	0.587	0.54 0.68

MARATHON OIL COMPANY
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SEPTEMBER 1981 (30 DAYS)

WELL	DAYS ACTIVE	OIL PROD CUM OIL DAILY AVE	WATER PROD CUM WATER DAILY AVE	FLUID PROD CUM FLUID DAILY AVE	FLD(PV) CUM FLD(PV)	INJECTION CUM INJ DAILY AVE	PORE VOL	OIL CUT	CUM OIL/ PORE VOL	CUM INJ/ PORE VOL	FLD/INJ CUM FLD/ CUM INJ
T-10	30	326.5	2065.9	2392.4	0.015	2865.7	160801	0.136	0.063	0.664	0.83
		10090.8	100894.5	110985.2	0.690	106717.9					1.04
		10.9	68.9	79.7		95.5					
T-12	30	142.4	798.8	941.2	0.007	2447.9	138801	0.151	0.015	0.737	0.38
		2073.4	102609.3	104682.7	0.754	102280.9					1.02
		4.7	26.6	31.4		81.6					
T-14	30	108.0	4658.2	4766.2	0.026	2460.0	182561	0.023	0.015	0.614	1.94
		2718.8	91478.1	94196.9	0.516	112030.8					0.84
		3.6	155.3	158.9		82.0					
V-0	30	22.1	330.6	352.7	0.005	872.7	68550	0.063	0.006	0.540	0.40
		428.2	39327.6	39755.8	0.580	37022.6					1.07
		0.7	11.0	11.8		29.1					
V-2	30	108.0	2650.5	2758.5	0.031	1186.3	89783	0.039	0.049	0.571	2.33
		4414.6	81280.1	85694.6	0.954	51269.3					1.67
		3.6	88.3	91.9		39.5					
V-4	30	24.5	359.7	384.3	0.006	886.3	65527	0.064	0.023	0.567	0.43
		1496.2	23325.0	24821.2	0.379	37132.4					0.67
		0.8	12.0	12.8		29.5					
V-6	30	181.6	1793.4	1975.1	0.035	1263.1	57221	0.092	0.295	0.871	1.56
		16901.2	77435.9	94337.1	1.649	49837.6					1.89
		6.1	59.8	65.8		42.1					
V-8	30	73.6	1402.0	1475.6	0.018	1705.2	81115	0.050	0.024	0.792	0.87
		1920.7	32595.0	34515.7	0.426	64233.1					0.54
		2.5	46.7	49.2		56.8					
V-10	30	130.1	1029.0	1159.1	0.009	2078.5	123793	0.112	0.067	0.731	0.56
		8317.7	83748.7	92066.4	0.744	90437.5					1.02
		4.3	34.3	38.6		69.3					
V-12	30	326.5	1793.4	2119.9	0.015	2240.8	145395	0.154	0.094	0.758	0.95
		13680.1	108154.0	121834.0	0.838	110156.1					1.11
		10.9	59.8	70.7		74.7					

MARATHON OIL COMPANY
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2.5-ACRE FIVE SPOT REPORT
SEPTEMBER 1981 (30 DAYS)

WELL	DAYS ACTIVE	OIL PROD CUM OIL DAILY AVE	WATER PROD CUM WATER DAILY AVE	FLUID PROD CUM FLUID DAILY AVE	FLD(PV) CUM FLD(PV)	INJECTION CUM INJ DAILY AVE	PORE VOL	OIL CUT	CUM OIL/ PORE VOL	CUM INJ/ PORE VOL	FLD/INJ CUM FLD/ CUM INJ
V-14	30	326.5	2142.6	2469.1	0.017	2970.6	146174	0.132	0.080	0.909	0.83
		11660.0	103662.4	115322.4	0.789	132878.9					0.87
		10.9	71.4	82.3		99.0					
TOTAL		9183.0	107634.9	116817.7	0.013	132217.7	9066200	0.083	0.053	0.668	0.88
		481099.9	5348386.8	5829485.3	0.643	6052494.8					0.96
		306.1	3587.9	3894.0		4407.3					

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE FIVE SPOT REPORT
SEPTEMBER 1981 (30 DAYS)

WELL	DAYS ACTIVE	OIL PROD CUM OIL DAILY AVE	WATER PROD CUM WATER DAILY AVE	FLUID PROD CUM FLUID DAILY AVE	FLD(PV) CUM FLD(PV)	INJECTION CUM INJ DAILY AVE	PORE VOL	OIL CUT	CUM OIL/ PORE VOL	CUM INJ/ PORE VOL	FLD/INJ CUM FLD/ CUM INJ
AS-35	30	137.3 5219.1 4.6	553.4 48683.5 18.4	690.7 53902.6 23.0	0.009 0.739	1421.8 81318.3 47.4	72916	0.199	0.072	1.115	0.49 0.66
AS-36	30	93.6 2108.2 3.1	2796.0 225568.7 93.2	2889.6 227676.9 96.3	0.023 1.844	1489.7 108123.9 49.7	123442	0.032	0.017	0.876	1.94 2.11
DD-10	30	181.0 5048.1 6.0	1288.7 39297.1 43.0	1469.6 44345.3 49.0	0.017 0.513	1032.4 46172.4 34.4	86394	0.123	0.058	0.534	1.42 0.96
DD-12	30	230.9 2060.9 7.7	1707.7 103824.7 56.9	1938.6 105885.6 64.6	0.006 0.311	2097.1 96928.7 69.9	340851	0.119	0.006	0.284	0.92 1.09
DD-14	30	505.5 9812.4 16.8	2137.2 142426.4 71.2	2642.7 152238.8 88.1	0.009 0.515	2626.7 108522.9 87.6	295683	0.191	0.033	0.367	1.01 1.40
DD-16	30	137.3 2422.4 4.6	1399.3 76836.4 46.6	1536.6 79258.7 51.2	0.007 0.339	2128.5 83855.1 70.9	234062	0.089	0.010	0.358	0.72 0.95
DD-18	30	49.9 2274.1 1.7	350.5 49554.3 11.7	400.4 51828.4 13.3	0.004 0.521	851.2 53220.0 28.4	99411	0.125	0.023	0.535	0.47 0.97
FF-12	30	230.9 2183.7 7.7	1823.6 120338.6 60.8	2054.5 122522.2 68.5	0.007 0.418	2094.2 101443.7 69.8	292955	0.112	0.007	0.346	0.98 1.21
FF-14	30	415.0 6653.0 13.8	2485.1 132420.6 82.8	2900.1 139073.5 96.7	0.008 0.401	2900.0 121354.1 96.7	347235	0.143	0.019	0.349	1.00 1.15
FF-16	30	274.6 4421.0 9.2	1204.3 109129.9 40.1	1478.9 113550.9 49.3	0.006 0.487	2538.2 96716.7 84.6	233092	0.186	0.019	0.415	0.58 1.17

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE FIVE SPOT REPORT
SEPTEMBER 1981 (30 DAYS)

WELL	DAYS ACTIVE	OIL PROD CUM OIL DAILY AVE	WATER PROD CUM WATER DAILY AVE	FLUID PROD CUM FLUID DAILY AVE	FLD(PV) CUM FLD(PV)	INJECTION CUM INJ DAILY AVE	PORE VOL	OIL CUT	CUM OIL/ PORE VOL	CUM INJ/ PORE VOL	FLD/INJ CUM FLD/ CUM INJ
FF-18	30	93.6 9104.0 3.1	2134.6 88229.7 71.2	2228.2 97333.7 74.3	0.014 0.592	1699.4 62587.9 56.6	164544	0.042	0.055	0.380	1.31 1.56
FF-20	30	12.5 2550.4 0.4	0.0 5112.8 0.0	12.5 7663.2 0.4	0.000 0.134	688.6 26668.6 23.0	57048	1.000	0.045	0.467	0.02 0.29
HH-12	30	137.3 3116.7 4.6	1554.8 105894.9 51.8	1692.1 109011.6 56.4	0.006 0.400	1554.7 103199.3 51.8	272292	0.081	0.011	0.379	1.09 1.06
HH-14	30	368.2 3032.2 12.3	1863.1 122436.0 62.1	2231.3 125468.2 74.4	0.008 0.447	1888.2 96433.0 62.9	280397	0.165	0.011	0.344	1.18 1.30
HH-16	30	168.5 7424.5 5.6	453.3 52155.2 15.1	621.8 59579.6 20.7	0.003 0.267	1853.9 87959.4 61.8	222864	0.271	0.033	0.395	0.34 0.68
HH-18	30	184.1 2456.5 6.1	2018.6 99275.7 67.3	2202.7 101732.2 73.4	0.012 0.556	1469.7 64229.1 49.0	183019	0.084	0.013	0.351	1.50 1.58
HH-20	30	115.4 3498.0 3.8	21.1 3785.6 0.7	136.5 7283.6 4.6	0.002 0.107	688.6 26668.6 23.0	67865	0.846	0.052	0.393	0.20 0.27
JJ-12	30	93.6 4398.1 3.1	1201.7 112835.7 40.1	1295.3 117233.8 43.2	0.004 0.401	2007.0 123183.6 66.9	292199	0.072	0.015	0.422	0.65 0.95
JJ-14	30	25.0 1485.3 0.8	332.0 33717.4 11.1	357.0 35202.8 11.9	0.002 0.238	827.4 68437.7 27.6	147711	0.070	0.010	0.463	0.43 0.51
JJ-16	30	184.1 11369.8 6.1	1243.9 75013.9 41.5	1428.0 86383.7 47.6	0.009 0.518	840.8 56938.2 28.0	166634	0.129	0.068	0.342	1.70 1.52

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE FIVE SPOT REPORT
SEPTEMBER 1981 (30 DAYS)

WELL	DAYS ACTIVE	OIL PROD CUM OIL DAILY AVE	WATER PROD CUM WATER DAILY AVE	FLUID PROD CUM FLUID DAILY AVE	FLD(PV) CUM FLD(PV)	INJECTION CUM INJ DAILY AVE	PORE VOL	OIL CUT	CUM OIL/ PORE VOL	CUM INJ/ PORE VOL	FLD/INJ CUM FLD/ CUM INJ
LL-12	30	93.6 2454.9 3.1	2988.4 123981.9 99.6	3082.0 126436.8 102.7	0.009 0.386	2276.8 131547.6 75.9	327428	0.030	0.007	0.402	1.35 0.96
LL-14	30	62.4 1247.3 2.1	358.4 28618.4 11.9	420.8 29865.8 14.0	0.003 0.195	1134.0 72340.2 37.8	152809	0.148	0.008	0.473	0.37 0.41
NN-12	30	137.3 6600.7 4.6	2332.2 191666.3 77.7	2469.5 198266.9 82.3	0.010 0.819	2056.7 105030.7 68.6	242122	0.056	0.027	0.434	1.20 1.89
NN-14	30	93.6 1876.0 3.1	932.9 54776.7 31.1	1026.5 56652.7 34.2	0.004 0.211	1246.8 73750.0 41.6	268441	0.091	0.007	0.275	0.82 0.77
PP-12	30	458.7 10717.3 15.3	3107.0 116455.6 103.6	3565.7 127172.8 118.9	0.017 0.599	2510.2 133275.9 83.7	212400	0.129	0.050	0.627	1.42 0.95
PP-14	30	68.6 2662.7 2.3	548.1 101127.4 18.3	616.8 103790.1 20.6	0.002 0.359	1127.0 74343.9 37.6	288920	0.111	0.009	0.257	0.55 1.40
PP-16	30	46.8 973.5 1.6	1009.3 39386.6 33.6	1056.1 40360.1 35.2	0.008 0.324	633.5 44813.4 21.1	124520	0.044	0.008	0.360	1.67 0.90
RR-2	30	59.3 3441.4 2.0	255.6 40745.9 8.5	314.9 44187.2 10.5	0.002 0.212	1094.9 53382.6 36.5	208887	0.188	0.016	0.256	0.29 0.83
RR-4	30	274.6 16010.1 9.2	1515.3 51100.3 50.5	1789.9 67110.4 59.7	0.010 0.368	1904.4 59727.7 63.5	182551	0.153	0.088	0.327	0.94 1.12
RR-6	30	137.3 8548.2 4.6	1283.4 60614.2 42.8	1420.7 69162.4 47.4	0.010 0.487	2059.3 77881.6 68.6	141948	0.097	0.060	0.549	0.69 0.89

MARATHON OIL COMPANY
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5.0-ACRE FIVE SPOT REPORT
SEPTEMBER 1981 (30 DAYS)

WELL	DAYS ACTIVE	OIL PROD CUM OIL DAILY AVE	WATER PROD CUM WATER DAILY AVE	FLUID PROD CUM FLUID DAILY AVE	FLD(PV) CUM FLD(PV)	INJECTION CUM INJ DAILY AVE	PORE VOL	OIL CUT	CUM OIL/ PORE VOL	CUM INJ/ PORE VOL	FLD/INJ CUM FLD/ CUM INJ
RR-8	30	184.1 3546.9 6.1	853.8 67008.4 28.5	1037.9 70555.3 34.6	0.004 0.306	1621.6 93005.2 54.1	230914	0.177	0.015	0.403	0.64 0.76
RR-10	30	28.1 2307.7 0.9	748.4 81237.0 24.9	776.5 83544.7 25.9	0.003 0.313	2174.4 118758.4 72.5	266817	0.036	0.009	0.445	0.36 0.70
RR-12	30	93.6 4754.0 3.1	1085.7 75486.1 36.2	1179.3 80240.1 39.3	0.005 0.359	1349.5 69534.1 45.0	223502	0.079	0.021	0.311	0.87 1.15
RR-14	30	40.6 3656.9 1.4	424.3 15071.5 14.1	464.8 18728.4 15.5	0.006 0.233	803.4 44415.2 26.8	80481	0.087	0.045	0.552	0.58 0.42
TT-2	30	43.7 858.7 1.5	556.0 46947.1 18.5	599.7 47805.9 20.0	0.005 0.438	625.0 44954.2 20.8	109198	0.073	0.008	0.412	0.96 1.06
TT-4	30	137.3 7926.2 4.6	1359.8 86095.6 45.3	1497.1 94021.7 49.9	0.019 1.174	922.4 44423.6 30.7	80067	0.092	0.099	0.555	1.62 2.12
TT-6	30	21.8 720.3 0.7	1496.8 80107.3 49.9	1518.7 80827.6 50.6	0.029 1.534	901.7 43106.6 30.1	52686	0.014	0.014	0.818	1.68 1.88
TT-8	30	68.6 773.3 2.3	424.3 31435.9 14.1	492.9 32209.3 16.4	0.005 0.295	548.1 30865.1 18.3	109336	0.139	0.007	0.282	0.90 1.04
TT-10	30	199.7 6517.3 6.7	376.8 34431.6 12.6	576.5 40948.8 19.2	0.004 0.296	616.6 41939.1 20.6	138176	0.346	0.047	0.304	0.94 0.98
SC-14	30	0.0 910.9 0.0	0.0 29429.5 0.0	0.0 30340.4 0.0	0.0 0.346	784.5 32093.5 26.2	87710	0.0	0.010	0.366	0.0 0.95

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE FIVE SPOT REPORT
SEPTEMBER 1981 (30 DAYS)

WELL	DAYS ACTIVE	OIL PROD CUM OIL DAILY AVE	WATER PROD CUM WATER DAILY AVE	FLUID PROD CUM FLUID DAILY AVE	FLD(PV) CUM FLD(PV)	INJECTION CUM INJ DAILY AVE	PORE VOL	OIL CUT	CUM OIL/ PORE VOL	CUM INJ/ PORE VOL	FLD/INJ CUM FLD/ CUM INJ
BP-18	30	3.1 208.2 0.1	34.3 7193.1 1.1	37.4 7401.3 1.2	0.000 0.090	920.1 82353.0 30.7	82228	0.083	0.003	1.002	0.04 0.09
TOTAL		5891.0 177351.1 196.4	48260.0 3109453.7 1608.7	54151.0 3286804.2 1805.0	0.007 0.433	60008.9 3085502.6 2000.3	7591755	0.054	0.023	0.406	0.90 1.07

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE SULFONATE REPORT

* SULFONATE IN WATER, %

WELL NO.	2-77	3-77	4-77	5-77	6-77	7-77	8-77	9-77	10-77	11-77
XA-10	.20	**	**	**	.04	0.0	**	**	.68	.09
XA-12	.05	.06	**	**	.04	.01	0.0	.04	.07	.08
XA-14	.02	.06	.03	**	.04	.02	.01	.04	.01	.05
AA-11	**	**	.37	**	.05	.03	.08	.02	.01	.05
B-0	.06	.06	.03	**	.07	.03	0.0	.01	.01	0.0
EB-5	**	**	**	**	**	**	**	.03	.01	0.0
B-4	.04	.06	.03	**	.05	.03	.14	.04	.03	.40
B-6	.06	.06	.03	.40	.25	.08	0.0	.07	.05	.07
B-8	.09	.06	**	.10	.04	.03	.01	.06	.09	.05
B-10	**	.11	.07	**	**	**	.07	.17	2.50	.41
B-12	.10	.23	.07	**	.16	.10	**	**	.25	.44
B-14	.07	.06	.03	.10	.13	.09	.09	.10	.07	.07
B-16	.06	.06	.07	.05	.09	.08	.03	.03	.02	.05
D-0	.04	.06	.03	.05	.05	.03	.03	.01	.01	.04
D-2	.05	.06	0.0	**	**	.03	.07	.04	**	.32
D-4	.04	.06	.07	**	.05	.03	.09	.18	.10	.39
D-6	.25	.23	.23	.40	.27	.10	.20	.16	.14	.24
D-8	.14	.11	.13	.10	.22	.22	.11	.09	.07	.13
D-10	.06	.06	.03	.02	.05	.03	.02	.04	0.0	.05
F-0	.06	**	.07	**	.05	.05	.05	.02	0.0	.04
F-2	.04	.06	.07	**	.13	.08	.05	.03	.01	0.0
F-4	.11	.11	.13	.10	.14	.12	.12	.11	**	.05
F-6	.18	.23	.20	.30	.34	.14	.18	.20	.10	.20
F-8	.09	.06	.13	.10	.14	.22	.09	.08	.02	.09
F-10	.05	.06	.07	.07	.09	.08	.06	.07	.00	.08
F-12	.05	.06	.03	.50	.29	.07	.05	.04	.02	.08
F-14	.06	**	.03	.80	.20	.03	5.94	4.56	5.93	6.80
H-0	.04	.06	.03	.30	.27	0.0	.05	.04	.00	.00
H-2	.10	**	**	.10	.27	.08	.08	.11	.14	.23
H-4	.08	.06	.07	.10	.20	.08	.11	.21	.03	.08
H-6	.14	.11	.10	.20	.25	.17	.12	.10	.03	.11
H-8	.14	.06	.13	.20	.24	.14	.15	.16	.13	.29
H-10	.08	.00	.07	.02	.09	.02	.07	.08	.07	.17
H-12	.06	.00	.03	**	.09	.02	**	.05	.00	.07
H-14	.06	.06	.07	**	.20	.08	.12	.13	.08	.19
J-0	.04	.00	.03	**	.05	0.0	.06	.05	**	.08
J-2	.07	.06	.07	.07	.07	0.0	.07	.04	**	.08
J-4	.08	.06	.13	**	.14	.05	.12	.12	**	.13
J-6	.06	.06	.07	.07	.13	.04	.10	.08	.00	.08
J-8	.96	.46	.07	.02	.07	.05	.07	.06	.00	.08
J-10	.06	.11	.07	**	.07	.05	.11	.07	**	.08
J-12	.41	.06	.10	.70	.74	.49	.49	.43	**	.08
J-14	.70	.11	.13	.20	.29	.16	.17	.13	.08	.16

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE SULFONATE REPORT

* SULFONATE IN WATER, %

WELL NO.	12-77	1-78	2-78	3-78	4-78	5-78	6-78	7-78	8-78	9-78
XA-10	.09	**	0.0	**	.17	3.5	3.2	**	**	**
XA-12	.11	.11	.08	.04	.17	0.0	.07	.08	**	.11
XA-14	.07	.12	.08	.01	.17	.05	.14	.14	.18	.23
AA-11	.05	0.0	.05	**	.16	0.0	**	**	.09	.13
B-0	.05	.70	.05	0.0	.12	0.0	.07	.03	.05	.09
EB-5	**	1.02	.07	0.0	**	0.0	.04	.03	.08	.09
B-4	.27	.26	.37	.54	.42	.90	1.1	1.1	2.84	1.53
B-6	.11	.13	.08	0.0	.13	0.0	.88	.07	**	.08
B-8	.07	.11	.28	.18	.10	.23	.41	**	.53	.56
B-10	2.0	4.11	0.0	**	**	0.0	**	**	**	**
B-12	.83	.55	.11	.03	.94	.60	**	1.3	1.00	.88
B-14	.12	.16	.14	**	.18	.06	.14	.14	.13	.15
B-16	.07	.13	.07	0.0	.12	0.0	.10	.07	.08	.09
D-0	.08	.14	.07	0.0	.13	0.0	.12	.09	.13	.15
D-2	.96	.47	.32	.21	.39	.17	.27	.03	.34	.38
D-4	.37	1.29	.05	.21	.70	1.67	**	2.7	**	3.94
D-6	.13	.25	.50	0.0	.73	.40	.59	.70	.68	.79
D-8	.05	.17	.11	.01	.17	0.0	.10	.11	.13	.11
D-10	.05	.14	.08	0.0	.09	0.0	.03	.03	.07	.04
F-0	.23	.12	.09	0.0	.10	0.0	.08	**	.08	.09
F-2	.14	.14	.16	**	.10	0.0	**	.07	.11	.15
F-4	.09	1.4	1.22	1.20	1.49	1.22	1.9	2.2	2.80	2.89
F-6	.05	.22	.16	.21	.23	.10	.22	.22	.25	.25
F-8	.07	.15	.05	0.0	.12	0.0	.10	.09	.12	.13
F-10	.05	.16	.05	0.0	.11	0.0	.08	.05	.09	.10
F-12	.07	.14	.36	0.0	.09	0.0	.08	.03	.07	.05
F-14	7.1	8.36	10.6	.26	9.52	8.8	5.7	8.0	9.60	9.7
H-0	.17	.13	.06	0.0	.08	0.0	.10	.07	.09	.11
H-2	.08	.16	.18	0.0	.22	0.0	.23	.22	.22	.28
H-4	.08	.17	.09	0.0	.14	.07	.12	.11	.37	.19
H-6	.34	.12	.13	.12	.21	.36	.29	.23	.21	.25
H-8	.15	.13	.08	0.0	.60	.20	.66	.95	1.17	1.38
H-10	.07	.18	.18	0.0	.25	.16	.40	**	**	.30
H-12	.20	.14	.07	0.0	.09	0.0	.10	.06	.11	.11
H-14	.07	.26	.20	.16	.22	.16	.41	.41	.47	.40
J-0	.07	.13	.07	0.0	.09	0.0	.08	.05	.08	.07
J-2	.14	.11	.16	.04	.10	.16	.08	.06	.08	.13
J-4	.06	.16	.14	.03	.17	.07	.16	.15	.14	.18
J-6	.37	.12	.09	0.0	.10	0.0	.08	.09	.09	.10
J-8	.08	.14	.07	0.0	.09	0.0	.08	.09	.09	.11
J-10	.36	.14	.38	0.0	.08	.35	.04	.08	.09	.10
J-12	.15	.46	.39	.34	.43	.33	.49	.49	.47	.49
J-14	.05	.22	.22	.09	.18	.13	.21	.23	.22	.19

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE SULFONATE REPORT

* SULFONATE IN WATER, %

WELL NO.	10-78	11-78	12-78	1-79	2-79	3-79	4-79	5-79	6-79	7-79
XA-10	**	**	**	**	**	**	2.67	**	**	**
XA-12	.17	.28	.19	.24	.82	1.80	3.06	11.70	6.06	8.53
XA-14	0.00	.43	.30	.67	.65	.91	.90	.99	**	1.09
AA-11	.14	.63	.19	.39	.76	1.33	1.61	**	6.22	9.98
B-0	.07	.10	.15	.32	.06	.25	.51	.28	**	.55
EB-5	.10	5.7	**	3.0	.08	**	**	.10	.12	.09
B-4	1.96	**	1.40	4.30	5.30	.29	6.58	.15	11.40	12.60
B-6	.14	5.50	.18	.35	.80	.28	1.37	.35	1.62	.91
B-8	.96	.80	.61	1.10	1.20	2.03	1.93	2.64	2.63	2.96
B-10	**	**	**	**	**	**	2.39	.21	**	**
B-12	1.29	.80	.69	.62	**	2.46	2.64	4.64	5.56	8.44
B-14	.17	.16	.09	.30	.11	.28	.31	.16	.57	.82
B-16	.12	.10	.10	.32	.13	.22	.17	**	.20	.21
D-0	.22	.35	.13	.37	.23	.32	.43	.43	.46	.42
D-2	.46	.25	.24	.57	.61	1.33	1.03	1.42	1.36	1.54
D-4	.09	.51	2.03	4.00	5.10	5.48	6.12	7.50	10.00	11.50
D-6	**	.51	.62	.24	3.50	**	6.09	6.89	8.34	8.44
D-8	.16	.18	.10	.25	.13	.38	.72	.43	.41	.39
D-10	4.30	.10	**	**	.06	**	.18	.20	.16	.30
F-0	.09	**	.08	.39	.12	.19	.21	.18	.18	.24
F-2	.20	**	.11	.37	.57	.42	.31	.50	.74	.62
F-4	3.19	**	1.87	**	4.10	5.09	3.67	5.50	5.24	9.42
F-6	.33	.25	.16	.30	.39	.87	1.38	2.25	2.14	2.01
F-8	.13	.10	.06	.25	.06	**	.41	.89	1.62	2.64
F-10	.09	.13	.11	.32	.11	.36	.17	.25	.20	.22
F-12	.10	.13	.10	.25	.14	.25	.19	.25	.23	.19
F-14	9.80	18.30	6.00	9.60	**	3.81	6.60	7.78	8.90	9.52
H-0	.10	.13	.10	.32	.16	.57	.79	.78	.76	.87
H-2	.29	.16	.20	.21	.67	.28	1.22	1.78	1.95	2.34
H-4	.30	.16	.17	.38	.25	.33	.32	.88	1.34	2.35
H-6	.43	.23	.23	.70	**	.75	1.27	1.45	2.61	3.21
H-8	2.06	1.75	1.20	.78	1.20	.69	1.52	1.88	2.03	1.74
H-10	.36	.10	.18	.25	1.40	2.54	**	5.21	3.03	4.06
H-12	.13	.12	.10	.27	.17	.56	1.23	2.88	4.54	6.82
H-14	.52	.35	.31	.57	1.40	2.88	2.48	7.45	10.70	12.60
J-0	.09	.16	.10	.26	.16	.22	.29	.50	.55	.60
J-2	.16	.23	.11	.33	.27	1.74	2.21	3.24	3.27	3.70
J-4	.19	.20	.12	.35	.91	.35	.46	.61	.82	1.02
J-6	.32	.18	.10	.30	**	.20	.20	.21	.28	.21
J-8	.17	.20	.09	.36	.11	.69	.43	.58	.76	1.09
J-10	.13	.13	.11	.32	.26	.33	.31	.58	.78	.94
J-12	.52	.18	.24	.34	.29	.13	.30	.45	.35	.33
J-14	.22	.18	.15	.27	.11	.20	.19	.38	.51	.57

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE SULFONATE REPORT

WELL ID	8-79	9-79	10-79	11-79	12-79	1-80	2-80	3-80	4-80	5-80	6-80	7-80
XA-10	2.67C	2.67C	1.45	2.32	2.32C	.38	9.03	10.38	10.80	10.80	10.01	10.01
XA-12	9.39	9.39C	11.30	9.08	9.80	8.22	10.00	11.23	11.00	11.36	9.12	8.72
XA-14	.95	1.39	1.87	2.99	2.93	3.73	5.55	6.59	10.50	6.44	8.45	9.21
AA-11	9.98C	9.98C	12.50	9.27	10.20	11.80	11.10	12.78	16.30	10.13	9.45	8.69
B-0	.37	.50	.89	1.42	.72	.92	.92	.93	.38	.49	.50	.79
EB-5	.13	.20	2.91	4.65	.36	.51	.28	.20	.44	.44C	.44C	.44C
B-4	12.30	12.30C	15.80	15.20	9.98	19.90	19.90	27.30	31.00	31.00C	31.00C	20.90
B-6	.67	.94	1.06	1.69	.84	.84C	.34	.34C	.34C	.34C	.34C	6.45
B-8	2.96C	3.90	4.16	6.65	4.66	.69	5.26	8.31	8.85	6.23	6.56	8.05
B-10	.21C	.21C	2.04	2.04C	2.04C	2.04C	2.04C	2.04C	2.04C	.34	.99	.99C
B-12	8.44C	10.20	.48	.77	.90	8.57	11.20	13.76	16.90	12.59	9.41	11.81
B-14	.63	1.50	2.06	3.29	2.78	2.50	5.41	3.9	4.36	2.56	3.28	3.59
B-16	.06	.36	.43	.69	.67	.60	1.46	.59	.18	.31	.67	.79
D-0	.51	.52	.57	.91	.81	.61	.64	.95	.33	.33C	.30	.39
D-2	1.15	2.01	2.06	3.29	3.71	2.10	2.73	4.06	4.38	3.48	4.19	4.74
D-4	11.50C	11.50C	14.50	14.60	10.40	11.30	15.00	28.81	16.90	15.16	17.91	16.37
D-6	8.36	10.20	10.50	10.90	8.28	7.40	8.27	9.23	10.90	10.39	7.73	7.53
D-8	.39C	.52	.52	.52C	.86	.60	.87	.80	.24	.61	.61	.61C
D-10	.46	.46C	2.06	3.09	.95	.54	.84	.99	1.04	.77	.40	1.11
F-0	.22	.44	.65	.97	.79	.62	.61	.79	.66	.61	.77	.86
F-2	.79	1.01	1.34	2.01	1.34	.76	.76C	1.10	1.10C	1.48	1.61	1.88
F-4	9.42C	4.69	4.84	7.27	5.79	7.68	7.68C	.78	.78C	33.60	25.16	29.04
F-6	2.29	2.91	2.72	4.09	3.78	4.16	5.74	6.79	4.61	12.53	6.13	6.67
F-8	3.70	4.42	4.06	6.11	3.66	2.58	2.58C	2.83	3.00	1.99	2.17	2.21
F-10	.30	.57	.73	1.10	1.04	.69	.36	1.35	1.66	1.25	1.22	1.69
F-12	.11	.11C	.33	.50	1.00	.67	.23	1.27	.23	.23C	1.21	.14
F-14	8.41	9.66	11.40	12.00	7.76	5.98	6.41	7.39	7.70	4.69	5.03	4.97
H-0	.89	1.49	2.15	3.25	2.48	2.07	2.50	3.05	3.36	2.19	2.28	3.26
H-2	2.59	3.47	3.50	5.29	3.47	2.98	1.03	4.24	4.49	3.35	3.59	3.50
H-4	3.38	5.26	5.60	8.47	5.96	5.22	5.87	6.51	4.33	5.08	5.25	6.04
H-6	3.56	5.71	3.89	5.89	4.28	3.54	5.07	4.91	4.91C	5.03	4.90	5.98
H-8	1.73	2.39	2.46	3.73	2.69	2.07	3.32	3.37	3.11	2.33	2.70	3.19
H-10	4.61	4.19	5.99	9.09	6.07	6.13	6.37	7.06	7.97	4.87	4.62	4.18
H-12	8.95	7.27	7.52	11.4	6.38	6.30	8.71	10.13	11.10	8.28	8.71	9.38
H-14	12.20	14.30	14.80	12.50	14.20	14.10	18.10	18.51	22.30	16.54	17.02	13.55
J-0	.56	1.04	1.10	1.67	1.00	.85	1.15	1.31	.81	.85	1.40	1.44
J-2	2.40	2.94	3.32	5.05	.75	3.57	.84	1.00	6.22	6.17	1.27	8.23
J-4	.91	1.50	1.82	2.77	1.97	2.63	2.73	3.41	4.05	6.09	2.79	3.60
J-6	.71	.37	.61	.93	4.17	2.18	1.26	1.88	2.18	2.16	2.88	3.12
J-8	1.54	2.21	2.43	3.70	2.71	2.72	3.64	4.30	4.57	3.19	3.21	4.20
J-10	1.36	2.04	2.35	3.58	2.88	2.55	2.55C	2.02	2.74	2.05	2.80	3.03

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE SULFONATE REPORT

WELL ID	8-80	9-80	10-80	11-80	12-80	1-81	2-81	3-81	4-81	5-81	6-81	7-81
XA-10	10.01	10.01C	10.01C	10.01C	10.01C	10.01C	10.01C	10.01C	10.01C	10.01C	10.01C	5.03
XA-12	9.39	9.39C	6.98	4.99	5.37	5.10	4.74	5.37	6.33	5.75	5.40	5.75
XA-14	8.84	11.04	11.80	13.00	12.50	11.30	13.10	14.00	14.40	12.60	12.10	11.80
AA-11	7.09	7.07	6.68	5.76	4.74	3.91	3.71	3.24	2.79	2.02	1.88	1.91
B-0	.69	.74	2.50	.77	.85	.69	1.18	1.12	.74	.62	.62	.77
EB-5	.00	0.00	0.00C	.00	.14	.44	.41	.49	.18	.29	.33	.58
B-4	24.40	19.55	9.37	13.20	12.30	12.40	11.50	6.93	13.00	10.10	8.97	8.97C
B-6	.36	.36C	.36C	.59	.61	.35	.35C	.69	.61	.20	10.10	.28
B-8	6.90	6.76	6.76C	6.50	8.76	7.22	11.10	7.40	7.06	10.60	3.01	3.01C
B-10	.99C	8.22	8.22C	8.22C	8.22C	8.22C	8.22C	8.22C	.15	.15C	2.96	3.82
B-12	11.44	8.26	11.07	9.57	8.33	8.45	11.50	10.20	11.30	10.20	9.79	9.33
B-14	3.63	3.93	4.50	7.25	6.62	6.14	6.34	6.22	5.32	4.60	4.54	5.02
B-16	.69	.87	.87C	1.46	1.13	1.13	1.76	1.75	1.71	2.19	2.60	2.81
D-0	.41	.54	1.09	.86	.79	.87	1.56	1.61	1.82	1.94	2.53	3.04
D-2	4.78	5.28	5.65	6.33	6.39	8.57	9.32	7.34	14.10	12.00	9.71	8.16
D-4	12.50	13.32	9.15	11.60	11.00	10.30	14.40	4.33	3.90	9.72	9.24	8.26
D-6	6.36	5.94	4.94	6.06	5.20	5.19	5.61	2.86	3.54	3.40	3.35	3.29
D-8	.80	1.10	1.44	1.44C	2.09	2.50	3.61	.93	2.07	5.02	4.61	4.96
D-10	.80	.96	1.28	1.53	1.48	1.88	2.19	1.28	2.13	3.14	2.81	3.44
F-0	.78	1.05	1.29	1.63	1.35	1.69	2.41	2.40	2.80	3.35	3.34	3.91
F-2	.00	4.02	4.02C	4.94	5.30	5.50	.26	3.11	2.36	7.88	6.36	6.34
F-4	.15	24.90	28.30	11.90	10.40	9.68	.12	3.74	4.67	1.73	1.31	1.50
F-6	.20	4.82	6.81	6.39	6.70	6.97	6.34	5.50	5.62	5.58	5.96	5.91
F-8	.18	2.76	2.77	2.85	2.49	2.86	.38	.63	1.25	2.47	2.53	2.76
F-10	1.95	2.07	2.07C	2.07C	2.54	2.85	2.73	1.80	1.45	2.22	2.28	2.70
F-12	.65	.30		.65	.57	.84	1.27	1.30	1.46	1.65	2.18	2.87
F-14	6.14	6.07	4.66	4.76	4.10	4.04	4.90	4.42	4.29	4.32	5.09	5.40
H-0	3.92	3.99	4.69	4.24	3.84	4.23	4.98	4.77	2.25	6.52	5.85	5.98
H-2	.00	4.05	3.96	4.91	4.59	4.57	.38	2.83	2.31	2.76	3.17	3.45
H-4	.00	5.53	5.78	6.42	5.22	9.20	.28	3.48	4.17	4.25	4.45	4.64
H-6	5.87	6.04	5.85	5.43	6.18	6.12	.13	5.33	5.90	4.60	5.50	5.85
H-8	3.25	3.03	3.89	3.60	3.55	3.83	.12	3.85	3.45	3.84	4.84	5.55
H-10	.00	8.14	4.90	7.91	3.33	3.30	.19	3.25	2.97	2.55	2.92	3.20
H-12	.18	3.67	8.80	7.85	6.53	7.72	.38	5.72	7.74	7.00	7.74	7.99
H-14	.21	10.30	9.33	7.51	6.84	6.58	.11	5.49	5.83	3.64	4.02	3.95
J-0	.93	1.33	2.11	2.06	2.03	1.95	2.07	2.49	.44	3.20	4.29	4.75
J-2	.00	1.14	8.59	7.32	7.65	6.65	.17	6.47	.96	4.11	5.04	4.68
J-4	2.96	3.24	3.85	5.19	4.43	4.73	4.73C	4.19	4.35	4.62	5.63	6.67
J-6	.00	2.27	2.70	3.22	2.63	3.07	3.61	2.62	2.71	3.25	3.94	4.66
J-8	3.74	4.17	4.86	5.52	4.97	4.98	.25	5.03	5.73	5.00	5.93	6.05
J-10	.00	2.70	3.37	3.16	2.96	3.67	3.67C	4.01	4.09	3.82	4.58	4.43

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE SULFONATE REPORT

	8-81
XA-10	
XA-12	634
XA-14	996
AA-11	40
B-0	
EB-5	
B-4	2163
B-6	
B-8	
B-10	
B-12	394
B-14	
B-16	
D-0	2
D-2	5
D-4	332
D-6	166
D-8	
D-10	
F-0	
F-2	85
F-4	
F-6	69
F-8	
F-10	
F-12	
F-14	
H-0	
H-2	
H-4	
H-6	10
H-8	11
H-10	
H-12	4
H-14	3
J-0	
J-2	
J-4	3
J-6	605
J-8	360
J-10	

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE SULFONATE REPORT

* SULFONATE IN WATER, %

WELL NO.	2-77	3-77	4-77	5-77	6-77	7-77	8-77	9-77	10-77	11-77
L-0	.06	.06	.07	**	.09	.01	.07	**	.00	.07
L-2	.04	**	.07	.02	.09	.02	.07	.03	.00	.08
L-4	.04	.17	.07	.05	.09	.04	.08	.07	.01	.08
L-6	.04	.23	.07	**	.14	.06	.07	.07	.02	.08
L-8	.15	.46	.17	.10	.14	.08	.13	.13	.05	.17
L-10	.06	.11	.07	.02	.11	.09	.10	.07	.01	.13
L-12	.08	.11	.10	.10	.16	.07	.14	.10	.05	.19
L-14	.09	.11	.13	.10	.20	.07	.12	.09	.02	.13
N-0	.03	.06	.03	**	.07	.02	.06	.03	.00	.08
N-2	.03	.11	.03	.02	.09	0.0	.08	.09	.02	.11
N-4	.03	.11	.10	.07	.11	**	.05	.04	.01	.13
N-6	.01	**	.03	**	**	.03	.05	.04	.00	.07
N-8	.06	.11	.07	.07	.13	.04	.08	.10	.00	.13
N-10	.10	.11	.10	.07	.13	.06	.12	.08	.02	.08
N-12	.06	.17	.03	**	.09	.03	.07	.07	.03	.12
N-14	.08	.11	.07	.02	.16	.07	.09	.08	.02	.11
P-0	.04	.06	.03	.10	.05	0.0	.05	.04	.00	.04
P-2	.02	**	.03	**	.07	.02	.05	.03	.00	.04
P-4	.02	.11	.03	**	.13	.02	.06	.04	.00	.07
P-6	.03	.11	.03	**	.09	.05	.05	.05	.00	.05
P-8	.08	.11	.03	**	.20	.05	.08	.07	.00	.08
P-10	.06	.11	.07	.07	.11	.06	**	.06	.01	.08
P-12	.06	.06	.07	.05	.09	.04	.08	.08	.00	.07
P-14	.06	.11	.07	**	.09	.04	.06	.05	.01	.07
R-0	.12	.17	.03	.05	.13	.05	.18	.13	.08	.19
R-2	.04	.11	.03	.20	.09	.09	.04	.06	.00	.08
R-4	.04	.11	.03	.07	.07	0.0	.05	.04	.00	.04
R-6	.04	.11	.13	**	**	.04	.05	.05	.02	.08
R-8	.10	.11	.07	**	.11	.04	.08	.10	.02	.09
R-10	.10	.17	.10	.07	.16	.10	.12	.11	.06	.13
R-12	**	.80	**	**	.89	.56	.65	.54	.40	.59
R-14	.10	.11	.07	.10	.14	.06	.16	.13	.07	.08
T-0	.06	.06	.03	.02	.07	0.0	.05	.07	.00	.07
T-2	.04	**	.03	**	.05	.04	.05	.06	.00	.07
T-4	.04	.06	0.0	**	.05	0.0	.08	**	.03	.11
T-6	.04	.11	0.0	**	.07	.10	.06	.06	.01	.08
T-8	.05	.11	.03	.05	.02	.16	.05	.05	.01	.17
T-10	.06	**	.07	.05	.11	.07	.12	.13	.08	.12
T-12	.06	**	.07	.05	.09	.10	.10	.10	.10	.08
T-14	.06	.11	.07	.02	.09	.07	.05	.05	.06	.07
V-0	.07	.11	.10	.07	.07	.06	.08	.10	.05	.08
V-2	.04	.06	.07	.02	.05	.03	.03	.04	.01	.08
V-4	.02	.06	.03	**	.05	.10	.07	.05	.02	.05

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE SULFONATE REPORT

* SULFONATE IN WATER, %

WELL NO.	12-77	1-78	2-78	3-78	4-78	5-78	6-78	7-78	8-78	9-78
L-0	.07	.14	.09	0.0	.10	0.0	.11	.06	.12	.09
L-2	.08	.13	.05	0.0	.08	0.0	.08	.07	.09	.09
L-4	.08	.15	.07	0.0	.11	0.0	.12	.07	.09	.10
L-6	.10	.15	.05	0.0	.11	0.0	.23	.08	.12	.11
L-8	.07	.19	.13	.03	.17	.05	.18	.12	.14	.16
L-10	.12	.17	.13	0.0	.14	.04	.12	.11	.14	.14
L-12	.05	.22	.28	.24	.49	.31	.49	.54	.84	1.00
L-14	.04	.13	.11	0.0	.12	.04	.05	.11	.13	.14
N-0	.11	.13	.07	0.0	.08	0.0	.07	.06	.08	.09
N-2	.07	.23	.21	.12	.06	.28	.44	.46	.54	.64
N-4	.04	.16	.08	0.0	.09	0.0	.10	.11	.14	.19
N-6	.07	.13	.03	0.0	.04	0.0	.09	.07	.08	.10
N-8	.06	.16	.08	0.0	.12	.07	.12	.11	.12	.18
N-10	.07	.13	.08	0.0	.08	.05	.14	.11	.12	.14
N-12	.07	.15	.08	0.0	.04	.06	.12	.11	.12	.16
N-14	.04	.15	.09	0.0	.09	.06	.14	.11	.12	.14
P-0	.05	.11	.05	0.0	.07	0.0	.05	.07	.11	.10
P-2	.06	.09	.04	.18	.08	0.0	.05	.08	.11	.08
P-4	.04	.13	.05	0.0	.09	0.0	.05	.06	.09	.09
P-6	.06	.10	.07	0.0	.08	0.0	.08	.07	.09	.10
P-8	.06	.13	.08	.01	.10	.06	.08	.08	.14	.13
P-10	.04	.13	.09	0.0	.08	.07	.08	.09	.12	.04
P-12	.04	.12	.07	0.0	.08	0.0	.10	.08	.11	.13
P-14	.04	.12	.05	.07	.04	0.0	.05	.07	.11	.10
R-0	.05	.22	.17	.07	.04	.13	.18	.16	.18	.20
R-2	.05	.11	.05	0.0	.04	.06	.05	.06	.11	**
R-4	.06	.12	.04	0.0	**	0.0	.05	.06	.21	.09
R-6	.07	.13	.11	0.0	.04	.10	.15	.15	.25	.23
R-8	.10	.14	.09	0.0	.04	.05	.12	.11	.13	.15
R-10	.11	.57	.11	.04	.07	.07	.14	**	.14	.15
R-12	.11	.15	.55	.25	.16	.48	.60	.62	.66	.69
R-14	.03	.22	.17	.07	.09	.12	.22	.01	.25	.29
T-0	.11	.12	.09	0.0	.01	.06	0.0	.05	.09	.11
T-2	.11	.11	.04	0.0	**	0.0	.05	.06	.05	.06
T-4	.05	.20	.37	0.0	.57	.56	.60	.64	.58	.64
T-6	.05	.11	.05	0.0	**	0.0	.10	.08	.08	.08
T-8	.11	.11	.05	0.0	**	0.0	.05	.08	.09	.10
T-10	.16	.19	.22	.07	.10	.12	.19	.19	.01	.21
T-12	.07	.27	.25	.13	.17	.16	.23	.24	.30	.31
T-14	.04	.14	.08	.01	**	.05	.08	.08	.11	.11
V-0	.04	.16	.09	.07	**	.07	.11	.09	.11	.15
V-2	.04	.13	.08	0.0	**	.06	.08	.09	.12	.14
V-4	.58	.30	.05	**	**	0.0	.04	.04	.08	.06

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE SULFONATE REPORT

* SULFONATE IN WATER, %

WELL NO.	10-78	11-78	12-78	1-79	2-79	3-79	4-79	5-79	6-79	7-79
L-0	.13	.15	.12	.31	.60	.81	1.11	1.94	1.77	2.06
L-2	.12	.15	.09	.32	.19	.47	.60	1.36	1.51	2.51
L-4	.16	.11	.11	.33	.15	.31	.17	.3	.21	.20
L-6	.16	.18	.14	.29	.25	.33	.33	.58	.47	.84
L-8	.17	.22	.14	.37	.18	.20	.16	.28	.25	.24
L-10	.23	.20	.12	.30	.14	.47	.46	7.4	.72	.67
L-12	1.39	1.24	1.13	2.20	**	**	6.23	1.21	8.63	11.10
L-14	.16	.14	.09	.24	.12	.53	.69	.23	1.09	.01
N-0	.10	.13	.06	.23	**	**	.18	6.78	.15	.15
N-2	.88	1.14	.60	1.30	3.00	6.38	6.33	1.96	6.83	8.27
N-4	.19	.20	.12	.39	.31	.63	.89	.78	2.37	3.57
N-6	.13	.20	**	.25	.20	.45	.58	1.75	2.30	1.38
N-8	.20	.22	.09	.35	.21	.54	.71	1.00	2.28	2.74
N-10	.16	.18	.09	.33	.14	.33	.43	.46	1.17	1.58
N-12	.16	.20	.09	.33	.12	.26	.35	**	.71	.71
N-14	.13	.09	.09	.31	.08	.19	.18	1.83	.43	.58
P-0	.12	.10	.08	.23	.17	.36	.48	.20	.13	2.08
P-2	.12	.11	.09	.29	.05	.19	.16	.41	.10	.15
P-4	.13	.11	.07	.22	.08	.22	.22	.18	**	.51
P-6	.11	.13	.08	.23	.08	.17	.14	.33	.14	.19
P-8	.13	.11	.07	.24	.08	**	.16	.28	.27	.33
P-10	.16	.11	.10	.23	.13	.22	.22	**	.24	.27
P-12	.13	.18	.10	.23	.63	2.03	2.61	2.98	2.49	**
P-14	.12	.10	.07	.32	.06	.20	.30	.40	.36	.54
R-0	.22	.20	.11	.35	.13	.26	.14	.24	.37	.63
R-2	.16	.08	**	.30	.06	.20	.20	.33	.47	.57
R-4	.15	.15	.08	.32	.08	.19	.22	**	.29	.34
R-6	.22	1.22	.31	1.1	.98	1.44	1.95	3.08	.28	4.78
R-8	.18	.23	.12	.22	.26	.48	.61	.98	1.08	1.52
R-10	.18	.15	.10	.33	.17	.25	.43	.95	1.39	2.51
R-12	1.07	1.34	.53	2.90	.99	1.69	2.16	2.48	4.26	5.89
R-14	.44	.42	.18	.52	.76	6.16	1.55	2.53	2.90	**
T-0	.13	.10	.08	.31	.08	**	.22	.44	.44	.53
T-2	.13	.13	.08	.30	.06	**	.12	.21	.28	.29
T-4	.83	**	.39	.82	.99	1.69	1.41	1.41	1.42	1.74
T-6	.16	.18	.25	.36	.29	.81	.70	1.60	1.49	**
T-8	.12	.13	.14	.31	.07	.26	.30	.68	.44	1.98
T-10	.26	.25	.33	.33	.16	.32	.25	.43	.39	.46
T-12	.45	.43	.55	.51	1.20	2.39	2.64	3.55	3.45	3.66
T-14	.13	.13	.18	.31	.09	.44	.53	1.18	1.03	.98
V-0	.18	.13	.19	.23	.12	.25	.27	.41	.35	.69
V-2	.21	.22	.31	.37	.16	.29	.34	.60	.54	.69
V-4	.11	.13	.18	.30	.15	.39	.47	.70	.54	.55

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE SULFONATE REPORT

WELL ID	8-79	9-79	10-79	11-79	12-79	1-80	2-80	3-80	4-80	5-80	6-80	7-80
J-12	.30	.55	.62	.95	.74	.64	.54	.83	.69	.69C	.71	.66
J-14	1.03	1.82	2.54	3.88	2.71	.60	2.86	3.11	4.37	2.83	2.27	2.75
L-0	2.28	2.52	2.59	3.96	2.26	2.45	3.60	4.55	5.91	4.25	5.63	6.17
L-2	3.79	5.81	7.61	8.13	8.23	13.20	11.10	13.51	15.50	12.98	8.28	6.11
L-4	.19	.83	.61	.93	1.06	1.24	1.33	1.64	1.45	1.17	1.30	1.44
L-6	1.62	3.10	3.20	4.90	.90	.90C	9.74	14.09	13.09	9.12	7.59	7.75
L-8	.24C	.77	.77	1.18	1.23	1.02	1.71	2.21	2.00	1.67	1.95	2.04
L-10	.77	1.01	.82	1.26	1.39	1.01	2.05	3.02	4.09	2.71	3.14	2.97
L-12	10.70	12.70	13.60	15.90	16.30	10.00	11.80	12.45	15.70	19.63	11.40	11.34
L-14	2.04	2.90	3.45	5.29	3.51	2.93	3.90	4.76	4.42	3.52	4.20	3.79
N-0	.17	.37	.38	.58	.91	.44	.56	.32	2.38	.69	.25	.47
N-2	8.53	9.45	8.52	7.96	6.91	8.30	7.73	6.44	10.00	7.49	7.35	6.07
N-4	4.91	7.86	7.45	8.52	8.93	6.96	8.14	9.44	12.30	8.14	7.59	8.42
N-6	2.68	5.60	5.68	5.50	7.60	5.89	6.69	7.28	10.60	6.81	9.15	9.42
N-8	3.38	7.20	6.99	8.16	10.40	7.94	10.20	12.32	14.60	13.65	13.18	11.42
N-10	3.59	4.35	3.89	3.95	5.30	4.34	5.93	6.69	8.25	5.14	6.41	6.09
N-12	.69	1.09	1.33	1.56	2.48	2.12	2.41	2.41C	4.31	4.13	4.32	4.11
N-14	1.04	.90	1.23	1.37	2.20	2.65	3.32	5.77	6.16	4.66	4.22	5.38
P-0	2.02	2.24	1.87	1.90	1.67	1.09	2.30	2.08	2.40	1.48	2.08	1.74
P-2	5.39	.35	.38	.54	.49	.58	2.04	1.83	.67	.63	.78	1.14
P-4	.76	1.22	1.50	2.11	1.84	1.54	2.09	.86	2.58	1.78	2.29	2.71
P-6	.13	.37	.67	.66	.79	.47	.80	.81	.89	.59	.93	.89
P-8	.44	.94	.67	.69	1.47	.71	1.30	1.28	2.66	1.26	1.16	1.14
P-10	.37	.60	.60C	.73	1.13	1.13C	3.04	5.06	6.60	7.55	4.90	2.08
P-12	2.49C	3.37	3.21	3.45	3.45C	3.02	3.91	3.88	4.88	3.03	3.66	3.17
P-14	.86	1.58	2.41	2.72	3.74	3.62	3.60	5.80	6.61	4.27	4.61	4.33
R-0	1.15	1.05	.96	1.43	1.92	2.07	3.63	7.98	8.03	2.83	3.98	4.11
R-2	.95	1.97	2.27	2.72	8.66	3.41	4.20	4.86	5.89	4.26	4.12	4.48
R-4	.39	.91	.89	.98	.90	.84	1.27	1.26	1.11	.93	4.27	2.00
R-6	5.36	5.86	5.29	5.96	7.89	5.19	6.00	6.92	7.84	3.87	3.95	3.95C
R-8	1.87	3.25	3.25C	3.52	5.54	4.49	6.06	7.49	8.91	6.69	6.28	7.95
R-10	3.37	5.27	5.11	6.20	6.75	4.46	7.68	8.58	11.00	10.54	7.45	7.46
R-12	6.24	11.9	7.91	8.64	7.90	4.53	4.73	8.18	8.21	5.60	5.62	5.62C
R-14	5.23	8.03	7.85	8.98	8.98C	3.73	8.25	9.30	10.30	8.18	12.73	8.40
T-0	.71	1.18	1.21	1.12	1.69	1.27	2.65	5.42	4.55	3.87	3.60	3.52
T-2	.41	.50	.82	1.04	1.47	1.28	2.28	2.19	1.91	1.03	1.26	1.39
T-4	1.58	2.85	3.01	3.99	3.87	2.41	2.80	3.15	3.47	3.55	3.06	2.98
T-6	2.26	4.01	3.56	4.13	5.12	3.64	4.78	5.58	6.39	4.50	5.24	5.06
T-8	1.97	3.91	4.67	4.76	6.75	4.62	5.63	7.05	6.51	3.56	4.46	3.96
T-10	.46C	.91	1.09	1.52	2.15	2.34	2.84	4.26	5.67	3.56	4.59	5.36
T-12	4.11	3.22	5.72	5.83	1.91	5.24	6.17	8.00	8.90	5.37	6.74	6.61

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE SULFONATE REPORT

WELL ID	8-80	9-80	10-80	11-80	12-80	1-81	2-81	3-81	4-81	5-81	6-81	7-81
J-12	.00	.68	.76	.77	.75	1.00	.12	1.51	1.29	1.47	1.76	2.01
J-14	2.49	2.26	2.63	2.28	2.44	2.48	2.48C	3.23	3.50	3.38	4.60	4.87
L-0	6.40	6.84	6.84C	2.00	1.59	1.45	1.59	1.87	1.70	1.07	1.17	1.38
L-2	5.86	4.92	4.82	4.82C	5.03	4.97	.13	5.70	3.07	4.17	4.64	5.70
L-4	1.91	2.06	2.06C	3.95	4.86	5.29	5.26	5.42	5.91	5.30	5.72	6.30
L-6	7.85	7.35	7.12	1.82	3.99	3.39	3.39C	2.87	2.36	4.91	2.60	2.91
L-8	2.50	2.68	3.59	7.79	6.64	6.01	6.54	5.54	6.11	2.49	5.03	5.29
L-10	3.23	3.14	3.87	3.87C	4.59	4.66	5.15	5.31	5.88	4.87	5.86	6.32
L-12	11.50	10.10	10.40	8.35	8.24	7.96	7.49	7.71	11.00	9.19	7.44	8.87
L-14	4.04	4.10	4.79	4.63	4.48	4.28	4.70	4.92	4.90	4.35	5.46	5.62
N-0	.17	.55	1.54	.55	.34	.57	.80	.82	.40	.36	.15	.42
N-2	6.45	5.82	5.63	4.88	4.54	4.43	4.58	4.18	4.03	3.28	3.62	3.82
N-4	7.66	6.63	6.64	6.94	6.68	5.95	6.70	6.99	7.13	5.93	5.89	6.43
N-6	8.07	7.65	8.67	7.30	7.30	6.52	7.78	7.79	8.31	7.34	7.74	7.78
N-8	12.00	10.10	10.10C	9.06	9.48	7.62	10.70	9.71	8.95	8.81	8.42	8.85
N-10	6.92	7.22	7.04	6.77	8.49	6.28	7.91	8.22	9.01	8.26	9.28	9.42
N-12	4.56	4.55	4.55C	5.43	5.50	5.50	6.47	5.38	6.90	6.30	5.53	7.97
N-14	5.48	5.18	5.75	5.47	5.34	5.36	6.59	6.03	6.00	5.71	5.93	6.24
P-0	2.17	2.10	3.01	3.12	3.43	3.95	5.06	2.88	5.77	4.37	5.89	6.30
P-2	1.42	1.84	2.70	2.68	2.63	2.30	3.11	3.96	2.64	2.65	3.07	4.00
P-4	2.71	2.48	3.21	3.40	3.14	3.38	4.41	2.47	4.30	3.81	4.87	5.48
P-6	.94	.96	1.17	1.23	1.26	1.42	2.13	2.97	2.35	2.68	3.51	3.86
P-8	1.48	1.58	2.21	2.27	2.30	2.36	3.03	4.61	2.78	2.98	3.70	4.43
P-10	4.57	4.03	4.10	4.10	3.86	3.71	4.66	1.85	4.32	4.42	4.88	5.81
P-12	3.25	3.25	4.52	10.81	1.02	4.10	8.05	5.68	5.21	4.05	4.36	4.79
P-14	4.50	4.64	5.14	5.83	5.43	5.93	5.85	8.00	8.41	8.63	6.60	8.85
R-0	3.68	1.79	2.35	1.80	1.58	1.47	1.87	2.45	1.39	1.16	1.68	1.76
R-2	4.75	4.53	4.53C	2.91	2.17	1.85	2.24	2.12	2.83	2.57	3.09	3.50
R-4	2.19	2.80	2.63	1.95	1.75	1.64	1.83	3.54	1.62	1.58	1.92	2.07
R-6	3.25	3.70	3.70C	4.08	2.79	2.84	3.38	5.04	3.84	4.09	4.87	5.29
R-8	7.47	8.41	5.25	8.46	8.61	7.63	9.70	9.08	9.20	7.52	6.16	7.49
R-10	6.05	5.88	5.62	5.67	5.32	4.84	5.90	3.58	4.74	4.61	4.92	5.43
R-12	4.19	4.23	3.85	3.92	3.27	3.11	3.11	4.32	3.07	3.13	3.42	3.63
R-14	7.08	7.18	7.04	6.45	6.73	5.50	5.87	6.20	6.99	6.29	4.87	6.81
T-0	3.12	4.23	7.60	7.47	6.65	5.93	6.51	5.69	7.33	8.53	6.16	8.71
T-2	1.06	1.27	1.27C	1.27C	2.82	2.69	3.97	2.70	3.74	4.09	4.52	5.78
T-4	2.98	2.72	3.21	3.38	2.72	2.24	5.76	5.53	2.11	2.39	2.39	3.88
T-6	4.12	4.12C	5.49	5.49C	4.93	4.93C	5.38	5.68	6.05	5.83	5.79	6.63
T-8	3.96	5.26	4.44	4.37	4.52	3.93	4.92	3.92	4.69	4.79	5.23	5.60
T-10	4.71	5.52	6.51	7.54	6.42	6.30	7.43	7.41	8.44	8.08	6.59	9.58
T-12	5.97	6.49	3.97	8.44	8.02	7.20	9.23	9.15	10.90	10.30	8.42	11.05

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE SULFONATE REPORT

	8-81
J-12	78
J-14	36
L-0	
L-2	
L-4	
L-6	209
L-8	
L-10	3
L-12	527
L-14	66
N-0	2
N-2	
N-4	30
N-6	232
N-8	15
N-10	
N-12	423
N-14	216
P-0	
P-2	3
P-4	
P-6	
P-8	
P-10	
P-12	215
P-14	
R-0	3
R-2	
R-4	
R-6	19
R-8	
R-10	
R-12	
R-14	
T-0	165
T-2	
T-4	
T-6	183
T-8	100
T-10	188
T-12	112

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE SULFONATE REPORT

* SULFONATE IN WATER, %

WELL NO.	2-77	3-77	4-77	5-77	6-77	7-77	8-77	9-77	10-77	11-77
V-6	.04	**	.03	**	.07	.09	**	.04	.01	.13
V-8	.04	.06	.07	.02	.07	.03	.04	.05	.02	.07
V-10	.06	.06	.07	.05	.13	.05	.15	.13	.14	.20
V-12	.06	.06	.07	.02	.09	.16	.08	.08	.08	.12
V-14	.06	.06	0.0	.02	.09	.03	.03	.06	.02	.07

* CONCENTRATION IN WATER DIVIDED BY CONCENTRATION OF STANDARD 1 % SOLUTION OF M-1 SLUG.
** DATA NOT AVAILABLE
# ANALYSIS INDICATES LEVEL DUE TO OTHER THAN CRUDE OIL SULFONATE.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE SULFONATE REPORT

* SULFONATE IN WATER, %

WELL NO.	12-77	1-78	2-78	3-78	4-78	5-78	6-78	7-78	8-78	9-78
V-6	0.0	.50	.99	.74	.75	.83	1.08	1.2	1.37	1.39
V-8	.05	.13	.05	.03	**	0.0	.08	.08	.08	.01
V-10	.20	.21	.20	.13	.10	.12	.16	.19	.18	.25
V-12	.10	.17	.16	.01	.07	.08	.16	.16	.18	.19
V-14	.05	.14	.09	.07	**	0.0	.08	.08	.11	.13

* CONCENTRATION IN WATER DIVIDED BY CONCENTRATION OF STANDARD 1 % SOLUTION OF M-1 SLUG.
** DATA NOT AVAILABLE
# ANALYSIS INDICATES LEVEL DUE TO OTHER THAN CRUDE OIL SULFONATE.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE SULFONATE REPORT

* SULFONATE IN WATER, %

WELL NO.	10-78	11-78	12-78	1-79	2-79	3-79	4-79	5-79	6-79	7-79
V-6	1.90	1.84	2.90	.23	2.20	3.65	4.38	6.90	7.15	7.79
V-8	.10	.10	.19	.33	.06	.25	.30	.58	.59	.62
V-10	.33	**	.40	.38	.14	.32	.30	.55	.58	.98
V-12	.22	.23	**	.40	.25	.42	.51	.95	.93	1.22
V-14	.16	.23	.29	.98	.17	.42	.25	.31	.96	.35

* CONCENTRATION IN WATER DIVIDED BY CONCENTRATION OF STANDARD 1 % SOLUTION OF M-1 SLUG.
** DATA NOT AVAILABLE
# ANALYSIS INDICATES LEVEL DUE TO OTHER THAN CRUDE OIL SULFONATE.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE SULFONATE REPORT

WELL ID	8-79	9-79	10-79	11-79	12-79	1-80	2-80	3-80	4-80	5-80	6-80	7-80
I-14	.90	1.11	1.11	1.11C	1.84	1.17	4.13	2.29	2.32	2.03	2.15	2.05
V-0	.86	1.50	1.87	2.46	4.00	3.25	4.10	4.45	4.80	2.96	3.09	2.09
V-2	.61	.79	.84	.84	1.07	.98	5.06	6.63	7.27	6.66	6.39	6.72
V-4	.74	1.21	.96	1.73	1.13	1.27	1.93	2.19	2.59	1.91	2.31	3.09
V-6	7.79C	9.25	7.74	11.60	7.43	5.78	7.87	7.53	9.72	5.19	6.79	5.18
V-8	.56	1.61	1.12	1.86	1.21	1.04	2.20	1.86	2.18	.86	1.86	1.18
V-10	.98C	2.46	3.24	6.02	4.51	3.66	4.97	5.12	5.51	3.51	4.22	3.93
V-12	1.47	2.34	3.18	6.79	6.06	5.13	7.21	7.86	9.98	6.29	9.21	9.17
V-14	.35C	.68	.8	1.52	1.66	1.05	.89	1.83	2.09	1.38	2.26	2.17

* CONCENTRATION IN WATER DIVIDED BY CONCENTRATION OF STANDARD 1 % SOLUTION OF M-1 SLUG.
C DATA CARRIED OVER FROM LAST MONTH.
ANALYSIS INDICATES LEVEL DUE TO OTHER THAN CRUDE OIL SULFONATE.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE SULFONATE REPORT

WELL ID	8-80	9-80	10-80	11-80	12-80	1-81	2-81	3-81	4-81	5-81	6-81	7-81
T-14	1.46	2.14	2.14C	1.41	2.35	2.56	3.64	2.62	3.81	3.69	4.22	5.01
V-0	1.76	2.92	2.27	2.27C	2.04	1.65	2.25	2.88	2.65	2.81	3.98	4.77
V-2	5.11	5.10	5.41	5.41C	4.67	4.75	5.35	5.96	4.40	4.72	5.03	6.12
V-4	2.63	2.78	2.97	2.41	2.84	2.42	2.94	4.40	2.44	2.14	2.45	3.97
V-6	4.92	5.34	6.00	4.64	6.05	4.07	4.65	4.72	4.75	4.23	4.42	5.01
V-8	1.06	1.96	1.98	6.09	5.05	4.32	4.32	4.32	4.68	4.85	5.09	5.49
V-10	3.26	3.75	3.93	4.16	3.83	3.90	3.90	3.99	4.01	4.06	4.91	4.90
V-12	7.61	8.67	9.02	8.70	9.51	7.57	7.57	10.50	11.00	9.97	8.11	10.90
V-14	1.77	2.59	3.14	2.83	3.05	3.00	3.00	1.36	3.63	3.58	4.34	4.71

* CONCENTRATION IN WATER DIVIDED BY CONCENTRATION OF STANDARD 1 % SOLUTION OF M-1 SLUG.
C DATA CARRIED OVER FROM LAST MONTH.
ANALYSIS INDICATES LEVEL DUE TO OTHER THAN CRUDE OIL SULFONATE.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
8-81 2.5-ACRE SULFONATE REPORT

T-14	5
V-0	
V-2	3
V-4	
V-6	
V-8	
V-10	
V-12	7
V-14	

* CONCENTRATION IN WATER DIVIDED BY CONCENTRATION OF STANDARD 1 % SOLUTION OF M-1 SLUG.
C DATA CARRIED OVER FROM LAST MONTH.
ANALYSIS INDICATES LEVEL DUE TO OTHER THAN CRUDE OIL SULFONATE.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE SULFONATE REPORT

* SULFONATE IN WATER, %

WELL NO.	2-77	3-77	4-77	5-77	6-77	7-77	8-77	9-77	10-77	11-77
AS-35	**	**	**	**	**	**	**	**	.02	0.0
AS-36	**	**	**	**	**	**	**	.05	.02	0.0
DD-10	.23	.29	.13	.20	.16	.10	.12	.11	.06	.12
DD-12	.06	.11	.07	.09	.09	.15	.07	.07	.03	.07
DD-14	.06	.11	**	.05	.09	.17	.07	.07	.05	.08
DD-16	.06	.11	.07	.09	.11	.05	.11	.08	.07	.48
DD-18	.18	.29	.23	.30	.29	.05	.17	.18	.11	.21
FF-12	.06	.11	.07	.07	.08	.06	.07	.07	.05	.08
FF-14	.06	.06	.03	.05	.09	.15	.08	.07	.05	.07
FF-16	.74 #	.69 #	.83 #	.80 #	.84 #	1.49#	.49 #	.46 #	.35	.49 #
FF-18	.06	.06	.07	.30	.25	.07	.16	.17	.14	.21
FF-20	**	**	**	.10	**	.36	.07	.08	.13	.09
HH-12	.06	.06	.07	.07	.11	.02	.06	.08	.03	.08
HH-14	.06	.06	.07	.07	.11	.54	.09	.08	.03	.08
HH-16	.10	.06	.07	.20	.13	.03	.07	.11	.07	.11
HH-18	.06	.06	.13	**	.09	.92	.15	.08	.13	.08
HH-20	.08	**	.07	**	.07	.10	.10	.08	.11	.08
JJ-12	.06	.06	.07	**	.05	.34	.07	.05	.03	.07
JJ-14	.40 #	.40 #	.03	.60	.67 #	.03	.35	.35	.65 #	.36
JJ-16	.44 #	.51 #	.50 #	.80 #	.82 #	.53 #	.40	.50 #	.44 #	.56 #
LL-12	.04	.06	.07	.05	.07	.05	.12	**	.03	.09
LL-14	.74 #	.69 #	.93 #	1.70#	1.50#	.80 #	.83 #	.77 #	.58 #	.71 #
NN-12	.06	.17	.03	.10	.14	.13	.12	.17	.10	.15
NN-14	.95 #	.97 #	1.10#	2.10#	1.90#	1.26#	1.33#	1.24#	.91 #	1.20#
PP-12	.06	1.31	.03	.09	.09	0.0	.09	.08	.06	.11
PP-14	.42 #	.40 #	**	.70 #	.80 #	.03	.55 #	.56 #	.43 #	.57 #
PP-16	1.39#	.11#	**	2.70#	2.50#	.10	1.45#	1.42#	1.11#	1.30#
RR-2	.02	.00	.03	.02	.05	.03	.07	.05	.03	.08
RR-4	.04	**	.03	**	.11	.04	.07	.06	.03	.08
RR-6	.03	**	.03	.02	.05	.03	.06	.06	.05	.16
RR-8	.05	.06	.07	.05	.07	.03	.07	.07	.07	.07
RR-10	.06	1.60	.60	.20	.31	.13	.17	**	.10	2.10
RR-12	.06	.11	.03	.05	.07	.04	.07	.07	0.0	0.0
RR-14	.32	.11	**	**	.07	.14	.08	.52	.06	.51
TT-2	.05	.11	.07	**	.07	.05	.09	.07	.02	.08
TT-4	.06	.11	.03	.02	.07	.05	.08	.09	.03	.12
TT-6	.06	.11	.07	.02	.09	.04	**	.08	.05	.05
TT-8	.04	.11	.03	.02	.07	.04	.07	.05	.06	.04
TT-10	.05	**	.03	.20	.05	.11	.07	.05	.06	.08
SC-14	**	**	**	.20	**	0.0	.14	.14	.08	.17
BP-18	**	**	**	**	**	**	**	**	**	**

* CONCENTRATION IN WATER DIVIDED BY CONCENTRATION OF STANDARD 1 % SOLUTION OF M-1 SLUG.
** DATA NOT AVAILABLE
# ANALYSIS INDICATES LEVEL DUE TO OTHER THAN CRUDE OIL SULFONATE.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE SULFONATE REPORT

* SULFONATE IN WATER, %

WELL NO.	12-77	1-78	2-78	3-78	4-78	5-78	6-78	7-78	8-78	9-78
AS-35	.13	.09	.01	0.0	0.0	0.0	.08	.06	.09	.09
AS-36	.04	.15	.08	0.0	**	0.0	.08	.07	.08	.10
DD-10	**	.14	.42	.01	.25	.31	.37	.38	.39	.41
DD-12	.04	.13	.09	0.0	**	0.0	.10	.07	.11	.13
DD-14	.05	.14	.09	0.0	**	0.0	.10	.07	.11	.11
DD-16	.10	.21	.17	.07	.06	.12	.19	.20	.22	.24
DD-18	.14	.19	.22	.16	.12	.19	.34	.42	.64	.86
FF-12	.06	.13	.16	0.0	**	0.0	.10	.08	.17	.11
FF-14	.04	.15	.11	.03	**	0.0	.15	.08	.12	.11
FF-16	.10	.43#	.49#	.38	.38	.43#	.51#	.47#	.53#	.51#
FF-18	.13	.22	.18	.05	.11	.16	.23	.18	.26	.25
FF-20	.02	.21	0.0	.08	.04	.09	**	.14	.14	.13
HH-12	.04	.13	0.0	.03	**	0.0	.08	.08	.12	.14
HH-14	.04	.13	.09	.03	**	.09	.14	.09	.12	.13
HH-16	.08	.17	.12	.05	.06	.10	.18	.14	.14	.18
HH-18	.05	.16	.21	0.0	.03	.09	.10	.11	.12	.11
HH-20	.03	.20	.36	.03	.05	0.0	**	.12	.13	.16
JJ-12	.06	.14	.08	0.0	.02	.09	.12	.09	.14	.48
JJ-14	.21	.26	.55#	**	.05	.33	.34	.34	.37	.38
JJ-16	.35	.38	.55#	.46#	.40#	.51#	.58#	.53#	.61#	.53#
LL-12	.03	.13	.04	.01	**	0.0	.10	.08	.12	.10
LL-14	.44#	.69#	.72#	.04	.49#	.62#	.63#	.57#	.55#	.54#
NN-12	.13	.25	.20	.12	.17	.28	.45	.49	.78	.66
NN-14	.77#	1.14#	1.21#	1.17#	1.00#	1.19#	1.18#	1.20#	1.18#	1.13#
PP-12	.18	.36	.25	.21	.35	.47	.84	.65	.67	.65
PP-14	.34#	.51#	.58#	.51#	.45	.64#	.60#	.64#	.64#	.01#
PP-16	.79#	1.08#	1.14#	1.14#	1.00#	1.14#	1.30#	1.30#	1.29#	1.29#
RR-2	.06	.14	.07	.03	**	0.0	.08	.11	**	.11
RR-4	**	.17	.11	.03	.04	0.0	.16	.19	.13	.13
RR-6	.08	.16	.11	0.0	**	0.0	.11	.08	.11	.09
RR-8	.06	.14	.05	0.0	0.0	0.0	.07	.07	.08	.09
RR-10	.04	.11	.08	0.0	0.0	.05	.08	.08	.09	.10
RR-12	.05	.13	.08	0.0	0.0	0.0	.07	.08	.08	.10
RR-14	.50	1.12	.09	0.0	0.0	1.23	.05	.22	**	.16
TT-2	.07	.14	.11	0.0	0.0	.15	.08	.08	.09	.10
TT-4	.09	.20	.14	.05	.04	.09	.16	.12	.21	**
TT-6	.05	.14	.08	0.0	.02	0.0	.10	.08	.12	.13
TT-8	.06	.13	.09	0.0	0.0	0.0	.10	.09	.08	.09
TT-10	.18	.13	.09	0.0	0.0	0.0	**	.07	.08	.10
SC-14	.21	.38	.34	**	.25	.37	.53	**	**	.79
BP-18	**	**	**	**	**	**	**	**	**	**

* CONCENTRATION IN WATER DIVIDED BY CONCENTRATION OF STANDARD 1 % SOLUTION OF M-1 SLUG.
** DATA NOT AVAILABLE
# ANALYSIS INDICATES LEVEL DUE TO OTHER THAN CRUDE OIL SULFONATE.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE SULFONATE REPORT

* SULFONATE IN WATER, %

WELL NO.	10-78	11-78	12-78	1-79	2-79	3-79	4-79	5-79	6-79	7-79
AS-35	.11	.18	.13	.30	.11	**	.17	**	.18	.12
AS-36	.10	.13	.13	.30	.15	**	.16	.18	.20	.19
DD-10	.52	.16	.28	.37	.15	.33	.31	.48	.50	.33
DD-12	.13	.14	.08	.23	.15	.17	.18	.18	.14	.09
DD-14	.13	.14	.15	.22	.35	.19	.16	.23	.16	.12
DD-16	.32	.25	.28	.24	**	.36	.25	.46	.40	.12
DD-18	1.65	1.86	2.61	2.00	4.20	4.55	4.36	**	4.07	4.73
FF-12	.12	.13	.13	.30	.15	.20	.22	.19	.27	.27
FF-14	.13	.16	.15	.31	.24	**	.29	.30	.28	.27
FF-16	.61#	.42#	.48#	.50#	.67#	.87#	.75#	.88#	**	.98#
FF-18	.28	.24	.23	.21	**	.38	.35	.25	.18	.35
FF-20	.22	.26	.28	**	**	**	.34	**	**	**
HH-12	.12	.14	.13	.32	.23	.20	.33	.23	.18	.21
HH-14	.11	.16	.13	.30	.19	.19	.18	.20	.15	.17
HH-16	.19	.19	.16	.34	.34	.31	.29	.40	.41	.51
HH-18	**	**	.14	.29	.18	**	.18	.20	.23	**
HH-20	.22	.26	**	.38	.33	.38	.30	**	**	**
JJ-12	.16	.19	**	.51	.33	.25	.21	.24	.35	.42
JJ-14	.49	.28	.25	.35	.35	.31	.38	.31	.29	.30
JJ-16	.68#	.38#	.35#	.47	**	.45#	.57#	.39#	.51#	.45#
LL-12	.11	.14	.10	.22	.25	.19	.18	.16	.12	.17
LL-14	.74#	.42#	.19#	.31#	.44#	.41#	.42#	.48#	.43#	.41#
NN-12	1.35	.98	1.37	5.70	**	**	3.94	4.51	3.07	2.82
NN-14	1.43#	.71#	.48#	.65#	.72	**	.63#	.83#	.82#	.84#
PP-12	1.09	.89	.82	.22	**	5.68	5.52	6.38	5.84	5.85
PP-14	.88#	.58#	.76#	.83#	1.50#	1.95#	2.22#	2.68#	2.77#	3.16#
PP-16	1.64#	.80#	.61#	.32#	.65#	.63#	.59#	.65#	.57#	.55#
RR-2	.13	.19	.15	.32	**	.17	.21	.15	.15	.17
RR-4	.16	.25	.20	.38	**	.78	1.28	1.48	1.67	2.24
RR-6	.11	.19	.16	.23	.27	.28	.29	.03	1.58	2.03
RR-8	.06	.14	.10	.22	**	.20	.16	.21	.18	.17
RR-10	.11	**	.13	.23	.20	.14	.15	.13	.14	.15
RR-12	.09	.16	.10	.22	.19	.20	.18	.16	.18	.17
RR-14	.20	.21	.20	.36	.39	**	.26	**	.26	.25
TT-2	.13	.15	.10	.32	.18	.19	.18	.20	.18	.17
TT-4	.38	.36	.62	.45	.39	.62	.58	.63	.55	.96
TT-6	.16	.15	.10	.31	.21	.25	.14	.21	.20	.20
TT-8	.11	.13	.13	.27	.19	.19	.16	0.0	.13	.37
TT-10	.11	.15	.10	.32	.21	**	.18	.23	.27	.35
SC-14	.93	.86	.68	.22	1.30	**	**	1.98	**	**
BP-18	**	**	**	.22	.23	**	.18	.19	.17	.13

* CONCENTRATION IN WATER DIVIDED BY CONCENTRATION OF STANDARD 1 % SOLUTION OF M-1 SLUG.
** DATA NOT AVAILABLE
# ANALYSIS INDICATES LEVEL DUE TO OTHER THAN CRUDE OIL SULFONATE.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE SULFONATE REPORT

WELL ID	8-80	9-80	10-80	11-80	12-80	1-81	2-81	3-81	4-81	5-81	6-81	7-81
AS-35	.18	.30	.42	.33	.51	.73	.73	.59	.93	1.02	1.08	1.36
AS-36	.15	.23	.28	.18	.24	.29	.29	1.67	.41	.32	.21	.47
DD-10	.46	.66	.72	.69	.87	.93	.93	1.47	1.49	1.43	2.20	2.50
DD-12	.00	.28	.23	.26	.57	.65	.65	3.07	1.28	1.63	2.39	2.93
DD-14	.60	.60	1.04	.81	1.32	1.47	1.47	1.73	3.10	3.55	5.13	5.67
DD-16	.72	.70	.69	.66	.99	1.48	1.48	2.81	1.65	1.91	2.52	2.89
DD-18	2.85	2.86	3.38	2.14	3.01	4.00	4.00	1.42	2.67	2.86	3.16	5.32
FF-12	.96	1.12	1.05	.74	.90	.98	.98	3.19	1.00	.96	1.31	1.60
FF-14	1.31	1.03	1.48	1.23	2.35	1.73	1.73	3.47	3.16	3.64	5.48	6.06
FF-16	1.58	1.49	1.93	1.65	1.65C	2.27	2.27	5.23	3.62	3.87	5.18	5.48
FF-18	1.76	1.56	2.24	1.67	2.92	2.12	2.12	1.71	3.34	3.50	5.04	5.27
FF-20	.00	.00C	0.00	0.00C	0.00C	.20	.20	.20C	.20C	.20C	.20C	.20C
HH-12	1.00	1.09	1.33	.85	1.00	.77	.77	3.19	1.55	1.47	1.89	2.11
HH-14	.96	1.24	1.43	1.14	2.08	1.53	1.53	2.63	3.53	4.56	7.24	8.22
HH-16	2.31	2.24	2.56	1.65	1.09	1.77	1.77	3.36	2.56	3.58	3.25	3.85
HH-18	1.55	1.67	2.05	1.68	2.02	2.06	2.06	.89	3.42	3.57	4.86	4.68
HH-20	.48	.48C	.48C	.48C	.48C	.00	.00	.00	.00C	.00C	.10	.10
JJ-12	.54	.62	.63	.59	.46	.45	.45	.85	.53	.52	.57	.71
JJ-14	1.14	1.14C	.67	.43	.41	.52	.52	2.08	.93	.69	.78	.86
JJ-16	.00	.00C	1.52	1.47	1.82	1.72	1.72	.98	1.96	2.11	2.71	1.52
LL-12	.53	.12	.22	.23	1.19	.34	.34	1.22	.95	1.13	1.62	1.70
LL-14	.00	.00C	.67	.63	.54	.63	.63	.83	.89	1.16	1.51	1.76
NN-12	.94	.78	.71	.53	.56	.52	.52	1.61	1.06	.66	2.24	.83
NN-14	.93	.96	1.05	1.25	1.07	1.12	1.12	4.64	1.59	1.59C	2.33	2.34
PP-12	5.81	5.39	5.53	4.99	4.96	5.59	5.59	6.51	7.19	7.23	6.19	7.98
PP-14	4.69	3.85	4.50	3.79	2.32	4.10	4.10	4.74	4.63	4.80	6.17	5.71
PP-16	.73	.76	.92	.69	1.22	.77	.77	1.06	.85	.68	.86	.82
RR-2	.68	.73	2.41	2.41C	1.39	1.59	1.59	2.22	2.03	2.55	5.49	5.49C
RR-4	3.91	4.02	4.75	3.31	3.76	4.18	4.18	4.50	4.30	4.83	4.83C	3.37
RR-6	1.12	1.27	1.75	1.40	1.64	1.73	1.73	2.61	2.19	2.33	2.98	4.88
RR-8	.59	.85	1.05	1.11	1.62	1.47	1.47	2.10	2.15	2.43	3.48	2.81
RR-10	1.89	2.03	2.08	2.08	2.32	2.28	2.28	2.83	3.03	2.84	4.09	3.45
RR-12	1.09	1.39	1.75	1.70	2.05	2.30	2.30	3.26	3.26	3.48	4.83	3.73
RR-14	1.12	1.43	1.41	1.14	1.80	1.68	1.68	2.96	2.46	2.71	3.06	4.87
TT-2	.00	.10	.17	.00	.22	.27	.27	.67	.49	.48	.52	4.04
TT-4	1.67	1.56	.76	.73	.95	1.05	1.05	1.48	1.27	1.37	1.54	.94
TT-6	.59	.66	.72	.44	.63	.65	.65	1.29	1.05	1.16	1.06	1.98
TT-8	.47	.51	.38	.29	.29	.79	.79	.62	.45	.49	.36	1.50
TT-10	1.57	1.38	1.31	1.19	1.47	1.31	1.31	1.99	2.04	2.26	2.40	.57
SC-14	.69	.69C	.69C	.69C	.69C	.69C	.69C	.69C	.69C	.69C	3.58	3.22
BP-18	.00	.27	0.00	0.00C	.00	.00	.00	.22	.14	.10	.10C	.10

★ CONCENTRATION IN WATER DIVIDED BY CONCENTRATION OF STANDARD 1 % SOLUTION OF M-1 SLUG.
C DATA CARRIED OVER FROM LAST MONTH.
ANALYSIS INDICATES LEVEL DUE TO OTHER THAN CRUDE OIL SULFONATE.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE SULFONATE REPORT

8-81

AS-35	
AS-36	
DD-10	
DD-12	
DD-14	
DD-16	
DD-18	
FF-12	
FF-14	196
FF-16	324
FF-18	
FF-20	
HH-12	
HH-14	1228
HH-16	162
HH-18	
HH-20	
JJ-12	
JJ-14	
JJ-16	
LL-12	
LL-14	
NN-12	
NN-14	
PP-12	431
PP-14	54
PP-16	
RR-2	334
RR-4	
RR-6	
RR-8	
RR-10	
RR-12	665
RR-14	155
TT-2	88
TT-4	364
TT-6	
TT-8	
TT-10	
SC-14	
BP-18	

* CONCENTRATION IN WATER DIVIDED BY CONCENTRATION OF STANDARD 1 % SOLUTION OF M-1 SLUG.
C DATA CARRIED OVER FROM LAST MONTH.
ANALYSIS INDICATES LEVEL DUE TO OTHER THAN CRUDE OIL SULFONATE.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE CHLORIDE REPORT

CHLORIDES (PPM)

WELL NO.	2-77	3-77	4-77	5-77	6-77	7-77	8-77	9-77	10-77	11-77
XA-10	23560	**	**	21600	11210	10214	**	**	12800	21943
XA-12	23710	24700	**	21700	11570	13584	21059	22320	9820	21943
XA-14	10380	10500	10850	11100	10780	10319	10564	10400	9780	10473
AA-11	**	**	10450	11400	11140	10776	9891	10870	10670	11363
B-0	8920	8890	8800	9110	9520	9302	9040	9180	9000	9582
EB-5	**	**	**	**	**	**	**	9180	9280	0
B-4	7980	7770	7930	7990	8230	7897	10175	9210	15160	13429
B-6	23350	20200	20870	10400	9270	20008	19818	9560	19310	4096
B-8	9320	13200	**	11200	19760	10776	18790	19330	18850	11791
B-10	**	9730	10560	**	**	**	9714	14900	15650	14427
B-12	9470	13400	11720	11800	10420	9337	**	**	13840	14391
B-14	9360	9180	12160	9440	10670	9091	10104	9320	9250	11078
B-16	14170	13800	11900	11200	11680	10986	11061	10980	10490	11007
D-0	8270	8240	9010	8570	9590	8424	9572	8460	8500	9440
D-2	10560	10200	10090	9800	**	9828	10104	9000	**	9653
D-4	14570	12400	13700	12700	8870	11618	11557	9610	12520	13287
D-6	9180	9980	10270	10200	9380	9337	10458	9540	10030	10900
D-8	11000	11100	11030	11100	11280	11759	11025	11010	10880	11506
D-10	12760	12000	12440	12100	12320	11759	11203	12060	10850	11897
F-10	12750	**	10820	10700	10600	8354	8685	10400	10390	10758
F-2	14020	13500	14060	13200	11170	9723	13472	13320	13300	0
F-4	10200	9870	10170	9910	10380	9582	10033	10470	**	13892
F-6	8270	8600	8330	8530	8730	8529	8331	8460	8250	8692
F-8	8160	8170	10850	8570	9410	8213	8154	9110	8000	8442
F-10	9320	9660	9520	9620	10350	9266	10245	9720	9530	9867
F-12	14900	12900	12440	16200	9920	8915	8615	14200	12310	13037
F-14	20180	**	18820	19100	9560	8986	17088	17920	16570	18701
H-0	12020	11400	11070	13000	13190	10425	10210	10040	13370	0
H-2	8090	**	**	11000	13190	8494	11167	8530	13160	13678
H-4	8050	8020	7970	8280	8980	8951	8721	13120	8390	8834
H-6	8340	8530	8360	8750	8990	8459	8508	8030	7680	8193
H-8	8740	8780	8900	9110	9770	8915	8934	8640	8540	8727
H-10	8270	8200	8290	8420	10100	8389	8934	8500	8220	8585
H-12	9510	9290	9300	9580	9340	8951	**	8570	8610	9119
H-14	8010	9170	8440	**	9770	9126	9217	8960	8890	9618
J-0	11290	11300	11360	11100	11460	10741	10884	9470	**	10651
J-2	10490	9800	9730	9470	10280	10776	9572	9570	**	10402
J-4	9290	9440	9450	**	9880	8599	9040	8820	**	8638
J-6	9360	9330	9340	9260	10130	9266	8012	9860	9430	9898
J-8	10600	10700	10670	19100	12610	7406	10281	9750	9350	9574
J-10	10270	9980	10270	10400	12610	10109	10459	10470	**	36
J-12	10160	8170	10240	12000	13370	12390	13046	12060	**	36
J-14	9800	8600	8470	9070	9450	8940	8792	8460	8180	8458

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE CHLORIDE REPORT

CHLORIDES (PPM)

WELL NO.	12-77	1-78	2-78	3-78	4-78	5-78	6-78	7-78	8-78	9-78
XA-10	21590	**	0	**	9390	24600	25500	**	**	**
XA-12	21730	9525	20533	10553	20540	21000	20500	20900	**	21930
XA-14	10190	10057	10000	10720	20650	10200	10300	10300	10740	11170
AA-11	10980	**	10730	**	20880	11000	**	**	**	11720
B-0	9213	12386	9060	10025	9240	9100	9800	9600	9880	9780
EB-5	**	**	9210	9543	9940	9300	9300	9900	9880	9810
B-4	9079	6129	7870	8554	8830	8000	8700	9000	11880	8580
B-6	10870	19848	19450	19419	19390	19300	**	19700	**	19980
B-8	8540	11695	18600	20320	10800	19600	20900	**	21000	8580
B-10	16150	17909	0	**	**	10800	**	**	**	**
B-12	16480	15619	7700	12875	15130	15900	**	16200	18040	18680
B-14	9490	8508	9670	**	9185	9000	9800	9100	8900	10150
B-16	10470	9816	10040	10429	10080	10200	9800	10500	10080	10650
D-0	8100	7586	8250	9848	8330	8100	8400	8500	9270	8400
D-2	8420	9260	7790	9384	8950	8500	9400	9000	8820	8690
D-4	12050	11426	19370	9589	10280	11200	**	11600	**	12180
D-6	10420	7966	11230	19437	10270	9800	12000	10300	11130	11870
D-8	10560	10252	10730	10865	10790	10200	11300	11300	12170	12840
D-10	11810	11355	11290	8618	10770	10600	10100	11800	11010	10410
F-0	10250	10766	9560	9763	9660	9700	11100	**	9650	10040
F-2	11690	13918	13430	**	13380	13600	**	14100	14800	14800
F-4	13770	11294	11210	12386	11040	10700	12300	9300	12150	12140
F-6	7970	7654	7880	8182	8240	7700	8500	8600	8840	9040
F-8	8060	7235	7630	8887	7820	7500	8500	7700	8670	8130
F-10	12240	9777	6020	9458	9960	9200	9700	9000	2220	10570
F-12	12030	9582	11550	9699	10110	12500	11400	13000	13190	12680
F-14	18250	19072	17090	11925	18290	17800	18700	19900	19500	19220
H-0	9710	8512	9030	9437	9580	9500	9800	10400	9670	10110
H-2	12750	9922	12770	9501	13750	13100	13300	13900	14850	15280
H-4	8520	9855	7890	8125	8840	11200	8700	9000	9670	8930
H-6	7690	4881	9070	8129	8530	9700	8900	7900	7740	9360
H-8	8490	6650	8580	7842	8160	8200	8300	8400	8660	8570
H-10	8130	8224	7880	9161	7830	8100	8400	**	**	8810
H-12	8560	8926	8480	9125	8700	8700	9000	8800	8880	8980
H-14	9140	9355	8980	8948	9060	8900	9500	9500	9290	9130
J-0	10250	10380	10320	8710	10350	10100	10600	11300	11230	10230
J-2	9360	8274	7710	8689	10500	9300	10000	10400	11250	10610
J-4	8460	5871	8050	9394	8690	8500	8600	9400	9400	8970
J-6	9470	8292	9190	8238	8840	9200	9500	8500	10090	10210
J-8	8060	8327	8970	8958	9580	9100	9200	9500	9810	9290
J-10	9860	10298	11080	10238	8700	10800	**	10900	11180	10790
J-12	11710	11677	10640	11355	11980	11100	10900	10800	12340	13300
J-14	8260	8100	7970	8409	8640	8000	8100	8500	8720	8730

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CHLORIDES (PPM)

WELL NO.	10-78	11-78	12-78	1-79	2-79	3-79	4-79	5-79	6-79	7-79
XA-10	**	**	**	**	**	**	21240	**	**	**
XA-12	22040	19240	20970	21820	23600	22940	22230	20360	20000	18363
XA-14	10480	10310	10980	11440	11680	10780	11270	10850	**	11766
AA-11	11040	12080	11200	10220	11320	11610	11310	**	10760	9706
B-0	9940	9790	9580	8710	8850	9450	9470	9730	9500	9568
EB-5	9310	**	11540	9140	9070	**	**	9270	9370	8937
B-4	8540	9770	**	9140	8470	16800	8470	12210	7620	6672
B-6	20570	19770	11460	18300	18080	17170	17380	19530	18980	19434
B-8	21380	21360	11740	20160	19420	19270	19110	18870	19950	18601
B-10	**	**	**	**	**	**	19190	12190	**	**
B-12	17510	18110	22830	19270	19270	17880	19370	19320	18860	19058
B-14	9050	8540	8780	8840	9320	9080	9600	9090	9670	9437
B-16	10840	9820	10530	9170	9430	10170	9270	**	9750	10245
D-0	9390	8410	15050	8350	8160	8240	8310	8120	8330	8348
D-2	10410	9250	15010	8270	8990	9210	8850	8660	8650	8735
D-4	9850	10750	18090	10800	10430	9310	9310	8770	8620	7530
D-6	**	10590	13230	9740	9400	**	9500	9150	9040	8526
D-8	12100	11760	12120	10730	10500	10650	10880	10660	10780	10454
D-10	11420	**	9360	**	8130	**	10640	10580	9980	11103
F-0	9500	9770	**	9750	9980	10710	10410	10660	10620	10181
F-2	14980	14910	**	14480	14210	14250	14180	14710	13970	14308
F-4	11900	13560	**	**	10740	10050	8550	10410	10440	10043
F-6	9230	8340	8860	8800	8000	8010	7810	7780	7720	7632
F-8	7810	8370	7900	6760	7780	**	7530	7480	7240	7111
F-10	9700	10310	10480	8210	10140	9360	9470	9840	9750	9579
F-12	12500	13120	12540	11500	12440	12520	11840	11850	11380	10933
F-14	1** 0	19430	17870	16660	**	12270	14190	14030	13910	14201
H-0	10440	10390	10300	10500	11100	10640	8810	10760	10870	10982
H-2	14460	15250	10300	15000	14370	10740	14500	15490	14400	13946
H-4	8110	9040	8710	8710	8740	8870	1076	09580	8860	8586
H-6	10280	8950	9180	7830	**	7680	7590	7490	7700	7133
H-8	8410	8170	7970	6850	7920	6730	8160	8450	8920	8132
H-10	9010	8840	8760	7950	7920	7650	**	7420	8490	7586
H-12	8880	8560	8860	9220	9270	9260	8840	8680	8460	8171
H-14	9770	9150	8660	8670	9360	9470	8970	8020	7670	6466
J-0	10180	10320	9090	9860	**	10090	10050	10080	10780	9632
J-2	11230	12270	10240	9930	8390	7140	9060	9010	9480	9362
J-4	10340	9710	9150	8950	7740	8080	8410	8560	9000	8646
J-6	10140	9480	8770	8370	**	9010	8980	9110	9470	9061
J-8	8730	9060	9460	10580	8750	6640	8110	8340	8960	8738
J-10	11860	10340	10670	8950	1050	01039	09360	8820	8920	8504
J-12	12660	11980	8040	12470	12370	4400	10150	**	10320	10323
J-14	8720	9250	8040	7540	7720	7890	7870	8040	7910	7767

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WELL ID	8-79	9-79	10-79	11-79	12-79	1-80	2-80	3-80	4-80	5-80	6-80	7-80
XA-10	21240C	21240C	13021	13910	13910C	9398	13630	13250	13170	13170	12723	12425
XA-12	16782	16782C	14712	14740	13818	13549	14250	13890	12220	12870	12532	10209
XA-14	11667	13080	13039	13120	13092	12847	12860	12560	10060	12210	11567	6576
AA-11	9706C	9706C	8730	7920	7242	6257	7560	7030	5420	6570	6430	8916
B-0	9692	9680	9809	9700	9614	9366	9290	9310	9480	9730	8717	8685
EB-5	8707	9240	11270	9280	9100	9015	9190	9110	9280	8790	9338	3474
B-4	4945	4945C	4803	4240	19824	4757	4757C	4520	4100	3580	9260	11230
B-6	19076	8510	20015	19720	20256	7075	20220	20220C	20220C	21070	20487	14737
B-8	18601C	17830	18409	15390	16272	11000	17520	16100	15800	16030	15127	9000
B-10	1219C	1219C	9841	9841C	9841C	9841C	9841C	9841C	9841C	9500	9000	11518
B-12	19058C	17130	9919	16310	15431	14570	15380	12970	12370	11950	11960	8207
B-14	9302	10070	9635	9710	9678	9511	9430	9190	12630	8550	8590	9072
B-16	8990	9580	9635	9620	9621	9536	9690	10010	9620	9360	9150	8036
D-0	8497	8320	8820	8920	8515	8561	8561C	8730	8410	8380	8593	8161
D-2	8870	9040	9022	9070	8820	9143	9420	9840	9050	9090	8334	4928
D-4	7530C	7530C	6108	7040	6902	6597	5850	7010	6390	5340	5626	6650
D-6	8444	8050	8012	7900	7686	7480	6960	9080	7060	7040	7058	8076
D-8	10454	11140	11121	11121C	11014	10738	10940	18180	11440	11010	12719	10025
D-10	11305	11305	9543	10750	10529	10220	11260	10770	10980	11400	8200	10394
F-0	10185	10590	10238	14310	10511	10646	11070	10270	10290	11370	11447	15506
F-2	14148	14500	14797	14450	13797	14662	14662C	14900	14900C	15160	17487	7611
F-4	10043	10870	11390	14090	11234	10841	10841C	10450	10450C	8610	8132	5520
F-6	7824	7810	8068	9120	7590	7203	6930	6740	8580	6180	5983	6991
F-8	7175	7110	7983	6880	7324	7154	7154C	7960	8180	7560	7515	9199
F-10	9681	9840	9742	9440	9781	9564	12050	10160	9770	10130	9855	12166
F-12	11351	11351C	11348	11470	9798	9143	12450	10150	12160	13480	9075	12010
F-14	14361	14000	12283	12800	12946	12624	13860	12980	14720	14010	12478	9947
H-0	10894	11140	11461	13070	10603	10171	10171C	10560	10390	10090	11574	12620
H-2	13801	14080	14875	8400	13489	11564	15780	13590	13900	13410	12974	6771
H-4	8685	8650	7824	8170	8061	7760	8280	7920	14070	7180	7941	5392
H-6	7037	7000	6994	6710	6622	6750	7110	6860	6860C	6220	6594	7501
H-8	8299	8580	8061	5640	7959	7565	9720	8240	7940	8280	8242	6537
H-10	7608	7760	6480	6700	6796	6782	8880	6760	6680	6810	6842	5793
H-12	7342	8200	7728	8150	7537	7040	6930	6700	6600	6410	6785	2918
H-14	5778	4880	4034	3700	3822	3474	3410	3320	3030	3060	2946	9947
J-0	9745	10000	7966	10830	10550	10188	10040	9830	10250	10260	10263	7632
J-2	9316	9680	9738	10070	9915	9416	10270	10320	9810	9050	11000	7221
J-4	8253	8200	8196	8360	8207	8352	8270	7870	7780	7970	7937	5828
J-6	8827	9420	9270	9440	6544	8093	9140	8800	8730	8830	8629	7413
J-8	8671	8280	7785	8300	8416	8341	8440	8520	8340	8260	8154	9915
J-10	8565	8690	8806	9430	8820	8884	8884C	11250	11100	10790	10117	9589

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WELL ID	8-80	9-80	10-80	11-80	12-80	1-81	2-81	3-81	4-81	5-81	6-81	7-81
XA-10	12723	12723C	12723C	12723C	12723C	13090	13090C	13090C	13090C	13090C	13090C	13042
XA-12	12340	12340C	11870	12690	13240	12680	12990	11690	11961	10908	11255	10699
XA-14	8774	9752	9590	8860	7460	7000	6310	5980	5579	5137	4924	4683
AA-11	5892	5980	5800	5870	6140	6060	5840	5670	5232	4967	4811	4584
B-0	9040	8781	8390	8860	8930	8610	8480	8420	8536	8685	8061	7987
EB-5	8965	8678	8678C	13780	8700	8310	8720	8460	8582	8263	3288	8345
B-4	3612	3375	3180	3450	3120	2990	2690	3110	2304	2233	2152	2159
B-6	14421	14421C	14421C	20230	20820	22960	22960C	20530	21589	21731	21110	21061
B-8	13914	13592	13592C	14940	14220	14150	12840	13900	13272	13099	9135	9135C
B-10	11518C	11592	11592C	11592C	11592C	11592C	11592C	11592C	23213	23213C	9596	9880
B-12	10525	12269	10680	10620	10410	10840	9720	9300	9213	9160	8972	8419
B-14	7455	7806	7740	6980	6580	5940	5580	6200	5562	4881	4874	5009
B-16	9029	9139	9139C	8770	10020	9170	9180	8830	9444	8585	8848	8770
D-0	8412	8278	8100	8270	8630	8260	8960	8520	7934	8217	8437	8192
D-2	7912	5263	8550	7780	7650	7630	7690	7760	6771	6884	6572	6697
D-4	5403	4892	5140	4950	5660	5490	4480	4690	2886	4300	4346	4063
D-6	6704	6725	6920	6880	7020	6940	5850	4240	5626	5356	5151	4963
D-8	10795	10334	9940	9940C	10610	9580	7410	4720	5913	8831	8809	8813
D-10	11170	9983	10130	9900	10440	9900	9850	7240	9930	9529	8979	9072
F-0	8370	10713	10650	11500	10740	10600	11910	10640	12149	10791	10756	10720
F-2	8299	14382	14382C	14610	14280	12900	8820	8480	6994	9823	9610	9976
F-4	11819	7164	4590	6790	6900	7140	11260	3430	4534	1758	2209	2411
F-6	8806	10447	5080	5130	5940	4950	5050	4300	4140	3892	3779	4194
F-8	11060	7040	6660	6790	10030	6790	9490	2680	3985	6640	6363	6374
F-10	9252	9692	9692C	9692C	12670	8270	8450	7860	7569	8434	8494	8387
F-12	12120	12273	12273C	12950	13210	12640	12140	12630	12585	12340	12546	9135
F-14	9320	11660	10900	8580	11100	11160	12060	10470	11131	9614	10039	9607
H-0	9036	9930	10050	10390	10140	10290	10610	9930	5342	10107	9699	9802
H-2	9749	12592	9510	11860	12340	13640	9970	8890	7788	9533	9483	9681
H-4	9079	6693	6130	6840	7190	9160	9720	6830	4647	4679	4881	4970
H-6	5034	5183	4930	5490	4910	4820	7970	4420	4531	4243	4133	3924
H-8	8097	7483	7170	7250	7210	7320	8320	6240	6388	7104	6948	6927
H-10	7941	5651	5850	5670	6740	6390	8000	6400	6282	6913	6491	6328
H-12	6750	6356	5410	5350	6340	5500	7720	5460	4931	4612	4669	4375
H-14	7611	2790	2770	2580	2810	2810	8210	2530	2187	2017	2042	2074
J-0	10912	10142	9570	10640	10610	10280	8580	8560	1797	9657	9632	10000
J-2	9777	8806	7110	7100	6920	6900	9920	8620	1411	4463	4608	4396
J-4	6895	7239	6870	6870	7140	7150	10130	5340	5559	5768	5743	5700
J-6	8877	5360	7740	7870	7980	7580	7630	4430	4956	6697	6555	6250
J-8	7774	6991	7180	7220	7370	6720	14000	6300	5523	6083	6041	6016
J-10	6757	5750	9130	9760	9230	8990	7720	8440	9235	8178	8317	8356

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	8-81
XA-10	13042C
XA-12	10660
XA-14	4410
AA-11	4370
B-0	7930
EB-5	8810
B-4	2210
B-6	21061C
B-8	9135C
B-10	9880C
B-12	8250
B-14	4380
B-16	8490
D-0	7490
D-2	6600
D-4	4150
D-6	4330
D-8	8360
D-10	8720
F-0	10230
F-2	9590
F-4	1910
F-6	3370
F-8	6270
F-10	8050
F-12	9135C
F-14	8890
H-0	9580
H-2	8870
H-4	4470
H-6	3470
H-8	6490
H-10	5890
H-12	4380
H-14	1620
J-0	9350
J-2	4450
J-4	5260
J-6	6190
J-8	5520
J-10	7590

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CHLORIDES (PPM)

WELL NO.	2-77	3-77	4-77	5-77	6-77	7-77	8-77	9-77	10-77	11-77
L-0	8740	8780	8510	9070	9950	9021	9501	**	9110	9358
L-2	8920	**	8830	9040	8590	8705	8579	8100	8000	8674
L-4	8780	8490	8690	9110	9410	8599	9253	8710	8540	8638
L-6	8740	8530	8400	8710	9660	8424	8544	8280	8040	8350
L-8	8090	8170	8150	8310	9380	8389	8544	8310	8070	8278
L-10	8120	8170	8110	8530	8870	8179	8225	8060	8000	8674
L-12	9180	9260	9230	9980	9880	9302	9359	9030	8890	9034
L-14	8010	8020	8150	8530	9590	8424	8508	8240	8180	8278
N-0	8740	8460	8440	9040	9380	9056	8969	9030	7220	9358
N-2	7360	7330	7280	7990	9410	7546	8047	7920	7650	12058
N-4	13150	12400	9050	9260	10670	**	12018	9860	11920	7846
N-6	9830	**	9730	9980	**	9372	10033	12240	10310	10078
N-8	9360	9150	9340	9260	10420	9056	8934	8890	10240	8998
N-10	8010	8130	8470	8530	9380	8740	9040	9000	9670	9574
N-12	8230	8390	8290	8350	9630	8213	8508	8280	8220	8278
N-14	8520	8420	8440	8460	10240	8459	8863	8670	8390	8278
P-0	10160	10000	9080	10200	10530	9723	9785	10110	9780	10042
P-2	8920	**	8650	8930	9410	8670	9005	10190	8710	10152
P-4	10200	10100	8290	12000	9200	9617	9891	10150	10350	10473
P-6	8270	8200	8150	9760	8800	8248	8615	8280	8220	8513
P-8	8160	8130	8110	9510	8770	8284	8437	8240	7860	8335
P-10	8920	8930	9050	9840	10060	9266	**	9650	9750	9938
P-12	8190	8170	8470	9110	8410	8178	8118	7160	8000	8371
P-14	8410	8350	8830	10600	9200	8354	7941	8280	8220	8549
R-0	9980	9980	9730	11000	9770	7827	9643	10080	9820	10010
R-2	8410	8530	8900	9470	8800	7862	8544	8670	8360	8371
R-4	11840	11300	11790	12200	12860	12180	9572	13010	12200	12574
R-6	16100	16100	10450	14200	**	13303	9926	13680	9640	14035
R-8	9650	9840	10090	10900	10100	9512	10068	10040	9780	9974
R-10	10020	10100	10310	10900	10350	9477	10387	10080	9820	10294
R-12	**	14900	**	**	15810	13900	13897	13680	13160	13714
R-14	14640	14200	14100	14500	14340	13163	14145	13210	12240	8513
T-0	8740	8310	8760	9600	8690	7968	8331	8280	8180	8478
T-2	7580	7660	8040	9200	8050	7546	8012	7740	17070	7943
T-4	11840	11600	11100	11900	10780	8951	11167	**	10350	10686
T-6	16390	**	16120	16900	8800	16568	17903	17490	16930	17454
T-8	8090	8240	8550	8780	16850	8319	8650	8460	8180	8763
T-10	9030	**	9190	9470	8800	8354	8969	8640	8430	12717
T-12	8230	**	8510	9070	8440	8178	8508	8130	8000	17490
T-14	7870	7800	8470	8530	7330	8178	8508	8240	8040	8349
V-0	8190	8160	8470	9110	7760	8284	8898	8130	8040	9012
V-2	8340	8930	8260	10200	8190	8494	8296	9360	9600	9404
V-4	11800	11200	11570	11700	8410	11127	**	10800	9280	10508

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CHLORIDES (PPM)

WELL NO.	12-77	1-78	2-78	3-78	4-78	5-78	6-78	7-78	8-78	9-78
L-0	9380	8249	9190	9334	9600	8900	9300	9200	10040	9430
L-2	8020	7746	7760	8487	8330	7900	8800	8200	8550	8340
L-4	8220	7650	8290	8249	8180	8100	8300	8400	8460	8800
L-6	8360	8051	7450	7767	7880	7700	8100	8800	7690	8720
L-8	8390	8309	7850	8738	8660	8000	8300	8900	8480	9150
L-10	7660	7604	7930	8026	8010	7400	7000	8800	7490	7680
L-12	8700	7289	8650	9738	8490	8600	8400	10000	9890	9200
L-14	7820	5977	7380	9029	7800	7200	8600	8600	8320	8240
N-0	8760	9057	9100	9398	8790	8700	8300	10000	8990	9770
N-2	7820	7998	7910	7937	9150	7900	7900	8100	8780	8500
N-4	11880	11979	11850	12858	12070	12700	13700	12700	13670	13220
N-6	10250	9912	9210	9362	9660	9600	10000	11200	10240	10760
N-8	8570	9554	8340	8919	8400	8400	8700	9300	9130	8950
N-10	9480	9050	8680	9455	9810	9400	10100	10500	9560	8920
N-12	8180	7866	7940	7923	3230	8400	8600	7800	8140	8260
N-14	8210	8487	8080	8402	8320	8100	8400	9000	8930	8890
P-0	9950	9873	9840	10401	10220	9900	10100	10700	10210	10490
P-2	8630	5442	9780	11280	8590	8400	9300	8300	9350	9190
P-4	9870	**	9800	10203	8410	10400	10400	8900	10530	10890
P-6	8012	5715	8040	8785	8010	7900	8400	8500	8550	8650
P-8	7810	7533	7810	7983	9590	7800	7700	8200	7720	8340
P-10	9540	9572	9190	9416	9450	9700	10400	10000	10450	**
P-12	7960	6463	7770	7987	5920	7900	8100	9000	8560	8790
P-14	8250	6845	8230	8270	8430	8100	8400	9500	8960	8250
R-0	9840	9749	9630	10692	8770	9700	10400	10900	10770	10920
R-2	8250	7891	11990	8256	11480	8000	8500	8800	8940	**
R-4	12410	10717	12110	13226	12780	12300	13400	12700	11710	14040
R-6	13730	13542	12170	11901	13930	10700	13400	14500	13530	14730
R-8	9760	9593	9306	9072	9470	9300	10100	9700	10170	9590
R-10	10020	13237	9830	10217	10090	9600	10300	**	10770	10340
R-12	**	6452	12540	11684	10930	13100	14300	14100	14000	14440
R-14	12110	12624	12130	11507	13500	12600	12500	14100	12920	12950
T-0	8240	7491	8230	8940	9700	8500	9200	8900	9030	8860
T-2	10430	6129	7920	8714	8160	7900	8500	8700	8830	8900
T-4	10260	9270	10500	8451	11140	10000	11600	11800	11600	11370
T-6	8440	7852	17370	8614	17090	16800	17200	17500	17060	17470
T-8	8300	7576	8370	8788	8400	7900	8500	9400	9290	9180
T-10	8530	6899	8090	9713	8670	8100	8700	9100	9010	8340
T-12	7820	7678	7710	7940	8100	7600	7900	8900	8000	8450
T-14	9630	6661	7890	8855	7490	8000	7700	8500	8600	8360
V-0	8150	7824	7800	10837	12360	8100	8700	9100	8370	8780
V-2	9570	9444	9060	9805	9270	8000	8900	9300	9100	9860
V-4	9360	9979	9830	**	10530	9300	10300	9900	10070	10530

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE CHLORIDE REPORT

CHLORIDES (PPM)

WELL NO.	10-78	11-78	12-78	1-79	2-79	3-79	4-79	5-79	6-79	7-79
L-0	9720	9380	9380	9050	8890	8830	8820	8640	8570	8295
L-2	8960	8190	8120	7670	8340	8250	8020	8010	7800	7370
L-4	9040	9040	8250	7440	7720	7740	7960	7850	7840	8083
L-6	8140	9350	8930	8660	8300	8680	8560	8150	8350	8068
L-8	9100	9344	8750	8990	9110	6880	8680	8110	8160	7799
L-10	7730	9060	7890	7650	7930	7580	7770	7680	7630	7643
L-12	10160	9730	9940	9170	**	**	8600	8640	8710	8455
L-14	8680	8740	8660	8000	8130	8020	8250	7860	7580	7480
N-0	9180	9170	9500	8350	**	**	8430	8380	8460	8356
N-2	9040	9040	7960	8120	8320	7290	6830	6870	6080	6870
N-4	12796	14050	12510	13620	13980	12290	12290	12380	12260	11699
N-6	10510	**	10200	11940	9140	8920	8870	9130	12350	9217
N-8	8650	9680	9840	9260	8330	8050	8040	7910	7950	7907
N-10	9800	11370	9630	10830	8950	9140	9310	9040	9100	9164
N-12	8820	9340	9610	8300	8130	7900	8280	8300	7920	8015
N-14	8540	8060	9290	8270	8230	8270	8230	8380	8400	8377
P-0	10570	10520	9930	9340	8990	9290	9970	9370	8580	7951
P-2	10500	10400	8860	7890	8240	8090	8820	8760	8520	8604
P-4	10430	11730	11680	10030	9620	9810	9420	9590	**	9618
P-6	8210	8140	8320	7130	7620	7890	7970	7910	7930	7728
P-8	8840	9270	7910	9030	7950	**	7990	8270	7820	7707
P-10	10810	9500	10150	10000	10100	10160	10850	10500	10030	10117
P-12	8600	7950	7910	7550	7540	7650	7480	7440	7370	**
P-14	8460	8880	8890	8680	8570	8390	8060	8040	8360	7785
R-0	11060	11980	11120	9590	8960	9060	9150	9260	8900	9040
R-2	9910	**	8400	7920	8890	8150	8180	7700	8030	7888
R-4	13990	8050	13750	10990	12500	12290	12330	**	11980	12291
R-6	10940	13930	13840	15130	12650	12780	12580	12350	11820	12032
R-8	9670	9810	9280	8710	9840	8880	9110	8830	8780	8912
R-10	10530	10750	11250	9480	10580	10240	10390	10560	10610	10185
R-12	12650	13120	14670	11010	11990	11690	12000	12120	11600	11596
R-14	12870	13880	14390	11820	13000	8750	12840	12880	12610	**
T-0	8800	9160	10420	8710	8780	**	8540	8700	8570	8235
T-2	8940	10430	9520	9650	8390	**	8160	8580	8470	8366
T-4	12790	12270	**	12820	10470	10890	11560	11650	11620	11776
T-6	17120	17140	17360	16630	17230	16060	16900	16820	16110	**
T-8	8840	9930	8810	7890	8320	8700	8260	8640	8560	8327
T-10	8360	8530	9620	8192	8010	8100	7990	8190	8150	8051
T-12	8000	8000	8750	6850	7590	7110	7290	7410	7470	7342
T-14	9710	9470	9120	9000	8910	7850	7870	7980	7800	7707
V-0	8610	9450	8970	7830	7630	7680	7890	7940	9320	7739
V-2	10600	10840	9780	9050	8830	9530	9710	9900	10040	10036
V-4	11370	11330	10040	11030	11170	10030	10470	10590	11100	11227

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE CHLORIDE REPORT

WELL ID	8-79	9-79	10-79	11-79	12-79	1-80	2-80	3-80	4-80	5-80	6-80	7-80
J-12	10181	10280	9621	10390	10171	10731	10400	9900	9980	9980C	10014	7111
J-14	8083	8050	7228	7050	8001	10000	8050	7660	7350	5310	7661	6732
L-0	8551	8390	7671	8140	7831	7445	8040	7960	8000	7510	6338	5119
L-2	7214	7150	6867	6300	6253	6200	5580	5580C	4790	4520	5700	7753
L-4	6714	7740	7912	8000	7845	7927	7890	8040	8110	8480	7840	5229
L-6	7608	7400	6934	6460	7891	7891C	7740	5950	5360	4660	5676	7367
L-8	7799C	7670	8111	8100	8136	8037	7920	7890	7980	7560	7767	7367
L-10	7849	7740	7849	7930	7916	7813	8640	7220	7000	6810	6870	6675
L-12	9026	8130	7434	7830	6693	7395	7410	7140	7030	7350	6800	3790
L-14	7512	6670	5839	5410	4949	4878	5770	4450	4840	4250	4165	8246
N-0	8458	8390	8164	8160	7473	8636	8150	8960	8710	8980	9040	4158
N-2	5959	5910	5466	5040	4796	5328	4340	5180	3960	3950	4378	7175
N-4	10869	10780	10047	8720	9805	9827	9130	8900	8620	8050	7065	6370
N-6	9252	9110	8795	8750	7951	8639	8260	8220	8000	7550	7193	4878
N-8	8306	7540	7973	7170	6757	6452	6860	5900	5640	5290	5445	7228
N-10	8738	8690	9174	8500	8504	8444	8360	7870	7930	7760	7569	6783
N-12	8476	13680	8171	8150	7898	8377	8150	8150C	7780	7550	7179	6455
N-14	8214	8930	8728	8520	8182	8926	7500	7150	7700	7540	6540	8189
P-0	8458	8720	8526	8630	8200	8473	8490	8620	8840	8500	8462	8092
P-2	11089	8550	8650	8930	8607	8965	10500	7680	8860	9210	8519	10125
P-4	9600	10150	9784	10450	11117	4951	10780	7950	11100	11270	10865	7296
P-6	7795	8640	8490	8350	7409	7976	8330	7820	8190	7680	7218	8281
P-8	7749	7780	8214	7720	7671	7540	8040	7750	7860	8680	7966	8100
P-10	10319	10250	10250C	10550	11340	11340C	10260	7430	7740	8050	8189	6127
P-12	7370C	7350	7175	7620	7620C	7037	8700	6710	6690	6450	6409	5452
P-14	8458	8300	7437	8290	7852	7767	6910	7470	7130	7050	7303	5378
R-0	9011	8640	8444	8560	8940	9199	7620	6070	6150	8550	5750	6540
R-2	7608	7870	7207	7520	10975	7342	7270	6960	6950	7070	5652	12255
R-4	12581	12370	12436	13300	11546	11812	12620	12970	13240	13340	6572	9203
R-6	12361	11690	9735	11160	10639	11153	11270	10900	10770	11160	9203	7086
R-8	9196	9000	9000C	9130	8604	8380	8240	8170	8200	7740	7473	7189
R-10	9922	9920	8948	9110	9252	9355	8680	7900	7600	7970	6750	9040
R-12	11794	10470	10809	10850	11167	11195	11160	9900	10040	9480	9040	8061
R-14	12386	10970	10288	10070	10070C	7909	9290	9290C	9210	8930	8916	8125
T-0	8795	8670	8522	8660	8458	8919	8340	8860	8460	9000	8554	8721
T-2	8554	9040	8738	8760	8707	8926	8620	8420	9110	9080	9146	9582
T-4	10525	11320	10901	10230	10975	11262	10970	10940	11250	10160	10309	12860
T-6	15020	14670	14903	14410	14003	13875	13860	13960	13230	12570	12865	6916
T-8	14946	8210	8097	7930	7675	7335	7540	6970	6730	7390	8072	6891
T-10	8051C	8290	8168	7780	8005	8469	7940	7750	6610	7170	7508	5732
T-12	7498	8200	6796	6280	8221	6877	6800	6790	6650	6530	6172	6292

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE CHLORIDE REPORT

WELL ID	8-80	9-80	10-80	11-80	12-80	1-81	2-81	3-81	4-81	5-81	6-81	7-81
J-12	6431	9270	9830	8990	10070	9540	7260	9320	8653	9405	9139	9412
J-14	7437	6700	6900	7830	7390	7280	6020	6670	6959	6635	6512	6668
L-0	6416	5917	5917C	7910	7310	7220	6570	6630	6629	6168	6200	6285
L-2	5626	5009	5940	5940C	5910	6440	8800	5010	3254	4275	4367	4715
L-4	7232	7225	7225C	6880	6680	6330	6070	5560	5559	5349	5236	5034
L-6	4850	4516	4780	2870	4600	4200	4200C	3590	3580	3538	3651	3432
L-8	7111	7164	8060	5340	5400	5420	5440	5620	5048	4293	3956	3864
L-10	6484	5835	6050	6050C	6220	5720	5570	5850	5416	5183	5286	5215
L-12	6239	6253	6430	6840	6600	6760	7250	7310	6767	6558	5590	6923
L-14	3903	3580	3520	3610	3620	3630	3570	3040	2786	2630	2467	2439
N-0	8182	6920	8310	9010	9000	9290	8760	9350	8994	9228	9125	9082
N-2	4119	3995	4070	3890	3590	3420	3150	3490	2694	2793	2694	2627
N-4	7363	6658	6900	7460	6840	7380	7010	6290	6196	5668	5498	5463
N-6	8214	5849	6490	6120	6480	6690	6180	6190	6069	4970	4981	4945
N-8	5325	3797	3797C	5710	5300	5300	4580	4750	4740	4431	4392	4364
N-10	7235	6246	7120	7210	6960	7270	6560	6480	6182	5899	5594	6080
N-12	7522	6126	6126C	7020	6700	6830	6500	6550	6229	5927	5966	5807
N-14	6877	6328	6960	6540	6890	7350	6600	6520	6512	6424	6229	5938
P-0	10018	8019	8430	8780	8610	8170	7790	8040	7335	6906	6711	6782
P-2	8377	8416	8470	8310	8340	8430	7780	8210	7895	7629	7494	7150
P-4	10125	10514	10800	10940	10980	11230	11190	10200	10032	9930	9809	9554
P-6	8210	7675	7890	8170	7540	8330	7200	7580	7962	7320	7250	7164
P-8	8231	7296	7480	7100	7110	7160	7510	7360	7381	7260	6874	6721
P-10	8763	8441	9230	8340	8320	8270	7820	7640	7973	7675	7111	7402
P-12	6030	5966	5920	3540	9930	3640	4080	3900	3602	3460	3322	3407
P-14	7647	6399	6860	5910	6180	5670	5500	5010	4715	4676	4704	3662
R-0	5743	7023	6230	6020	6080	5960	7500	6710	6200	5984	6143	5917
R-2	6852	6321	6321C	6040	5220	5120	4170	4430	3417	2740	2910	3116
R-4	12952	12340	13200	13160	13650	13390	14280	12220	14729	13081	13886	14953
R-6	11642	10564	10564C	10760	11140	11270	11810	10600	10334	9944	9483	9834
R-8	6693	6452	9730	6410	5940	5790	5710	4980	4718	4229	4343	4360
R-10	7707	7203	6530	6490	7090	7070	6310	6130	6353	6774	5154	6299
R-12	8398	8657	9930	8640	9480	8810	9450	8170	9075	7927	7377	7583
R-14	8061	8040	10320	8220	7890	7480	7940	7000	6587	6470	6067	6420
T-0	8742	8341	7120	6930	6600	6590	6730	6180	5842	5395	5229	5395
T-2	9674	10025	10025C	10025C	9860	9990	9620	9290	9632	9277	9185	9646
T-4	9582	10305	5970	9060	9930	10570	6930	10070	10195	9444	9525	8731
T-6	13085	13085C	10810	10810C	11340	11010	11130	10090	9965	9387	9391	9401
T-8	6916	5098	6480	5760	6740	6660	6280	5530	5828	5562	5247	5218
T-10	6774	6555	6840	6050	6270	6200	5810	5620	5438	5438C	5062	5034
T-12	5750	5512	5320	5460	5630	5200	4970	5010	4644	4492	4460	4435

MARATHON OIL COMPANY
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	8-81
J-12	8970
J-14	6030
L-0	5780
L-2	4330
L-4	4650
L-6	3030
L-8	3390
L-10	4820
L-12	6180
L-14	2380
N-0	9250
N-2	2430
N-4	4830
N-6	4360
N-8	4090
N-10	5630
N-12	5230
N-14	5700
P-0	6120
P-2	7180
P-4	9130
P-6	6770
P-8	6390
P-10	6570
P-12	3280
P-14	4300
R-0	5130
R-2	2570
R-4	13380
R-6	8870
R-8	3740
R-10	6040
R-12	6480
R-14	3810
T-0	5640
T-2	7960
T-4	8890
T-6	8550
T-8	4880
T-10	4830
T-12	3960

MARATHON OIL COMPANY
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2.5-ACRE CHLORIDE REPORT

CHLORIDES (PPM)

WELL NO.	2-77	3-77	4-77	5-77	6-77	7-77	8-77	9-77	10-77	11-77
V-6	14170	**	13880	12400	8690	14953	**	13570	9390	13429
V-8	8230	8680	8580	9300	8050	8529	9395	8420	9320	8513
V-10	8560	8970	9010	9180	8120	8775	9005	9210	8570	8870
V-12	9650	9660	9880	10900	8840	9442	9714	9390	9430	9582
V-14	10780	11100	11000	12000	9950	10951	10671	10900	10710	11256

** DATA NOT AVAILABLE

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE CHLORIDE REPORT

CHLORIDES (PPM)

WELL NO.	12-77	1-78	2-78	3-78	4-78	5-78	6-78	7-78	8-78	9-78
V-6	9890	12489	12220	14017	15190	13800	13800	13900	13460	14590
V-8	8000	6938	4860	8012	8200	7900	8000	8900	8340	8480
V-10	8610	6969	8610	8976	9350	8600	9300	9700	8880	9170
V-12	8800	7803	8940	12489	9900	9100	9600	9500	8990	10160
V-14	10690	10642	10160	9029	10810	10500	11000	11400	10550	11200

** DATA NOT AVAILABLE

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE CHLORIDE REPORT

CHLORIDES (PPM)

WELL NO.	10-78	11-78	12-78	1-79	2-79	3-79	4-79	5-79	6-79	7-79
V-6	13780	15470	13600	14830	13870	13790	13740	13040	13050	12606
V-8	7930	8550	8520	7520	7290	7710	7870	7880	7950	7629
V-10	9010	9010	**	8830	8420	8430	8910	8840	8780	9033
V-12	8530	**	9260	9330	8880	8860	9090	9080	9220	8962
V-14	11520	11970	11430	8650	10060	10020	10100	9790	9050	10149

** DATA NOT AVAILABLE

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE CHLORIDE REPORT

WELL ID	8-79	9-79	10-79	11-79	12-79	1-80	2-80	3-80	4-80	5-80	6-80	7-80
T-14	7615	7640	7554	7554C	4392	7686	6740	6740C	7430	7430C	6884	7094
V-0	7618	7770	8104	7560	7512	7381	7140	7240	8020	7080	7182	8001
V-2	10036C	9540	10256	7910	10234	10305	9670	8820	8680	8650	7530	10826
V-4	10990	11400	10982	9930	11443	11603	11830	11990	12370	11690	11440	10397
V-6	12606C	12100	12485	10420	10420C	11858	11710	11390	10350	10330	10213	8001
V-8	7870	8390	8575	9100	8682	8455	8940	8760	8920	8360	8997	7200
V-10	9033C	8640	8490	8280	8288	7966	7580	7650	7790	7770	7597	5988
V-12	8650	8700	8717	8500	8026	8026C	7500	6680	7360	7220	7111	6849
V-14	10149C	10310	9703	9440	9132	8944	10500	8320	7920	7830	7420	11748

C DATA CARRIED OVER FROM LAST MONTH.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE CHLORIDE REPORT

WELL ID	8-80	9-80	10-80	11-80	12-80	1-81	2-81	3-81	4-81	5-81	6-81	7-81
T-14	6548	5952	5952C	3860	5790	6070	5980	6000	5676	5289	5364	5069
V-0	7491	5530	6910	6910C	7240	7030	6790	6310	6264	6307	6338	6275
V-2	7420	7182	7200	7200C	7340	7330	7180	6800	6693	6551	6292	6448
V-4	10493	11058	10930	12370	11730	11540	12400	11780	12684	12234	12418	10394
V-6	10511	10054	10350	10160	10230	9560	10260	9260	9235	8629	8547	8657
V-8	8256	7969	8430	8560	8050	8320	7850	7380	7186	6512	6239	6317
V-10	7069	7370	7310	7850	7600	7650	7260	7120	6718	6821	6604	6718
V-12	6083	5980	6240	6060	5980	5670	5460	5320	5034	4786	4665	3623
V-14	9472	6544	6720	6390	6280	5860	5690	5400	5289	4771	4761	4825

C DATA CARRIED OVER FROM LAST MONTH.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE CHLORIDE REPORT

	8-81
T-14	4570
V-0	5940
V-2	5840
V-4	11740
V-6	8070
V-8	5950
V-10	6120
V-12	4220
V-14	4220

C DATA CARRIED OVER FROM LAST MONTH.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE CHLORIDE REPORT

CHLORIDES (PPM)

WELL NO.	2-77	3-77	4-77	5-77	6-77	7-77	8-77	9-77	10-77	11-77
AS-35	**	**	**	**	**	**	**	**	12730	0
AS-36	**	**	**	**	**	**	**	8670	8540	0
DD-10	12240	12300	9010	9980	8440	9056	9714	9360	9070	9760
DD-12	8310	8730	8830	9690	8190	9021	9714	9210	9250	9725
DD-14	9870	9840	**	11600	9520	9231	11415	10400	9070	10758
DD-16	10130	10200	10420	10900	9700	10600	10919	10330	10280	11612
DD-18	13000	13100	12980	10900	10200	10741	10919	10760	10740	10900
FF-12	8330	8280	8650	9290	7470	8108	8366	8170	8360	8335
FF-14	8600	8570	8830	9150	7650	4142	7303	9180	8680	9155
FF-16	12460	12700	12830	10700	9880	10635	11947	11340	11380	11612
FF-18	12890	12900	12800	10900	9700	11267	11132	11630	11080	11434
FF-20	**	**	**	19900	**	10846	26377	9770	15290	10900
HH-12	8700	8600	8700	9400	8840	8915	9572	8640	8860	8763
HH-14	8560	8390	8470	8710	8120	8424	9678	8530	8430	8727
HH-16	12640	13100	12730	14000	12860	12145	12266	11880	11700	11897
HH-18	9140	9290	9410	10000	9130	9863	11699	10110	11200	9974
HH-20	9470	**	29920	**	28530	29275	28362	9790	14940	10579
JJ-12	8520	8640	9630	10200	8590	9407	9714	9140	9070	8941
JJ-14	9400	9260	11250	9470	8690	9126	9430	9290	11450	9475
JJ-16	11110	11800	11570	12300	10310	11794	11451	12310	11950	12432
LL-12	8740	8750	8830	9800	7720	8705	7303	**	8710	8976
LL-14	11730	11700	11610	12500	11530	12355	10848	12270	12310	12717
NN-12	10630	10500	10270	11300	9410	10249	11132	11550	10140	10544
NN-14	13440	13200	13520	13600	13510	14181	14216	14220	13870	14783
PP-12	9650	11100	**	10500	9490	9582	10848	9570	9250	9582
PP-14	8920	9080	**	8700	8980	8915	9607	9210	9070	9511
PP-16	10890	9620	**	12000	11860	11373	8366	11770	11560	12325
RR-2	11470	11500	11570	11600	11140	11092	11380	11450	11100	11399
RR-4	15330	**	11540	**	0	21201	10210	20570	11200	20625
RR-6	15300	**	11570	15000	14910	15269	7338	14870	14940	9261
RR-8	9320	9180	9590	10090	8910	9021	10884	8710	23190	8727
RR-10	8190	9220	8830	8780	8480	8178	8189	**	8360	7979
RR-12	8740	8750	9190	9840	8770	9021	7338	8780	**	0
RR-14	8920	9040	**	25230	24650	11653	23611	9020	22980	9760
TT-2	9470	9800	9880	10310	9740	8073	9962	9900	9430	9404
TT-4	14420	14500	10270	13210	12750	11057	11451	9680	9780	13251
TT-6	9110	9150	9700	10850	10280	9758	**	9790	9600	10045
TT-8	8810	8930	9230	9870	9160	9231	10175	9390	22760	9475
TT-10	16830	**	16800	9470	17390	8143	9040	16130	22910	9938
SC-14	**	**	**	9290	**	9126	9785	10260	9530	9333
BP-18	**	**	**	**	**	**	**	**	**	**

** DATA NOT AVAILABLE

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE CHLORIDE REPORT

CHLORIDES (PPM)

WELL NO.	12-77	1-78	2-78	3-78	4-78	5-78	6-78	7-78	8-78	9-78
AS-35	14280	12156	13520	13762	14470	13900	13900	13800	13550	14040
AS-36	8670	8614	6050	8799	9120	8800	8900	8300	8930	9210
DD-10	**	10242	11430	8086	11640	10900	12000	11800	11350	12560
DD-12	9360	9490	9280	9447	10260	9200	9700	9900	9590	9950
DD-14	10120	10529	10190	10227	10180	10200	10400	9100	10300	11390
DD-16	10640	10628	10510	10543	11010	10300	11000	11200	10170	10920
DD-18	10970	7473	10360	10724	10930	10600	10900	10900	10340	11130
FF-12	8180	7214	9360	8217	8125	8000	8200	8400	9480	8720
FF-14	8810	8469	8680	9259	9170	8900	8700	8500	8850	9050
FF-16	11480	9933	11240	8111	11920	11500	12400	11500	11740	13020
FF-18	11230	10032	11030	9869	12060	11200	12200	11000	11270	12420
FF-20	8756	10458	**	26261	29540	26800	**	25600	27540	29580
HH-12	8680	6349	**	8685	9221	8600	8800	9100	8880	9200
HH-14	8230	6002	8170	8756	8990	8400	8700	9200	8580	9020
HH-16	11600	10851	11230	12291	11360	10900	11700	12800	11460	11250
HH-18	9810	10249	11210	**	9970	9500	9100	9000	8930	9200
HH-20	8470	9043	8300	26981	27630	25500	**	26400	26500	14660
JJ-12	9300	9412	9093	9511	9270	9300	9300	9600	9590	9340
JJ-14	8760	6377	6740	**	10080	8800	9100	10000	8980	10320
JJ-16	12130	9866	12170	13205	13120	12900	13300	12800	13270	13820
LL-12	8620	7586	5920	8728	**	8800	9100	9000	9110	9510
LL-14	12540	11993	11990	12149	13330	12100	13200	13100	12460	12750
NN-12	11110	10082	9500	9912	10510	9500	9600	10300	9660	10330
NN-14	14510	14889	13570	14024	15180	14300	15500	14700	14960	15240
PP-12	10270	10061	9060	10373	10640	9700	9900	9900	10260	9680
PP-14	9320	9135	8820	9267	9470	9200	10000	9600	9760	10870
PP-16	10730	11362	10620	11567	11170	11300	11600	11600	11930	12050
RR-2	11150	10227	10980	10387	10040	10500	10500	10500	**	10710
RR-4	**	19412	18560	18905	11640	17200	18100	16000	16770	18450
RR-6	14730	15105	14400	15378	20590	15700	16800	15600	15590	15580
RR-8	8070	8827	5090	8721	16340	8600	9300	9200	8500	9210
RR-10	8670	4630	8780	8178	8780	7700	8100	8000	8140	8610
RR-12	9380	8650	21430	9589	8000	9400	9600	9500	9980	10230
RR-14	9054	11426	9710	9614	9500	11200	20500	13400	**	22930
TT-2	9810	8703	11340	9958	22220	9700	10300	10200	9960	9860
TT-4	12770	12344	8500	11546	10040	11500	12100	11900	11720	**
TT-6	9940	9125	8590	11411	12480	10700	11200	10900	9930	10500
TT-8	9460	7235	21560	10472	11580	8900	9200	14100	9170	9430
TT-10	10610	6711	9070	15286	9490	13500	**	14000	13900	13190
SC-14	9040	9284	8910	**	14860	9300	9800	**	**	10580
BP-18	**	**	**	**	**	**	**	**	**	**

** DATA NOT AVAILABLE

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE CHLORIDE REPORT

CHLORIDES (PPM)

WELL NO.	10-78	11-78	12-78	1-79	2-79	3-79	4-79	5-79	6-79	7-79
AS-35	14660	14620	13080	14720	12880	**	8970	8960	12810	12468
AS-36	9170	9040	9150	8990	9260	**	13060	**	9160	9054
DD-10	10930	11580	11230	10720	11870	10170	10180	10130	10810	10032
DD-12	9800	9660	9390	9760	8960	9250	9420	9530	9700	9309
DD-14	10730	11870	10850	9410	10370	10320	10490	10460	10580	10465
DD-16	12920	10730	10680	11790	**	10110	9340	10850	10360	10256
DD-18	10450	10120	10680	9540	9290	9670	9830	**	9590	9944
FF-12	8090	9360	8450	7100	8080	8320	8180	8690	8440	8370
FF-14	9510	8610	9400	9590	9230	**	9260	9080	9470	8831
FF-16	11360	11360	12830	11730	11996	11530	11750	11140	11630	11730
FF-18	11050	11570	11250	11430	**	10760	10740	10970	11110	11124
FF-20	27420	27510	26990	**	**	**	26870	**	**	**
HH-12	8330	8600	9220	8610	8230	8830	9200	8800	9010	9100
HH-14	8650	9660	9170	8460	8330	8800	8740	8820	8950	8728
HH-16	9180	11330	10180	10010	11600	10630	10950	11060	11420	10380
HH-18	**	**	9010	9050	8370	**	8650	8770	8920	**
HH-20	25900	25650	**	25740	25600	26560	25080	**	**	**
JJ-12	9710	8950	**	11240	9820	7940	8460	8580	8010	8086
JJ-14	9570	9580	9040	9290	8900	9100	11570	9440	10290	9334
JJ-16	13490	13230	13700	13290	**	14370	13620	13340	13600	13861
LL-12	9320	9090	8870	8670	8380	8640	8780	8660	9340	8930
LL-14	11600	12350	9660	11880	12040	11310	11060	11510	11360	11301
NN-12	10440	9570	9650	8670	**	**	8520	8410	8160	8554
NN-14	14810	14660	11500	13450	14070	**	13600	13890	13800	13584
PP-12	9770	9410	9280	9460	**	8470	8510	8180	8200	7994
PP-14	10900	11070	9410	9514	9470	9240	9480	9470	9490	9380
PP-16	12800	11290	10700	10250	10000	10360	10830	10710	10870	9954
RR-2	11270	10340	10040	10330	**	10480	10400	10920	10610	10475
RR-4	18130	18190	18020	17830	**	17570	16488	16900	17083	17570
RR-6	16300	16100	16070	16240	14750	14960	14850	14610	14420	14765
RR-8	8880	8810	8560	8580	**	8670	8600	8820	8830	8703
RR-10	8780	**	8530	7780	8220	8110	7930	7960	8240	8345
RR-12	10440	9370	8880	9080	9110	9090	9390	9420	9580	9398
RR-14	24740	23490	23080	22810	21380	**	21670	**	21840	20366
TT-2	11330	10340	10020	10210	9380	9870	9750	9950	10260	10529
TT-4	12670	11730	11780	10220	9880	10160	11040	11344	11260	11040
TT-6	10870	11090	10840	10210	10540	10760	10250	10420	10110	10603
TT-8	9140	9650	9310	9340	9080	9280	9110	9220	9530	11791
TT-10	13120	12900	12760	12750	12210	**	12160	12450	12140	13046
SC-14	10720	10170	9930	9510	10000	**	**	9670	**	**
BP-18	**	**	**	**	**	**	**	**	**	**

** DATA NOT AVAILABLE

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE CHLORIDE REPORT

WELL ID	8-79	9-79	10-79	11-79	12-79	1-80	2-80	3-80	4-80	5-80	6-80	7-80
AS-35	11947	12660	11043	12910	12468	12156	12960	9270	12070	11870	11978	11748
AS-36	8922	9180	8636	9560	9582	9338	9480	9530	9440	12250	9277	9086
DD-10	11050	10290	10043	10170	10156	10242	10520	10540	10280	10520	9313	10288
DD-12	9501	9620	7328	9530	9678	9465	9840	9660	10360	9590	10351	9146
DD-14	10436	11340	10390	10380	10213	10490	10410	10390	10140	10610	10078	10075
DD-16	10213	10330	10585	10350	10142	10390	10240	10320	10200	10270	11787	9635
DD-18	10057	10130	10532	11510	10337	10809	10740	10960	11320	11060	9936	7778
FF-12	8409	8490	8519	8620	8405	8707	8710	8700	8610	8450	8731	8267
FF-14	8785	8860	8632	8890	9157	8898	8300	8220	8560	8480	8132	7774
FF-16	11621	11520	10483	12300	11745	12250	12250C	11840	11880	12230	11528	11082
FF-18	12464	11430	11348	11680	11489	11801	11850	12090	11510	11480	10840	10436
FF-20	26870C	26870C	11142	11370	11370C	11370C	11970	11970C	15270	29220	9550	9550C
HH-12	8905	8930	8668	9090	9196	8625	8810	8780	8770	8540	7429	8455
HH-14	8806	8810	8699	9290	8891	8884	8720	8860	9160	8770	8838	8561
HH-16	10486	11490	10426	11650	11294	11450	12020	12130	12100	12610	12117	11819
HH-18	8299	9460	8845	9380	9157	8919	9030	9250	9180	9020	8933	8281
HH-20	425	425	10876	10840	15176	23907	12130	12130C	15460	21540	11145	13194
JJ-12	8104	7620	7604	9960	7774	8419	8120	8090	7800	7950	8097	8015
JJ-14	9387	9270	9430	9630	9820	9713	9640	9820	9670	9670C	9959	9444
JJ-16	12645	12420	12294	13000	12305	12411	12560	12120	12680	12940	12659	12379
LL-12	9360	8740	7491	8670	8852	9072	8590	8850	8490	8410	8473	5892
LL-14	10862	10980	11153	11800	11192	11018	11290	11290C	11490	11870	11376	10585
NN-12	7845	7900	7611	8010	7764	7966	8330	7960	8160	8130	7951	7951C
NN-14	14340	13810	13776	14780	13670	13797	8910	13910	14080	14350	13829	13808
PP-12	8281	7740	7554	7850	7976	7654	7170	7580	7150	7260	7012	6849
PP-14	9586	9060	9157	9550	9015	9377	8970	9550	9420	8840	8636	8033
PP-16	10472	10340	9720	10760	10518	10451	10710	9370	11020	10500	10688	8877
RR-2	10291	10290	10284	10630	10358	11174	10580	11010	10770	11310	15857	10628
RR-4	17654	16980	16920	16630	16016	17090	15950	16400	16640	16180	11482	14460
RR-6	13428	13110	12656	12690	12606	12521	11790	12430	11880	12590	8423	11014
RR-8	8625	8710	8501	8960	9022	8852	8600	8840	8560	8550	7583	8455
RR-10	7732	8100	7888	8100	7983	8763	9620	7810	7790	8070	9182	7494
RR-12	9341	9710	9401	9680	9327	9625	9390	9620	9650	9650C	19600	9146
RR-14	19388	20970	20806	20806C	20806	21121	20500	20830	21390	20940	10259	10259C
TT-2	10465	10790	10426	10070	9937	10270	10330	10390	9960	10210	10741	9603
TT-4	10490	10600	10525	9950	10546	9706	10270	11310	10970	10860	10536	11312
TT-6	9894	10660	10472	10460	10358	10497	10180	10500	10670	10490	9536	10220
TT-8	9320	9560	9320	9580	9657	9706	8440	9780	8690	9920	12237	9759
TT-10	12181	12050	10316	11940	12053	12177	11920	12020	12080	9890	9890	12096
SC-14	9670C	9670C	9670C	9670C	9618	9618C	10100	9890	9890C	12940	11135	11135C
BP-18	9890C	9890C	9890C	14060	10447	13074	13074C	10040	10040C	12940	9000	9000C

C DATA CARRIED OVER FROM LAST MONTH.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE CHLORIDE REPORT

WELL ID	8-80	9-80	10-80	11-80	12-80	1-81	2-81	3-81	4-81	5-81	6-81	7-81
AS-35	11298	11603	11820	12850	13050	11280	12010	11600	12276	12142	9433	12010
AS-36	9504	9146	10030	10290	10060	9450	9940	9490	9908	9696	9692	9614
DD-10	10103	9756	10180	10730	9960	10290	10270	10160	10092	10015	9391	9714
DD-12	9625	9522	9510	9740	9530	9640	9640C	9680	9976	9639	8919	9639
DD-14	10047	9766	9810	9990	9950	10280	9920	9640	9610	9330	9153	9235
DD-16	9844	9525	10060	9690	10010	9690	9690C	9900	9976	9852	10064	9919
DD-18	9947	10227	10140	11420	11800	9990	10880	11580	12751	12301	12780	12241
FF-12	8551	8288	9700	9300	9090	8840	8640	9510	9160	9139	8887	8944
FF-14	8072	8022	8010	8230	7970	8020	8015	8040	8107	7455	7349	7345
FF-16	10858	10851	10770	10780	10780C	11160	11860	10970	11192	11138	10663	10975
FF-18	8717	10142	10230	11620	10820	10720	10520	10660	10848	9876	9341	9632
FF-20	27410	27410C	27290	27290C	27290C	27430	27430C	27430C	27430C	27430C	27430C	27430C
HH-12	7388	8246	10140	8490	9230	9770	9770C	9250	9203	9160	9465	9869
HH-14	8100	8111	8700	8530	8470	8730	9070	8460	8409	7604	7430	7203
HH-16	12978	11525	11890	11720	9750	12100	12110	11760	12599	10642	12471	12847
HH-18	8965	8341	8870	9680	8810	8720	9090	8960	8476	7877	7356	7749
HH-20	27162	27162C	27162C	27162C	27162C	26370	26370C	26370C	26370C	26370C	27768	28016
JJ-12	8175	7239	7300	7370	6640	7740	6080	5160	4601	4318	4176	3970
JJ-14	10121	10121C	9680	9590	9900	10180	9600	9120	7483	9412	10078	9844
JJ-16	12344	12344C	12520	12880	12550	13300	11740	9830	10125	6448	10167	7058
LL-12	8657	8037	8550	8890	8540	8910	8630	8010	7980	7714	7647	7569
LL-14	12018	12018C	11210	11060	11950	11960	11290	11460	10425	11124	11511	11309
NN-12	8029	7615	7840	8180	7790	7710	7180	6750	6182	6271	5917	5598
NN-14	14524	13609	13830	13940	13900	14870	14310	13670	13808	13808C	14340	14616
PP-12	6544	6913	6950	6700	6790	6100	5880	5650	5101	4977	4743	4885
PP-14	8816	8515	8810	9010	10500	8710	8710	8700	8653	8455	8831	8508
PP-16	11092	9965	10840	10270	11010	10640	11270	10470	10150	11114	11674	11340
RR-2	12298	10876	10120	10120C	12710	11710	11510	11760	12276	11220	13907	11801
RR-4	15396	14460	14260	15070	14630	14510	14630	13630	13443	13411	13411C	13432
RR-6	12638	12081	12640	12510	12510	12040	12290	11510	11096	10958	11195	11241
RR-8	8458	8214	8080	8260	8110	8980	8250	8100	7859	7533	7813	7622
RR-10	7292	7367	7270	7520	7760	7520	7740	7400	7147	7306	7469	7707
RR-12	9334	8767	8570	9710	8850	8750	8960	8190	8809	8210	8554	8207
RR-14	19678	18962	18990	20410	21480	18970	18604	17300	18785	18122	18533	19076
TT-2	9951	10203	10110	10900	10920	10200	10080	9660	9660	9603	10259	9536
TT-4	11340	11858	9590	10640	10040	10110	10820	9820	9600	10745	10263	10532
TT-6	10351	10238	10030	10290	10640	10660	10890	10210	9795	10110	10426	10068
TT-8	9628	9738	9540	9400	10030	9600	10180	9740	6745	9494	9777	9579
TT-10	12315	12953	12240	12210	12580	12570	12330	11760	11408	11823	11837	12159
SC-14	9890	9890C	9890C	9890C	9890C	9890C	9890C	9890C	9890C	9890C	11486	11486C
BP-18	0	0C	0C	0C	15370	13880	14520	14870	14510	13939	11925	13779

C DATA CARRIED OVER FROM LAST MONTH.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE CHLORIDE REPORT

	8-81
AS-35	11400
AS-36	9470
DD-10	9580
DD-12	8880
DD-14	8720
DD-16	9490
DD-18	12460
FF-12	8810
FF-14	6870
FF-16	10720
FF-18	9300
FF-20	27430C
HH-12	9100
HH-14	6550
HH-16	12170
HH-18	7270
HH-20	28016C
JJ-12	4100
JJ-14	9770
JJ-16	9790
LL-12	10030
LL-14	10970
NN-12	5310
NN-14	13620
PP-12	4440
PP-14	8480
PP-16	11030
RR-2	10980
RR-4	12760
RR-6	10660
RR-8	7280
RR-10	7210
RR-12	8120
RR-14	16410
TT-2	9170
TT-4	10580
TT-6	9620
TT-8	9490
TT-10	11230
SC-14	11486C
BP-18	13720

C DATA CARRIED OVER FROM LAST MONTH.

MARATHON OIL COMPANY
MARAFLOOD PROCESS M-1 PROJECT
TRITIATED WATER REPORT

WELL NO.	6-77	7-77	8-77	9-77	10-77	11-77	12-77	1-78	2-78	3-78	4-78	5-78	6-78	7-78
B-4	**	**	**	**	**	350	**	**	**	**	**	**	**	**
D-4	1701	1336	970	**	290	347	431	447	**	**	**	401	**	460
H-8	**	**	**	**	**	**	**	**	125	138	**	**	**	**
J-8	**	**	**	**	**	**	**	**	123	136	181	130	252	220
L-4	47	**	**	**	**	**	**	232	**	**	355	**	**	**
L-6	**	205	196	204	219	210	337	290	**	372	351	338	**	300
L-12	**	**	**	**	190	411	526	676	922	957	1112	806	809	790
N-8	**	**	**	**	**	**	**	**	**	**	134	**	**	**
RR-2	**	**	**	**	**	188	304	**	463	454	698	849	947	990
TT-2	**	**	**	165	165	**	**	**	**	**	**	**	**	**
TT-4	**	**	**	168	168	203	253	211	**	**	**	156	155	160
TT-10	**	**	**	**	**	251	**	**	**	**	**	**	**	**
MA-12	**	**	**	**	2020	**	**	3670	**	**	**	**	**	**
MA-14	**	**	426	1182	2127	2745	3538	3662	3721	3791	**	4196	3819	3700
ECB-5	**	**	**	**	**	**	**	248	**	**	**	**	**	**
N-6	**	**	**	**	**	**	**	**	**	**	**	147	204	280
J-6	**	**	**	**	**	**	**	**	**	**	**	**	168	150
PP-12	**	**	**	**	**	**	**	**	**	**	**	**	171	190

(DATA REPORTED AS DPM/ML--DISINTEGRATIONS PER MINUTE/MILLILITER OF TEST FLUID)
** BELOW BACKGROUND LEVEL

MARATHON OIL COMPANY
MARAFLOOD PROCESS M-1 PROJECT
TRITIATED WATER REPORT

WELL NO.	8-78	9-78	10-78	11-78	12-78	1-79	2-79	3-79	4-79	5-79	6-79	7-79
XA-10	**	**	**	**	**	**	**	**	146	**	**	**
XA-12	**	**	**	**	**	**	**	**	**	**	**	**
XA-14	3689	4161	4146	4095	4112	3849	4872	4379	4057	4638	**	5000
AA-11	**	**	**	**	**	**	**	**	316	**	**	445
B-4	489	**	**	**	**	**	**	**	**	**	858	201
D-4	**	475	**	560	**	431	484	484	269	**	385	351
D-10	**	**	511	**	**	**	**	**	**	**	**	**
ECB-5	**	**	**	**	**	**	**	**	**	**	**	**
F-4	**	**	**	**	**	**	**	**	**	**	**	201
H-8	**	**	**	**	**	**	**	**	**	**	**	**
J-0	**	**	**	**	214	**	**	**	**	**	**	**
J-4	**	**	**	**	212	**	**	**	**	**	**	**
J-6	174	171	150	204	207	474	**	338	281	172	206	226
J-8	231	212	223	231	324	**	384	**	**	**	197	262
L-4	**	**	**	**	**	**	**	**	**	**	**	**
L-6	326	316	326	315	341	404	143	**	131	**	187	241
L-12	838	1010	860	971	477	686	**	**	1442	1517	1244	758
L-14	**	**	**	**	**	**	**	**	**	**	1236	**
N-2	**	**	**	**	**	**	**	**	**	**	**	284
N-6	384	478	537	**	569	1048	246	199	146	212	**	1684
N-8	**	**	**	**	**	**	**	**	**	**	**	**
N-10	**	**	**	**	**	**	**	**	**	**	**	**
P-12	**	**	**	**	**	**	213	563	398	884	1003	**
R-14	**	**	**	**	**	**	**	1517	**	**	**	**
T-6	**	**	**	**	**	**	**	315	**	**	**	**
T-8	**	**	**	**	**	**	443	**	225	182	**	226
PP-12	371	905	1445	1137	1081	666	**	671	439	416	430	564
RR-2	**	1197	1165	1069	832	648	**	383	370	340	271	254
TT-2	**	**	**	**	**	**	**	**	**	**	**	**
TT-4	489	**	294	327	415	347	178	300	304	261	192	155
TT-10	**	**	**	**	**	**	**	**	**	**	**	**

(DATA REPORTED AS DPM/ML--DISINTEGRATIONS PER MINUTE/MILLILITER OF TEST FLUID)
** BELOW BACKGROUND LEVEL

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE TRITIATED WATER REPORT

WELL ID	8-79	9-79	10-79	11-79	12-79	1-80	2-80	3-80	4-80	5-80	6-80	7-80
XA-10			3343	1470			553	237	390			
XA-12				805			1079	343	326	937	368	234
XA-14	4250	3400	3459	3175	4350	4340	4249	4593	3426	4340		2097
AA-11				247		260	2474	575	841	443	191	
B-0												
EB-5												
B-4			3673	897			4815		3407			
B-6							77					
B-8								3533		4447	8600	3805
B-10												
B-12							149		180			
B-14												
B-16												
D-0												
D-2												
D-4			220	352				4700	513	1150	1200	238
D-6								189		183	69	203
D-8									498	56		
D-10												
F-0												
F-2												
F-4	201											
F-6									498	56		
F-8												
F-10												
F-12												
F-14												
H-0												
H-2												
H-4												
H-6												
H-8			365				179					
H-10												
H-12												
H-14							8333	420	800	1116	100	
J-0												
J-2												
J-4												
J-6	460	230	222	210			356	436	582	606	295	
J-8	330		405	365	430	388	467	568	490	373	247	369
J-10												

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE TRITIATED WATER REPORT

WELL ID	8-80	9-80	10-80	11-80	12-80	1-81	2-81	3-81	4-81	5-81	6-81	7-81
XA-10						536						
XA-12	286		353	517		817	605		705	901	2396	1079
XA-14	3017	3350	2655	2208		7343	2350	143	1593	1427	7855	2692
AA-11	128	114	124	72		256	191	130	37	36	73	50
B-0							11				3	
EB-5												
B-4			282						2394	1200	11900	50
B-6												
B-8	26300					6510						942
B-10												
B-12		264	38			99			42		883	
B-14						117					188	30
B-16												
D-0						54				10		
D-2						1301			267	72	6963	293
D-4	684	900	218	109		330	136	99	80	162	1287	319
D-6	216	153	209	122		407	212	86	150	152	187	192
D-8										157		
D-10	5											
F-0						6						
F-2						9					482	60
F-4						365						
F-6	23		8			26	33		29	33	15	76
F-8												
F-10												
F-12												7
F-14											112	81
H-0												
H-2												
H-4						983	3					
H-6										13		3
H-8										8		11
H-10												
H-12	15										34	5
H-14		140				289					17	14
J-0											19	
J-2												
J-4										11		6
J-6	281	671	628	786		713	810	330	455	581	578	536
J-8	355	338	273	381		408	35	259	317		345	357
J-10												

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE TRITIATED WATER REPORT

	8-81
XA-10	5.03C
XA-12	4.41
XA-14	8.63
AA-11	1.52
B-0	.48
EB-5	.35
B-4	7.19
B-6	.28C
B-8	3.01C
B-10	3.82C
B-12	6.86
B-14	3.31
B-16	2.26
D-0	2.36
D-2	6.15
D-4	7.00
D-6	2.30
D-8	4.50
D-10	2.91
F-0	2.75
F-2	5.72
F-4	.73
F-6	5.20
F-8	2.20
F-10	2.02
F-12	2.87C
F-14	3.81
H-0	4.17
H-2	2.52
H-4	3.36
H-6	4.18
H-8	4.17
H-10	2.19
H-12	5.10
H-14	2.50
J-0	3.35
J-2	3.62
J-4	4.35
J-6	3.29
J-8	4.10
J-10	3.10

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE TRITIATED WATER REPORT

WELL ID	8-79	9-79	10-79	11-79	12-79	1-80	2-80	3-80	4-80	5-80	6-80	7-80
J-12												
J-14												
L-0												
L-2												
L-4												
L-6	275	255	220				144		100	408	72	159
L-8												
L-10												
L-12	540	355	473	593	230	428	1419	1038	737	805	483	577
L-14							101	116		71		77
N-0												
N-2												
N-4							233	191	73	184		
N-6	2560	2290	2370	2325	2140	1320	1296	1219	1684	1607	975	1107
N-8							220	106	91			
N-10	270											
N-12				210	298	328	319		453	461	354	418
N-14					229	335	386	431	548	585	520	461
P-0												
P-2												
P-4												
P-6												
P-8												
P-10												
P-12		1090	1228	910		852	673	622	677	680	497	522
P-14							392				46	53
R-0												
R-2												
R-4												
R-6												
R-8												
R-10												
R-12												
R-14							115					
T-0												
T-2												
T-4												
T-6							601	256		181	1102	1624
T-8						175	209	276	248	233	198	
T-10												
T-12												

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE TRITIATED WATER REPORT

WELL ID	8-80	9-80	10-80	11-80	12-80	1-81	2-81	3-81	4-81	5-81	6-81	7-81
J-12						3		21	41	48	52	57
J-14	38	34	273	33		31		22	56	43	25	32
L-0												
L-2						99						
L-4						28					14	4
L-6	192	189	112	155		594		133	181	275	253	220
L-8											70	
L-10											24	10
L-12	587	856	749	617		594	782	455	709	529	558	835
L-14	78	87	77	63		74	87	54	41	74	64	70
N-0												
N-2						20					23	
N-4	18	49	48			98	55			36	113	56
N-6	910	659	695	595		462	447	223	236	282	420	297
N-8											205	29
N-10											173	
N-12	440	330		303		318	371	228	313	295	385	438
N-14	554	420	380	318		268	314	176	214	204	224	206
P-0												
P-2											2	
P-4												6
P-6												
P-8												
P-10												
P-12	496	558	637	1752		1163	885	392	350	263	255	167
P-14	48	65	87	171		116	57	39	7	71	178	144
R-0												
R-2												
R-4												
R-6							14			3	26	25
R-8											111	
R-10											8	
R-12								26				
R-14								234			87	23
T-0											355	
T-2												
T-4							5					
T-6	1071		117			4100	8	175				113
T-8	233	313	235	183		183	201	201	161	117	101	111
T-10								16			125	53
T-12											157	

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE TRITIATED WATER REPORT

	8-81
J-12	1.59
J-14	3.92
L-0	.70
L-2	4.76
L-4	5.84
L-6	2.89
L-8	5.46
L-10	6.19
L-12	10.00
L-14	5.92
N-0	.49
N-2	3.61
N-4	6.08
N-6	7.50
N-8	9.19
N-10	10.50
N-12	8.51
N-14	6.51
P-0	6.37
P-2	4.02
P-4	5.66
P-6	4.57
P-8	4.61
P-10	5.81
P-12	4.94
P-14	8.94
R-0	1.66
R-2	3.37
R-4	2.37
R-6	5.70
R-8	7.06
R-10	5.66
R-12	3.62
R-14	4.04
T-0	7.27
T-2	6.22
T-4	3.14
T-6	6.81
T-8	6.16
T-10	11.20
T-12	14.00

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE TRITIATED WATER REPORT

WELL ID	8-79	9-79	10-79	11-79	12-79	1-80	2-80	3-80	4-80	5-80	6-80	7-80
I-14												
V-0							676					
V-2												
V-4												
V-6												
V-8												
V-10												
V-12												
V-14							125					

(DATA REPORTED AS DPM/ML--DISINTEGRATIONS PER MINUTE/MILLIMETER OF TEST FLUID)
** BELOW BACKGROUND LEVEL

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE TRITIATED WATER REPORT

WELL ID	8-80	9-80	10-80	11-80	12-80	1-81	2-81	3-81	4-81	5-81	6-81	7-81
T-14												
V-0												
V-2												
V-4											12	
V-6											25	
V-8												
V-10											87	
V-12				89				14				
V-14												

(DATA REPORTED AS DPM/ML--DISINTEGRATIONS PER MINUTE/MILLIMETER OF TEST FLUID)
** BELOW BACKGROUND LEVEL

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
2.5-ACRE TRITIATED WATER REPORT

	8-81
T-14	6.69
V-0	6.58
V-2	7.38
V-4	4.48
V-6	6.97
V-8	8.24
V-10	8.05
V-12	12.70
V-14	7.37

C DATA CARRIED OVER FROM LAST MONTH.

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE TRITIATED WATER REPORT

WELL ID	8-79	9-79	10-79	11-79	12-79	1-80	2-80	3-80	4-80	5-80	6-80	7-80
AS-35												
AS-36												
DD-10												
DD-12									90			
DD-14												
DD-16												
DD-18												
FF-12												
FF-14							115	93	97	108	94	65
FF-16												
FF-18												
FF-20												
HH-12												
HH-14				170			135	156	166	195	223	159
HH-16												
HH-18												
HH-20												
JJ-12												
JJ-14												
JJ-16												
LL-12												
LL-14												
NN-12												
NN-14												
PP-12	620	1070	1130	924	884		1016		1188	1040	822	639
PP-14							46		61			
PP-16												
RR-2	230	255	246	225	212	170	123	117	111	111		142
RR-4												
RR-6												
RR-8												
RR-10							186					
RR-12						188	186	291	267	325	338	384
RR-14							171	218	189	221		288
TT-2									66	61	131	92
TT-4	180	160		236	193		360	403	529	560	523	
TT-6							74					
TT-8												
TT-10			373									
SC-14												
BP-18												

(DATA REPORTED AS DPM/ML--DISINTEGRATIONS PER MINUTE/MILLIMETER OF TEST FLUID)
** BELOW BACKGROUND LEVEL

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE TRITIATED WATER REPORT

WELL ID	8-80	9-80	10-80	11-80	12-80	1-81	2-81	3-81	4-81	5-81	6-81	7-81
AS-35								3				
AS-36												
DD-10												
DD-12		5										
DD-14												
DD-16											5	
DD-18												
FF-12												
FF-14	103	73	73	84		152	133	136	145	168	164	149
FF-16	33	20	36	85		187	279	231	282	336	339	326
FF-18												
FF-20												
HH-12												
HH-14	237	359	373	500		706	1000	971	1083	1257	1241	1232
HH-16	35	11	47	73		116	179	166	131	60	167	122
HH-18												
HH-20												
JJ-12												
JJ-14												
JJ-16												
LL-12												
LL-14												
NN-12									21		62	5
NN-14									2			
PP-12	883	859	979	674		650	737	446	340	432	510	456
PP-14	43	34	61	31		59	88	65	63	49	62	50
PP-16												
RR-2	115	127				203	252	220	231	267	17	272
RR-4							8					32
RR-6												
RR-8												
RR-10												
RR-12	147	438	461	458		532	738	597	670	707	722	664
RR-14		199	197	176		206	220	210	135	162	158	149
TT-2	21	71	63	70		79	97	63	64	73	79	68
TT-4	419	634	255	300		331	366	294	264	326	346	279
TT-6		3				8	15	13		3		2
TT-8						162						
TT-10												7
SC-14											288	
BP-18												

(DATA REPORTED AS DPM/ML--DISINTEGRATIONS PER MINUTE/MILLIMETER OF TEST FLUID)
** BELOW BACKGROUND LEVEL

MARATHON OIL COMPANY
MARAFLOOD PROCESS - M-1 PROJECT
5.0-ACRE TRITIATED WATER REPORT

	8-81
AS-35	3.04
AS-36	.92
DD-10	4.30
DD-12	5.58
DD-14	9.87
DD-16	5.78
DD-18	5.81
FF-12	2.82
FF-14	10.10
FF-16	7.80
FF-18	8.57
FF-20	.20C
HH-12	3.00
HH-14	10.80
HH-16	6.67
HH-18	7.58
HH-20	.10C
JJ-12	1.25
JJ-14	1.20
JJ-16	1.16
LL-12	3.13
LL-14	2.91
NN-12	1.29
NN-14	3.28
PP-12	9.28
PP-14	8.34
PP-16	1.22
RR-2	4.99
RR-4	6.93
RR-6	4.25
RR-8	4.70
RR-10	5.23
RR-12	7.79
RR-14	7.60
TT-2	1.94
TT-4	3.82
TT-6	2.33
TT-8	1.08
TT-10	5.23
SC-14	3.22C
BP-18	.10

TED OVER FROM LAST MONTH.