DOE/BC/14960--11

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3rd Quarter, Fiscal Year 1995

POST WATERFLOOD CO2 MISCIBLE FLOOD IN LIGHT OIL
FLUVIAL - DOMINATED DELTAIC RESERVOIRS.

DE - FC22 - 93BC14960

TEXACO EXPLORATION AND PRODUCTION INC.

July 15, 1995

Award Date: June 1, 1993.

Completion Date: December 31, 1997

Government Award for Current Fiscal Year

\$ 1,042,421.00

Project Manager (Texaco)	Sami Bou-Mikael
COR (DOE)	Chandra Nautiyal
Contract Specialist (DOE)	John Augustine

Reporting Period : April 1, 1995 through June 30, 1995

U.S./DOE Patent Clearance is not required prior to the publication of this document

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POST WATERFLOOD CO₂ MISCIBLE FLOOD IN LIGHT OIL
FLUVIAL DOMINATED DELTAIC RESERVOIRS"

"DE-FC22-93BC14960"
TECHNICAL PROGRESS REPORT

3rd QUARTER, 1995.

EXECUTIVE SUMMARY.

Production from the Marg Area 1 at Port Neches is averaging 337 BOPD for this quarter. The production drop is due to fluctuation in both GOR and BS&W on various producing wells, low water injectivity in the reservoir and shut-in one producing well to perform a workover to replace a failed gravel pack setting. Coil tubing work was performed on 2 injection wells in order to resume injection of water and CO₂ in the reservoir. The Marg Area 2 did not respond favorably to CO₂ injection in the Kuhn #6 well. For this reason Texaco will not pursue any further development of this section of the reservoir due mainly to low target reserves. Instead Texaco will reallocate the money to a new Marg segment (Marg Area 3) in order to test a new process that will utilize the CO₂ to accelerate the primary production rates and reduce cycle time. Also the process should reduce water disposal cost, cash lifting cost, operating cost and increase the NPV of the reserves.

3rd QUARTER (1995) OBJECTIVES.

* Monitor and optimize reservoir performance.

The reservoir production during this quarter declined from 392 BOPD to about 337 BOPD due to mechanical problems in two major producers in the reservoir (Kuhn #38 and Kuhn #15R). The gravel pack settings in the wells have failed as evidenced by the surface chokes and by subsequent wireline runs that indicated some sand fill inside the screen. Texaco is planning to workover the wells to correct this problem. Additionally, Texaco is planning to bring a coil tubing rig to the field to clean out the injection wells in order to increase the water and CO₂ injection rates to maintain reservoir pressure. A second WAG cycle is planned in an attempt to reduce the total GOR and improve the oil production rate. The monthly allocated production is illustrated in figure 1.

- * Workover well Kuhn #42 to plug it down to the Marg Area 1 to increase the reservoir production.

The workover for well Kuhn #42 was postponed until September 1995 due to well utilization in the C-1 reservoir. The well will be plugged down as soon as it becomes available. This well is anticipated to recover additional oil from the reservoir that can not be recovered otherwise. However, it may become necessary to workover the injection well Kuhn #36 to reinstate injection in this part of the reservoir.

- * Discuss with the DOE the addition of the Marg Area 3 to the project.

The Marg Area 3 segment is a natural extension to the rest of the Marg reservoir. The proposed project to test the CO₂ utilization to improve the primary production rates was based on the high production rates encountered in the Marg Area 1 reservoir during tertiary production as compared to primary production. Similar observation were noticed in other CO₂ floods. The Marg Area 3 project was presented to the DOE personnel in Bartlesville and will be incorporated into the current project area. All other contract conditions will remain unaffected. The project will have a significant contribution in determining the need to begin CO₂ flooding early in the life of a particular reservoir while the primary oil bank is available. This test will evaluate the economic impact of combining the tertiary and primary production while reducing the operating cost due water disposal, artificial lift and cycle time.

DISCUSSION OF RESULTS - FIELD OPERATIONS.

The separation between Area 1 and Area 2 of the reservoir was confirmed by reservoir pressure difference between well Kuhn #6 and the rest of the reservoir. The Stratamodel built for this reservoir suggested similar conclusions. For this reason Texaco recommended the following actions:

- * Cancel the drilling of the Polk B#39 injection well, in Area 2 of the reservoir.
- * Expend the project to a new area that can impact the project economics positively.
- * Workover Kuhn #42 in Area 1 to increase the reservoir production.

CO₂ purchases from Cardox was temporarily interrupted during the 3rd quarter. However, The daily CO₂ purchases averaged 1850 MCFD. CO₂ purchases are illustrated in figure 2. The following is a list of the most recent well tests taken during the month of June 1995 for the producing wells:

Kuhn #15R	172	BOPD,	636	BWPD,	1645	MMCFD,	17	CHOKE.
Kuhn #38	88	BOPD,	818	BWPD,	1427	MMCFD,	22	CHOKE.
KUHN #33	--	BOPD,	--	BWPD,	--	MMCFD,	--	CHOKE.
STARK #8	46	BOPD,	636	BWPD,	2134	MMCFD,	28	CHOKE.
KUHN #6	--	BOPD,	--	BWPD,	--	MMCFD,	--	CHOKE.
KUHN #14	--	BOPD,	--	BWPD,	--	MMCFD,	--	CHOKE.
POLK #B5	--	BOPD,	--	BWPD,	--	MMCFD,	--	CHOKE.

The Financial Status Report, Management Summary Report, Milestone Schedule and the Federal transaction report are included in Figure 3 through 8.

DISCUSSION OF RESULTS - TECHNOLOGY TRANSFER.

Texaco and SAIC are planning to submit two papers for consideration to the annual SPE/DOE symposium on IOR, to be held in Tulsa in April of 1996. LSU is also planning on submitting a separate SPE paper.

4th Quarter (1995) Objectives.

- * Continue monitoring and optimizing reservoir performance.
- * Workover well Kuhn #42 to the Marg Area 1 reservoir to increase production.
- * Drill Polk B#39 as a CO₂ injection well to the Marg Area 3, after a successful completion of the discovery well Polk B#40 as a producer in the same reservoir. Upon well completion commence CO₂ injection by the OWC.

Port Neches CO2 Project Allocated Production

PORT NECHES - CO2 DELIVERY
ACTUAL VS. CONTRACT

U.S. DEPARTMENT OF ENERGY
SUMMARY REPORT

1. IDENTIFICATION NUMBER DE-FC22-93BC14960		2. PROGRAM/PROJECT TITLE CLASS I		3. REPORTING PERIOD 4/1/95 to 6/6/95											
4. PARTICIPANT NAME AND ADDRESS TEXACO Exploration AND PRODUCTION 400 Poydras St. NEW ORLEANS, LA 70130				5. START DATE: 6/1/93											
				6. COMPLETION DATE 12/31/97											
7. FY	8. MONTHS														
9. COST STATUS		O N D J F M A M J J A S O N D													
a. \$ Expressed in: MILLIONS															
b. Budget and Reporting No. AC1510100															
c. Cost Plan Date 6-23-93															
d. Actual Costs Prior Years 19,722															
e. Planned Costs Prior Years 14,082															
f. Total Estimated Cost for Contract 10,085															
g. Total Contract Value 2,985															
h. Estimated Subsequent Reporting Period															
i. Planned		630	630	214	330	330	330	330	330	330	330	330	330	330	330
j. Actual		214	239	319	490	300	353	91	252	292					
k. Variance		416	391	<105>	<160>	30	70	239	78	38					
l. Cumulative Variance		<214>	<1751>	<1856>	<2016>	<1986>	<1909>	<1,670>	<1592>	<1554>					
10. LABOR STATUS															
a. Labor Expressed in: THOUSANDS															
b. Labor Plan Date: N/A DIRECT LABOR															
c. Planned Labor Prior Fiscal Years 530															
d. Actual Labor Prior Fiscal Years 582															
e. Total Estimated Labor for Contract 465															
f. Total Contract Labor N/A															
LEGEND Planned: - - - - - Actual: _____ Projected:															
g. Planned		15	15	15	13	13	13	13	13	13	13	13	13	13	13
h. Actual		15	11	9	5	15	18	19	8	17					
i. Variance		2	4	6	8	<2>	<5>	<6>	5	<4>					
j. Cumulative Variance		<43>	<39>	<33>	<25>	<27>	<32>	<38>	<33>	<37>					
11. MILESTONES		STATUS													
a.															
b.															
c.															
d.															
e.															
f.															
g.															
12. SIGNATURE OF PARTICIPANT'S PROJECT MANAGER AND DATE															

U.S. DEPARTMENT OF ENERGY
MILESTONE SCHEDULE [] PLAN [X] STATUS REPORT

DOE F1332.3
(11-84)

FORM APPROVED
OMB NO. 1901-1400

1. TITLE Post Waterflood CO2 Miscible Flood in a Light Oil Fluvial Dominated Deltaic Reservoir														2. REPORTING PERIOD Apr. 1, 1995 - Jun. 30, 1995				3. IDENTIFICATION NUMBER DE-FC22-93BC14960											
4. PARTICIPANT NAME AND ADDRESS Texaco Exploration and Production Inc. 400 Poydras St. New Orleans, LA 70130														5. START DATE June 1, 1993															
														6. COMPLETION DATE December 31, 1997															
7. ELEMENT CODE	8. REPORTING ELEMENT	9. DURATION												CURRENT FISCAL YEAR				FY 1994				FY 1995				FY 1996	FY 1997	10. PERCENT COMPLETE	
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q			a. Plan	b. Actual				
1.1	Geologic & Engineering	▲																									100%	100%	
1.2	Extraction Technology	▲																									100%	100%	
2.1	Recording Daily Production										▲															A ▼	50%	50%	
2.2	Reservoir Characterization										▲				B ▼					C ▼							100%	100%	
2.3	Site Operation & Field Work								D					5	E					F							100%	100%	
2.4	CO2													6													50%	50%	
2.5	EH&S Monitoring & Compliance										G	H		7											I ▼	50%	50%		
3.1	CO2 Screening Model																			J ▼	8						100%	100%	
3.2	Environmental Analysis																			9							100%	100%	
3.3	FDD Database & Model																			K					10	75%	75%		
3.4	Technical Publications																			L						11	50%	50%	
11. SIGNATURE OF PARTICIPANT'S PROJECT MANAGER AND DATE																													

U.S. DEPARTMENT OF ENERGY
MILESTONE SCHEDULE [] PLAN [X] SCHEDULE
(ATTACHMENT)

DOE F1332.3 ATTACHMENT
(11-84)

1. TITLE Post Waterflood CO2 Miscible Flood in a Light Oil Fluvial Dominated Deltaic Reservoir	2. REPORTING PERIOD Apr. 1, 1995 - Jun. 30, 1995	3. IDENTIFICATION NUMBER DE-FC22-93BC14960
4. PARTICIPANT NAME AND ADDRESS Texaco Exploration and Production Inc. 400 Poydras St. New Orleans, LA 70130	5. START DATE June 1, 1993	6. COMPLETION DATE December 31, 1997

MAJOR EVENTS	DATE	DESCRIPTION	STATUS
1	10/15/92	TASK 1.1 - GEOLOGICAL RESERVOIR DESCRIPTION AND LAB TESTS	COMPLETED
2	10/15/92	TASK 1.2 - PHASE 1 RESERVOIR SIMULATION	COMPLETED
3	08/01/93	TASK 2.1 - RECEIVE DOE APPROVAL TO INJECT CO2	COMPLETED
4	08/01/93	TASK 2.2 - RESERVOIR PRESSURE IS RAISED TO 2700 PSI BY WATER INJECTION	COMPLETED
5	08/15/93	TASK 2.3 - CO2 INJECTION AND PRODUCTION FACILITY IS COMPLETED	COMPLETED
6	08/15/93	TASK 2.4 - CO2 PIPELINE IS INSTALLED	COMPLETED
7	08/15/93	TASK 2.5 - NEPA CATEGORICAL EXCLUSION IS RECEIVED	COMPLETED
8	12/31/95	TASK 3.1 - SPE PAPER AND RELEASE OF CO2 SCREENING MODEL	COMPLETED
9	12/31/94	TASK 3.2 - TOPICAL REPORT ON ENVIRONMENTAL CONSTRAINTS	COMPLETED
10	12/31/95	TASK 3.3 - TOPICAL REPORT ON FDD DATABASE	PROJECT 75% COMPLETE
11	12/31/97	TASK 3.4 - SPE PAPER ON RESERVOIR CHARACTERIZATION	TO BE PRESENTED 1997

INTERMEDIATE EVENTS	DATE	DESCRIPTION	STATUS
A	12/31/97	TASK 2.1 - FINAL PROJECT REPORT	TO BE COMPLETED DURING 1997
B	12/31/93	TASK 2.2 - UPDATED RESERVOIR MODEL COMPLETED	COMPLETED
C	12/01/94	TASK 2.2 - CONVENTIONAL CORE ANALYZED IN POLK "B" #39 WELL	DEFERRED
D	04/30/93	TASK 2.3 - 10 WELL WORKOVER PROGRAM COMPLETED	COMPLETED
E	10/01/93	TASK 2.3 - HORIZONTAL CO2 INJECTION WELL DRILLED, POLK "B" #2 W/O PERFORMED	HORIZ. WELL COMPLETE, POLK "B" W/O CANCELLED
F	12/01/94	TASK 2.3 - VERTICAL CO2 INJECTION WELL DRILLED (POLK "B" #39)	CANCELLED
G	06/10/93	TASK 2.5 - PERMIT FOR CO2 PIPELINE RECEIVED FROM ARMY CORPS OF ENGINEERS	COMPLETED
H	06/30/93	TASK 2.5 - HAZARDOUS SUBSTANCE PLAN SUBMITTED TO DOE	COMPLETED
I	12/31/97	TASK 2.5 - FINAL HAZARDOUS SUBSTANCE PLAN SUBMITTED TO DOE	TO BE COMPLETED DURING 1997
J	12/31/94	TASK 3.1 - CO2 SCREENING MODEL FINAL REPORT SUBMITTED TO DOE	COMPLETED
K	12/31/94	TASK 3.3 - FDD DATABASE STUDY IS COMPLETED BY LSU	LSU WORK WILL BE COMPLETED IN SPRING, 1996
L	04/18/94	TASK 3.5-1ST SPE PAPER PRESENTED-PROJECT IMPLEMENTATION	COMPLETED

11. SIGNATURE OF PARTICIPANT'S PROJECT MANAGER AND DATE

FINANCIAL STATUS REPORT

(Short Form)

1. Federal Agency and Organizational Element to Which Report is submitted		2. Federal Grant or Other Identifying Number Assigned By Federal Agency		OMB Approval No. 0348-0039	Page 1	of 1 pages
U. S. Department of Energy		DE-FC22-93BC14960				
3. Recipient Organization (Name and complete address, including ZIP code)						
Texaco Exploration and Production Inc. 400 Poydras St. New Orleans, LA 70130						
4. Employer Identification Number		5. Recipient Account Number or Identifying Number		6. Final Report [] Yes [X] No		7. Basis [X] Cash [X] Accrual
51-0265713		323037151				
8. Funding/Grant Period (See Instructions) From: (Month, Day, Year)		To: (Month, Day, Year)		9. Period Covered by this Report From: (Month, Day, Year)		To: (Month, Day, Year)
January 1, 1995		December 31, 1997		04-01-95		06-30-95
10 Transactions				I Previously Reported	II This Period	III Cumulative
a. Total outlays				\$1,042,421.36	\$634,657.80	\$ 1,677,079.16
b. Recipient share of outlays (64.39%)				\$671,215.11	\$408,656.16	\$ 1,079,871.27
c. Federal share of outlays (35.61%)				\$371,206.25	\$226,001.64	\$ 597,207.89
d. Total unliquidated obligations				0.00	0.00	0.00
e. Recipient share of unliquidated obligations				0.00	0.00	0.00
f. Federal share of unliquidated obligations				0.00	0.00	0.00
g. Total Federal share (Sum of lines c and f)				\$371,206.25	\$226,001.64	\$ 597,207.89
h. Total Federal funds authorized for this funding period				\$2,984,599.00	\$0.00	\$ 2,984,599.00
i. Unobligated balance of Federal funds (Line h minus line g)				\$2,613,392.75	(\$226,001.64)	\$ 2,387,391.11
11. Indirect Expense						
a. Type of Rate (Place "X" in appropriate box)						
[X] Provisional [] Predetermined [] Final [] Fixed						
(Labor)		b. Rate		c. Base	d. Total Amount	e. Federal Share
		89.34%		\$ 43,849.90	\$ 39,175.50	\$ 13,950.40
12. Remarks: Attach any explanations deemed necessary or information required by Federal sponsoring agency in compliance with governing legislation						
13. Certification: I certify to the best of my knowledge and belief that this report is correct and complete and that all outlays and unliquidated obligations are for the purposes set forth in the award documents.						
Typed or Printed Name and Title					Telephone (Area code, number and extension)	
Sami Bou-Mikael - Project Manager					(504) 593-4565	
Signature of Authorized Certifying Official					Date Report Submitted	
					August 17, 1995	

Previous Editions not Usable

Standard Form 269A (REV 4-88)
Prescribed by OMB Circulars A-102 and A-110

FEDERAL CASH TRANSACTIONS REPORT <i>(See instructions on the back. If report is for more than one grant or assistance agreement, attach completed Standard Form 272-A.)</i>		Approved by Office of Management and Budget No 80-80182 1. Federal sponsoring agency and organizational element to which this report is submitted <div style="text-align: center; font-weight: bold;">U. S. Department of Energy</div>	
2. RECIPIENT ORGANIZATION Name Texaco Exploration and Production Inc. Number 400 Poydras St. and Street New Orleans, Louisiana 70130 City, State and Zip Code:		4. Federal grant or other identification number DE-FC22-93BC14960	5. Recipient's account number or identifying number 323037151
3. FEDERAL EMPLOYER IDENTIFICATION NO> 51-0265713		6. Letter of credit number NA	7. Last payment voucher number -
11. STATUS OF FEDERAL CASH		10. PERIOD COVERED BY THIS REPORT FROM (month,day,year) 04/01/95 TO (month,day,year) 06/30/95	
12. THE AMOUNT ON LINE j. REPRESENTING		13. OTHER INFORMATION	
14. REMARKS		15. CERTIFICATION	
16. THIS SPACE FOR PRIVATE USE		17. REMARKS	