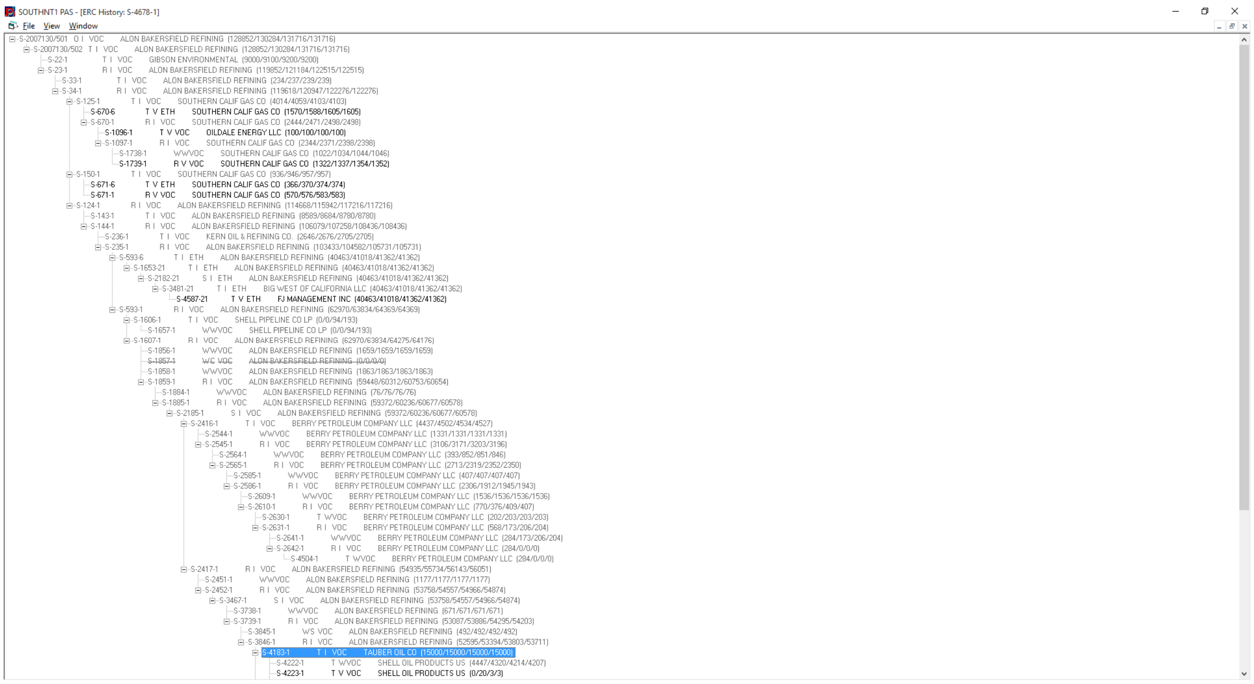
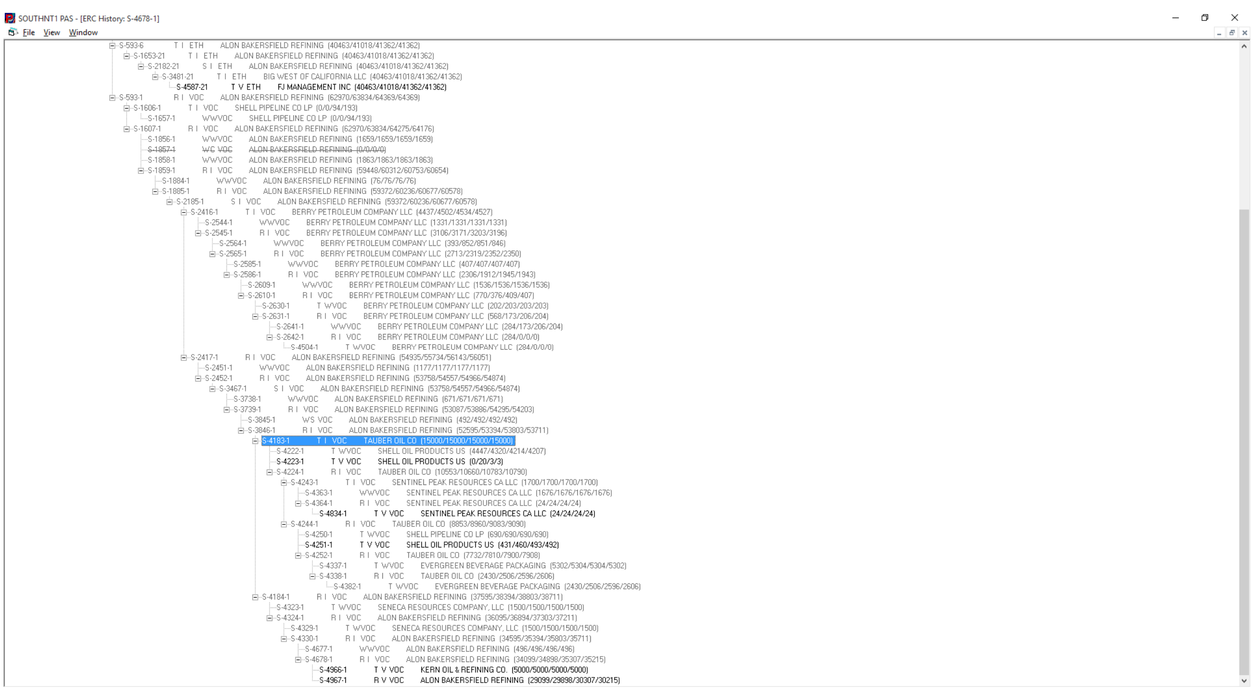
Case Study B

(ERC Certificate S-4678-1)





UNITED STATES POSTAL SERVICE

Official Business

BAKERSFIELD CA 933 PM 13 JAN 1993

U.S. MAIL

PENALTY FOR PRIVATE USE $300

RECEIVED

JAN 14 1993 Print your name, address and ZIP Code here

SAN JOAQUIN VALLEY UNIFIED APCD—SOUTHERN REGION

PLY
SJVUAPCD
2700 "M" Street, Suite 275
Bakersfield, CA 93301

20007 0130

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt Fee will provide you the signature of the person delivered to and the date of delivery.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. Donald J. Slack
Supervisor - EH&S
Texaco Refining & Marketing, Inc.
P.O. Box 1476
Bakersfield, CA 93302

4a. Article Number
P 534 165 894

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
JAN 13 1993

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, November 1990 ★U.S. GPO: 1991—287-066 **DOMESTIC RETURN RECEIPT**

sierra
research

1521 I Street
Sacramento, CA 95814
(916) 444-6666
Fax: (916) 444-8373

RECEIVED
SEP 18 1989
KERN COUNTY AIR

September 14, 1989

Ms. Diana Frailey
Accounts Receivable Clerk
Kern County APCD
2700 M Street, Suite 275
Bakersfield, CA 93301

Dear Ms. Frailey:

I request a copy of each of the following Certificates:

2007130/101 - Texaco Refining
2007130/201 - "
2007130/401 - "
2007130/501 - "
2007130/601 - "

4003217/101 - Texaco Producing
4003217/201 - "
4003217/301 - "
4003217/401 - "
4003217/501 - "

Enclosed is a check in the amount of $9.50 for copying charges at $0.75 per Certificate, plus $2.00 handling. Also enclosed is a Federal Express label to return the copied material to us as soon as it is possible.

Thank you for your assistance.

Sincerely,

Cathy S. French

Cathy S. French

encls.

Federal Express
9.26.89
C.M.

PLACE IT ABOVE

AIRBILL

USE THIS AIRBILL FOR DOMESTIC SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

PACKAGE TRACKING NUMBER 2854584600

2 8 5 4 5 8 4 6 0 0

9045M 2854584600

Sender's Federal Express Account Number	Date
1027-0770-2	

1 From (Your Name) Please Print

Your Phone Number (Very Important) (916-444-6666

Company: SIERRA RESEARCH, INC

Department/Floor No.

Street Address: 1521 I ST

City: SACRAMENTO State: CA ZIP Required: 95814

2 To (Recipient's Name) Please Print: Cathy French

Recipient's Phone Number (Very Important) ( )

Company: Sierra Research

Department/Floor No.

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. ® Zip Codes.): 1521 I Street

City: Sacramento, CA State ZIP Required: 95814

3 YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.)

H IF HOLD FOR PICK-UP, Print FEDEX Address Here

Street Address

City State ZIP Required

PAYMENT ☐ Bill Sender ☐ Bill Recipient's FedEx Acct. No. Fill in Account Number below ☐ Bill 3rd Party FedEx Acct. No. Fill in Account Number below ☐ Bill Credit Card Fill in Credit Card Number below

☐ Cash Expiration Date /

4 SERVICES

1 ☐ PRIORITY 1 Overnight Delivery
6 ☐ OVERNIGHT LETTER*
2 ☐ COURIER-PAK OVERNIGHT ENVELOPE*
7 ☐
3 ☐ OVERNIGHT BOX
8 ☐
4 ☐ OVERNIGHT TUBE
9 ☐
5 ☐ STANDARD AIR Delivery not later than second business day
10 ☐

*Declared Value Limit $100

DELIVERY AND SPECIAL HANDLING

1 ☐ HOLD FOR PICK-UP (Fill in Box H)
2 ☐ DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra charge) ☐
4 ☐ DANGEROUS GOODS (Extra charge)
5 ☐ CONSTANT SURVEILLANCE SERVICE (CSS) (Extra charge) (Release Signature Not Applicable)
6 ☐ DRY ICE ____ Lbs.
7 ☐ OTHER SPECIAL SERVICE
8 ☐
9 ☐ SATURDAY PICK-UP (Extra charge)
10 ☐
11 ☐
12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

PACKAGES	WEIGHT IN POUNDS ONLY	YOUR DECLARED VALUE (See right)	OVER SIZE
Total	Total	Total	

Received At
1 ☐ Regular Stop
2 ☐ On-Call Stop
3 ☐ Drop Box
4 ☐ B.S.C.
5 ☐ Station

FEDEX Corp. Employee No.

Date/Time for FEDEX Use

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

Use of this airbill constitutes your agreement to the service conditions in our current Service Guide which is available upon request. See back of sender's copy of this airbill for further information.

We will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay or non-delivery, unless you specify a higher amount in the space to the left, pay 40¢ per additional $100 specified and document your actual loss in the event of a claim. Maximum amount limitations found in the current Federal Express Service Guide apply. Your rights to recover from Federal Express for loss of the intrinsic value of the package, as well as for loss of sales, income, interest, profit, attorneys fees, costs and any other form of damage whether direct, incidental, consequential or special is limited to the greater of $100 or the declared value specified to the left. In no event shall your recovery exceed your actual loss.

In the event of untimely delivery, Federal Express will at your request and with some limitations, refund all transportation charges paid. See Service Guide for further information.

5 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

Release Signature:

Federal Express Use	
Base Charges	
Declared Value Charge	
Other 1	
Other 2	
Total Charges	

PART #111800
REVISION DATE 10/88
PRINTED IN U.S.A. FXEM

009

2854584600

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

1601 "H" Street, Suite 150
Bakersfield, California 93301-5199
Telephone: (805) 861-3682

LEON M HEBERTSON, M.D.
Director of Public Health
Air Pollution Control Officer

BANKING CERTIFICATE

FEE STATEMENT

PLEASE RETURN ORIGINAL
OR COPY WITH REMITTANCE

Mr. L. E. Perrier, Plant Manager
Texaco Refining & Marketing Inc.
P. O. Box 1476
Bakersfield, CA 93302

REQUEST FOR BANKING CERTIFICATE FEE - Payment Required Before Banking Certificate Can Be Issued

Application No.	Fee Schedule	Total Fee	Fee Paid	Fee Due
2007130/101	9	$ 200	$ 60	$ 140
2007130/201	9	200	60	140
2007130/401	9	200	60	140
2007130/501	9	200	60	140
2007130/601	9	200	60	140
		TOTAL FEE DUE		$ 700

Application No.	Description
2007130/101	Particulate Matter ERC from TCC, FC & CO Boiler Shutdown
2007130/201	Sulfur Dioxide ERC from TCC, FC & CO Boiler Shutdown
2007130/401	Nitrogen Dioxide ERC from TCC, FC & CO Boiler Shutdown
2007130/501	Non-Methane Hydrocarbon ERC from TCC, FC & CO Boiler Shutdown
2007130/601	Carbon Monoxide ERC from TCC, FC & CO Boiler Shutdown

PAID
APR 14 1988
RECEIPT NO. 0002252
KERN COUNTY A.P.C.D. ________

DATE FEE DUE: No later than 30 days from billing date. NONPAYMENT OF THE FEE BY THIS DATE MAY RESULT IN THE DENIAL OF YOUR APPLICATION.

Pursuant to Rule 301.1 of the District's Rules and Regulations, every applicant for a Banking Certificate shall pay prior to issuance, the fee prescribed in Rule 302.

Jesse M Gray Jr
Plant Manager
Bakersfield Plant

Texaco Refining and Marketing Inc

PO Box 1476
Bakersfield CA 93302
805 326 4221

RECEIVED
APR 10 1990
KERN COUNTY AIR
POLLUTION CONTROL

April 4, 1990

Mr. William J. Roddy
Air Pollution Control Officer
Kern County Air Pollution
Control District
2700 "M" Street, Suite 275
Bakersfield, CA 93301

Gentlemen:

Enclosed is a check in the amount of $250.00 in payment of the renewal fee for the following banking certificates:

2007130/101
2007130/201
2007130/401
2007130/501
2007130/601

For further inquiry, please contact Mr. Don Slack at 326-4265.

Sincerely,

J. M. Gray

Jesse M. Gray, Jr.

SGP/sms
Enclosure
39/90

File: 34040-0-A-25-X-433

|

L E Perrier
Plant Manager

Texaco USA

P O Box 1476
Bakersfield CA 93302
805 326 4200

October 19, 1987

Dr. Leon M. Hebertson, APCD
KCAPCD
1601 H Street, Suite 150
Bakersfield, CA 93301

Attn: Mr. Thomas Paxson
Manager of Engineering

Dear Mr. Paxson:

It is our understanding that the District finds that our application for Emission Reduction Credit Banking Certificates for the TCC and FC Unit and CO Boiler was filed timely. Basis your October 1, 1987 memo and our various discussions with you, Mr. Smith and Mr. Toy, we have disregarded the District's August 27, 1987 memo concerning this matter, as directed.

L. E. Perrier

L. E. Perrier

DJS/LEP/sms
20/87

RECEIVED
OCT 21 1987
KERN COUNTY AIR
POLLUTION CONTROL DISTRICT

Engr

L E Perrier
Plant Manager

Texaco USA

P O Box 1476
Bakersfield CA 93302
805 326 4200

RECEIVED
SEP 15 1987
KERN COUNTY HEALTH DEPT.

September 10, 1987

~~Tom: We need to set a time to discuss this immediately. H~~

10-2-87

~~Mr. Tom Paxson~~ - Cotton - I believe you have this matter in hand. If not let me know when I return H
Manager of Engineering
Kern County Air Pollution
Control District
1601 H Street, Suite 250
Bakersfield, CA 93301

Dear Mr. Paxson:

On July 31, 1987, Texaco Refining and Marketing, Inc. submitted an application for ERC Banking certificate for emission reductions associated with the shutdown of the former Tosco T.C.C. unit, fluid coker and CO boiler.

On September 2, 1987, we received your letter (dated August 27, 1987) denying our request to bank the emissions. The reason given for denying our application was that the application was not filed within 90 days of the date the reduction occurred as required by Rule 210.3; Sec. C.2(b).

We do not believe that the interpretation of that section was intended to apply to the actual operation of the equipment. We interpret the words "date the reduction occurred" to mean the effective date that the equipment is physically unable to be used again or the date that the permit is surrendered.

At the present time we have a valid permit to operate the equipment and the equipment is capable of being operated. It would not be in the best interest of the County or of Texaco to operate this equipment, nor do we believe that it is the intent of Rule 210.3 to require us to do so simply to establish these credits.

We hope you will reconsider, we intend to file a petition for review of your denial. We would appreciate an opportunity to discuss this with you so that we may avoid the need for an appeal.

Sincerely,

L. E. Perrier

L. E. PERRIER

DJS/mag
cc: WOB
GAT

RECEIVED
SEP 15 1987
KERN COUNTY AIR
POLLUTION CONTROL DISTRICT

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

1601 "H" Street, Suite 150
Bakersfield, California 93301-5199
Telephone: (805) 861-3682

LEON M HEBERTSON, M.D.
Director of Public Health
Air Pollution Control Officer

October 1, 1987

Mr. L. E. Perrier, Plant Manager
Texaco Refining & Marketing, Inc.
P. O. Box 1476
Bakersfield, CA 93302

Subject: Application #'s 2007130/101, '130/201, '130/401, '130/501, '130/601
Project #870731

In reply refer to:
ATC #'s & Project #

Dear Mr. Perrier:

Your applications for Emission Reduction Credit Banking Certificates from the following equipment were recently received by this office:

TCC Unit, FC Unit, and CO Boiler Shutdowns

A preliminary review of these applications reveals that they appear to be complete. It is possible, however, that after actual processing commences, additional information may be required to clarify, amplify, correct or otherwise supplement parts of the applications.

Processing will begin as soon as possible and you will be notified if additional support data is required. Mr. Douglas McCormick will be processing your application. Thank you for your cooperation. Should you have any questions, please telephone Mr. McCormick of the Engineering Evaluation Section at (805) 861-3682.

Sincerely,

LEON M HEBERTSON, M.D.
AIR POLLUTION CONTROL OFFICER

Thomas Paxson, P.E., Manager
Engineering Evaluation Section

DM/nn

L E Perrier
Plant Manager

Texaco USA

P O Box 1476
Bakersfield CA 93302
805 326 4200

July 31, 1987

Dr. Leon M. Hebertson, APCO
Kern County Air Pollution
Control District
1601 H Street, Suite 150
Bakersfield, CA 93301

RECEIVED
JUL 31 1987
KERN COUNTY AIR
POLLUTION CONTROL DIST

Attn: Mr. Tom Paxson

Dear Mr. Paxson:

Enclosed are five applications and associated application filing fees in the amount of $300.00 submitted by Texaco Refining and Marketing Inc. (TRMI) for Emissions Reduction Credits (ERCs). We are applying for five separate ERCs, specifically for:

1. Particulate matter (36.1 lbs/day)
2. Sulfur dioxide (1,977.8 lbs/day)
3. Carbon monoxide (25,918 lbs/day)
4. Non-methane hydrocarbons (1,431.6 lbs/day)
5. Nitrogen oxides (2,791.3 lbs/day)

This is pursuant to the procedures specified in Rule 210.1 and 210.3 of Kern County APCD's Rules and Regulations.

The technical report which is part of these applications was prepared by our contractor, Energy Systems Associates (ESA). The data used to compile the available emissions reductions were various operating records which were kept by Tosco Corporation for the equipment which was previously under their operation. The emissions arrived at are considered to be the best available and indicative of actual emissions which occurred during the specified time period considering the restrictions required by Rule 210.3.

The operating equipment which has been evaluated to determine the level of emissions for which TRMI is requesting ERCs is specific operating unit/equipment associated with the Fluid Coking Unit, CO Boiler and the Thermofor Cracking Unit. This equipment was operated through November 1983. With the recent changes to Rule 210.1 and Rule 210.3, which significantly restricted the time frame for establishing baseline emissions (i.e., Rule 210.1, Section 4B), TRMI has prepared these applications in order to maximize any remaining ERCs which are available under the current Rule 210.3. As you are aware, Section 4B requires, where applicable, the "baseline emissions" to be based on the actual operating conditions of the source averaged over the two years immediately preceding the date of the application. In addition, this same section allows the Control Officer to use a different consecutive two-year period within the preceding five years if this other two-year period is determined to be more representative of normal operations. Since the subject equipment was last operated through November 1983, the only two-year period available and used in this evaluation of ERCs is the period from July 1982 through November 1983. This period represents 491 days averaged over the consecutive two-year 730-day period (from July 1982 to July 1894); this has reduced the level of available emissions by nearly one-third from that obtained using a full two-year average. TRMI believes that the time period chosen, considering the restrictions specified in Section 4B and the historical operating records of the subject equipment, is more representative of normal operations. As such, TRMI requests that the Control Officer allow the use of the averaging period herewith described.

In addition, we are aware that Rule 210.3, Section C.2.(i) limits the use of "shutdowns or curtailment of a stationary source" in establishing available ERCs. The intent of this restriction, we feel, is not to eliminate the use of actual emissions from equipment within a stationary source but rather to restrict the use of emissions created when the stationary source in its entirety is operationally shutdown or curtailed due to economics or other such conditions. We feel that this restriction specified in Section C.2.(i) is not applicable to the subject ERC applications which we are submitting.

The applications and referenced documentation which are attached contain all the necessary support which we feel is necessary for the District to perform their evaluation. If any clarification or expansion of this data is necessary, please contact Mr. Gordon A. Turl who will coordinate any necessary information. In addition, our contractor (ESA) will be available to assist us in providing any further technical support.

Sincerely,

L E Perrier/GAT

L. E. Perrier

GAT/jas
Enclosures
144/87

cc (w/o enclosures): David Stein (ESA)

2007130/101

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

1601 "H" Street, Suite 250
Bakersfield, California 93301

Telephone
(805) 861-3682

APPLICATION FOR (check appropriate items)

X Emission Reduction Credit

[ ] Authority to Construct

[ ] Permit to Operate

[ ] Authority to Construct - Modification

[ ] Transfer of Location

[ ] Authority to Construct - Renewal

[ ] Transfer of Ownership

An application is required for each source operation as defined in Rule 102, Section cc

1. PERMIT TO BE ISSUED TO: Name of oganization to operate the following equipment:

TEXACO REFINING AND MARKETING, INC.

2. MAILING ADDRESS:

P.O. BOX 1476 BAKERSFIELD, CA Zip Code: 93308

3. LOCATION AT WHICH THE EQUIPMENT IS TO BE OPERATED:

6451 Rosedale Highway, Bakersfield, CA 93302

4. GENERAL NATURE OF BUSINESS:

Petroleum Refinery

5. EQUIPMENT FOR WHICH APPLICATION IS MADE:

This application is for a Banking Certificate to reflect PM Emission Reduction Credits attributable to the Thermofor Catalytic Cracking (TCC) Unit, KCAPCD Permit to Operate No. 2007130, Fluid Coker Unit, KCAPCD Permit to Operate No. 2007134, and CO Boiler, KCAPCD Permit to Operate No. 2007148, as calculated in the attached ESA Report 26200-455

Provide additional information as required by District "Instructions".

6. TYPE AND ESTIMATED COST OF AIR POLLUTION CONTROL EQUIPMENT:

Not Applicable

7. TYPE AND ESTIMATED COST OF BASIC PROCESS EQUIPMENT:

Not Applicable

8. SIGNATURE OF APPLICATION	TITLE OF SIGNER:	
L E Perrier	Plant Manager	
9. TYPE OR PRINT NAME OF SIGNER:	DATE:	PHONE NO.:
L. E. Perrier	7/28/87	326-4265

Validation (A.P.C.D. use only)

RECEIVED JUL 31 1987 KERN COUNTY AIR POLLUTION CONTROL DIST	FILING FEE: $ 60 / 300	RECEIPT NO.: 0000724
	FEE SCHEDULE NUMBER:	DATE: 7-31-87
	PERMIT FEE: $	RECEIPT NO.:

HD # 580 4110 400 (6/81)

KERN COUNTY AIR POLLUTION CONTROL DISTRICT 2007130/201

1601 "H" Street, Suite 250
Bakersfield, California 93301

Telephone
(805) 861-3682

APPLICATION FOR (check appropriate items)

X Emission Reduction Credit

[ ] Authority to Construct

[ ] Permit to Operate

[ ] Authority to Construct - Modification

[ ] Transfer of Location

[ ] Authority to Construct - Renewal

[ ] Transfer of Ownership

An application is required for each source operation as defined in Rule 102, Section cc

1. PERMIT TO BE ISSUED TO: Name of oganization to operate the following equipment:
TEXACO REFINING AND MARKETING INC.

2. MAILING ADDRESS:
P.O. BOX 1476, Bakersfield, CA Zip Code: 93308

3. LOCATION AT WHICH THE EQUIPMENT IS TO BE OPERATED:
6451 Rosedale Highway , Bakersfield, CA 93302

4. GENERAL NATURE OF BUSINESS:
Petroleum Refinery

5. EQUIPMENT FOR WHICH APPLICATION IS MADE:

This application is for a Banking Certificate to reflect SO_2 Emission Reduction Credits attributable to the Thermofor Catalytic Cracking (TCC) Unit, KCAPCD Permit to Operate No. 2007130, Fluid Coker Unit, KCAPCD Permit to Operate No. 2007134, and CO Boiler, KCAPCD Permit to Operate No. 2007148, as calculated in the attached ESA Report 26200-455

Provide additional information as required by District "Instructions".

6. TYPE AND ESTIMATED COST OF AIR POLLUTION CONTROL EQUIPMENT:
Not Applicable

7. TYPE AND ESTIMATED COST OF BASIC PROCESS EQUIPMENT:
Not Applicable

8. SIGNATURE OF APPLICATION L E Perrier	TITLE OF SIGNER: Plant Manager	
9. TYPE OR PRINT NAME OF SIGNER: L. E. Perrier	DATE: 7/28/87	PHONE NO.: 326-4265

Validation (A.P.C.D. use only)

RECEIVED
JUL 31 1987
KERN COUNTY AIR
POLLUTION CONTROL DIST

FILING FEE: $ 60/300	RECEIPT NO.: 0000724
FEE SCHEDULE NUMBER:	DATE: 7-31-87
PERMIT FEE: $	RECEIPT NO.:

HD # 580 4110 400 (6/81)

KERN COUNTY AIR POLLUTION CONTROL DISTRICT 2007130/401

1601 "H" Street, Suite 250
Bakersfield, California 93301

Telephone
(805) 861-3682

APPLICATION FOR (check appropriate items)

- [ ] Authority to Construct
- [ ] Authority to Construct - Modification
- [ ] Authority to Construct - Renewal
- (X) Emission Reduction Credit
- [ ] Permit to Operate
- [ ] Transfer of Location
- [ ] Transfer of Ownership

An application is required for each source operation as defined in Rule 102, Section cc

1. PERMIT TO BE ISSUED TO: Name of oganization to operate the following equipment:

TEXACO REFINING AND MARKETING INC.

2. MAILING ADDRESS:

P.O. BOX 1476, BAKERSFIELD, CA Zip Code: 93308

3. LOCATION AT WHICH THE EQUIPMENT IS TO BE OPERATED:

6451 ROSEDALE HIGHWAY 93302

4. GENERAL NATURE OF BUSINESS:

PETROLEUM REFINERY

5. EQUIPMENT FOR WHICH APPLICATION IS MADE:

This application is for a Banking Certificate to reflect NOx Emission Reduction Credits attributable to the Thermofor Catalytic Cracking (TCC) Unit, KCAPCD Permit to Operate No. 2007130, Fluid Coker Unit, KCAPCD Permit to Operate No. 2007134, and CO Boiler, KCAPCD Permit to Operate No. 2007148, as calculated in the attached ESA Report 26200-455

Provide additional information as required by District "Instructions".

6. TYPE AND ESTIMATED COST OF AIR POLLUTION CONTROL EQUIPMENT:

Not applicable

7. TYPE AND ESTIMATED COST OF BASIC PROCESS EQUIPMENT:

Not applicable

8. SIGNATURE OF APPLICATION	TITLE OF SIGNER:	
L E Perrier	Plant Manager	
9. TYPE OR PRINT NAME OF SIGNER: L. E. Perrier	DATE: 7/28/87	PHONE NO.: 326-4265

Validation (A.P.C.D. use only)

RECEIVED JUL 31 1987 KERN COUNTY AIR POLLUTION CONTROL DIST		
FILING FEE: $ 60/300	RECEIPT NO.: 0000724
FEE SCHEDULE NUMBER:	DATE: 7-31-87
PERMIT FEE: $	RECEIPT NO.:

HD # 580 4110 400 (6/81)

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

2007130/501

1601 "H" Street, Suite 250
Bakersfield, California 93301

Telephone
(805) 861-3682

APPLICATION FOR (check appropriate items)

[ ] Authority to Construct

[ ] Authority to Construct - Modification

[ ] Authority to Construct - Renewal

X Emission Reduction Credit

[ ] Permit to Operate

[ ] Transfer of Location

[ ] Transfer of Ownership

An application is required for each source operation as defined in Rule 102, Section cc

1. PERMIT TO BE ISSUED TO: Name of oganization to operate the following equipment:

TEXACO REFINING AND MARKETING INC.

2. MAILING ADDRESS:

P.O. BOX 1476 BAKERSFIELD, CA Zip Code: 93308

3. LOCATION AT WHICH THE EQUIPMENT IS TO BE OPERATED:
6451 ROSEDALE HIGHWAY, BAKERSFIELD, CA 93302

4. GENERAL NATURE OF BUSINESS:

PETROLEUM REFINERY

5. EQUIPMENT FOR WHICH APPLICATION IS MADE:
This application is for a Banking Certificate to reflect NMHC Emission Reduction Credits attributable to the Thermofor Catalytic Cracking (TCC) Unit, KCAPCD Permit to Operate No. 2007130, Fluid Coker Unit, KCAPCD Permit to Operate No. 2007134, and CO Boiler, KCAPCD Permit to Operate No. 2007148, as calculated in the attached ESA Report 26200-455.

Provide additional information as required by District "Instructions".

6. TYPE AND ESTIMATED COST OF AIR POLLUTION CONTROL EQUIPMENT:

Not applicable

7. TYPE AND ESTIMATED COST OF BASIC PROCESS EQUIPMENT:

Not applicable

8. SIGNATURE OF APPLICATION	TITLE OF SIGNER:	
L E Perrier	Plant Manager	
9. TYPE OR PRINT NAME OF SIGNER:	DATE:	PHONE NO.:
L. E. Perrier	7/28/87	326-4265

Validation (A.P.C.D. use only)

RECEIVED JUL 31 1987 KERN COUNTY AIR POLLUTION CONTROL DIST	FILING FEE: $ 60/300	RECEIPT NO.: 0000724
	FEE SCHEDULE NUMBER:	DATE: 7-31-87
	PERMIT FEE: $	RECEIPT NO.:

HD # 580 4110 400 (6/81)

KERN COUNTY AIR POLLUTION CONTROL DISTRICT 2007130/601

1601 "H" Street, Suite 250
Bakersfield, California 93301

Telephone
(805) 861-3682

APPLICATION FOR (check appropriate items)

X Emission Reduction Credit

[ ] Authority to Construct

[ ] Permit to Operate

[ ] Authority to Construct - Modification

[ ] Transfer of Location

[ ] Authority to Construct - Renewal

[ ] Transfer of Ownership

An application is required for each source operation as defined in Rule 102, Section cc

1. PERMIT TO BE ISSUED TO: Name of oganization to operate the following equipment:
TEXACO REFINING AND MARKETING INC.

2. MAILING ADDRESS:
P.O. BOX 1476 BAKERSFIELD, CA Zip Code: 93308

3. LOCATION AT WHICH THE EQUIPMENT IS TO BE OPERATED:
6451 ROSEDALE HIGHWAY, BAKERSFIELD, CA 93302

4. GENERAL NATURE OF BUSINESS:
PETROLEUM REFINERY

5. EQUIPMENT FOR WHICH APPLICATION IS MADE:

This application is for a Banking Certificate to reflect CO Emission Reduction Credits attributable to the Thermofor Catalytic Cracking (TCC) Unit, KCAPCD Permit to Operate No. 2007130, Fluid Coker Unit, KCAPCD Permit to Operate No. 2007134, and CO Boiler, KCAPCD Permit to operate No. 2007148, as calculated in the attached ESA Report 26200-455

Provide additional information as required by District "Instructions".

6. TYPE AND ESTIMATED COST OF AIR POLLUTION CONTROL EQUIPMENT:
Not Applicable

7. TYPE AND ESTIMATED COST OF BASIC PROCESS EQUIPMENT:
Not Applicable

8. SIGNATURE OF APPLICATION L E Perrier/car	TITLE OF SIGNER: Plant Manager	
9. TYPE OR PRINT NAME OF SIGNER: L. E. Perrier	DATE: 7/28/87	PHONE NO.: 326-4265

Validation (A.P.C.D. use only)

RECEIVED
JUL 31 1987
KERN COUNTY AIR
POLLUTION CONTROL DIST'

FILING FEE: $ 60/300	RECEIPT NO.: 0000724
FEE SCHEDULE NUMBER:	DATE: 7-31-87
PERMIT FEE: $	RECEIPT NO.:

HD # 580 4110 400 (6/81)

L E Perrier
Plant Manager

Texaco USA

P O Box 1476
Bakersfield CA 93302
805 326 4200

August 24, 1987

RECEIVED
AUG 24 1987
KERN COUNTY AIR
LLUTION CONTROL DIST

Mr. Thomas Paxson
Kern County Air Pollution
Control District
1601 H Street, Suite 150
Bakersfield, CA 93301

Dear Mr. Paxson:

Enclosed are the revised Tables 1, 2 and 4 of the ERC application we submitted on July 31, 1987.

These tables were revised to reflect corrected H2S concentrations in the reabsorber gas burned in the coker and TCC compressors. This has previously been discussed with Tom Goff.

If you have any questions, please contact Mr. Bill Kerstan at ~~325-5116~~.
326-4311

Very truly yours,

L E Perrier

L. E. Perrier

BK/jas
Enclosures

cc: File 34040-0-A-25-X-433

E/A Energy Systems Associates A CORPORATION

August 13, 1987
ESA 26200-L02

Mr. Gordon Turl
Supervisor, Environmental Health and Safety
Texaco RMI
P. O. Box 1476
Bakersfield, CA 93308

Dear Gordon:

OK Gordon

SUBJECT: Revision to July 1987 ERC Application for SO_2

As a follow up to our discussions with Don Hall, I am enclosing revised Tables 1, 2, and 4 which reflect the corrected H_2S concentration for dry reabsorber gas. The calculations now assume that the MEA scrubber removes 99% of the H_2S in the reabsorber gas. This translates to an H_2S concentration of 44 ppm over the 17-month period. This is consistent with Don's indication of a 30 to 50 ppm range.

Please let me know if you have any questions regarding these materials.

Sincerely,

David

David A. Stein, P.E.
Manager, Regulatory Affairs

DAS:ch

Attachments: As Noted

cy: D. Hall
D. E. Shore, ESA

8/5/87
Rev 1

E M I S S I O N   R E D U C T I O N S   (LB/DAY)

Source Operation	PM	SO2	CO	NMHC	NOX
o TCC Compressors	0	2.883002	147.5872	480.5166	1166.968
o Coker Compressors	0	1.519694	107.6751	350.5780	851.3845
o TCC Heaters					
fuel gas	0.950613	341.6133	33.27147	2.661718	133.0859
resid oil	10.72502	124.0245	4.624027	0.258945	50.86430
o TCC Kiln		389.1491	24646.11	564.2662	32.42909
o TCC Catalyst Lift Scrubber	22.37607				
o CO Boiler	2.120543	762.0404	979.6910	5.937521	556.6426
o Valves					
Type II (gas)				24.51491	
Type III (light liquid)				2.092063	
Type IV (heavy liquid)				0.097339	
o Flanges				0.760019	
TOTALS	36.17225	1621.230	25918.96	1431.683	2791.375

8/5/87
Rev 1

EMISSION FACTORS

Source Operation	Units	PM	SO2	CO	NMHC	NOX	Reference
o Compressors	lb/MSCF	0	0.007358	0.43	1.4	3.4	AP-42, Table 3.3.2-1 @ 1050 Btu/scf; 100 % conversion of fuel gas sulfur, Appendix L
w/adj for HHV-fg/HHV-ng		0	0.007358	0.521405	1.6976	4.122742	Emission factor multiplied by 1273.2/1050
o TCC Heaters							
fuel gas	lb/MMSCF	1	449.7145	35	2.8	140	AP-42, Table 1.4-1 @ 1050 Btu/scf; 100 % conversion of fuel gas sulfur, Appendix L
w/ adj for HHV-fg/HHV-ng		1.251428	449.7145	43.8	3.504	175.2	Emission factor multiplied by 1314/1050
resid oil	lb/1000 gal	11.59705	134.9738	5	0.28	55	AP-42, Table 1.3-1; S from calculated average Appendix L
o TCC Kiln	lb/1000 bbl	see catalyst lift scrubber	60	3800	87	5	AP-42, Table 9.1-1, Appendix L
o TCC Catalyst Lift Scrubber	lb/1000 bbl	3.45					KCAPCD Source Test, 8/3/76 - 1.9 lb/hr @ 550 bbl/hr, Appendix J
o CO Boiler	lb/MMSCF	1.251428	449.7145		3.504		Same as TCC Heaters
	lb/MMBtu			0.44		0.25	Chemecology Source test, 9/22/82 - Steam flow 130 Mlbs/hr, Fuel gas flow @ 110 Mscf/hr, 1034 Btu/scf, Appendix K
o Valves	lb/hr						
Type II (gas)					0.00531		AP-42, Table 9.1-2; 91 % control used for inspection and maintenance program (EPA-600/2-8-075a), Appendix G
Type III (light liquid)					0.00216		
Type IV (heavy liquid)					0.000045		
o Flanges	lb/hr				0.000050		AP-42, Table 9.1-2; 91 % control used for inspection and maintenance program (EPA-600/2-8-075a), Appendix G

8/5/87
Rev 1

GAS QUALITY

		TCC Heaters *		Compressors **	
Month	Year	(Btu/scf)	(% H2S, vol)	(Btu/scf)	(% H2S, vol)
Nov	83				
Oct	83	1396	0.8	1396	0.2
Sep	83	1438	0.2	1332	0.1
Aug	83	1315		1363	1.5
Jul	83	1269		1386	1
Jun	83	1258	0.2	1279	0.8
May	83				
Apr	83	1453		1273	0.3
Mar	83	1338		1449	0.2
Feb	83	1212	0.1	1271	0.3
Jan	83	1256	0.2	1196	
Dec	82	1182		1278	0.1
Nov	82	1142		1250	
Oct	82	1200	0.1	1183	0.1
Sep	82	1241		1257	
Aug	82	1125		1220	
Jul	82	1885		1037	0.2
	Avg	1314	0.266666	Avg 1273.2	0.436363
		H2S Contol Eff =	0 %	H2S Contol Eff =	99 %
		Avg H2S	1.672375 gr/scf	Avg H2S	0.027366 gr/scf

Source: Tosco Monthly Gas Gravities Report, Appendix B

Footnotes:

* TCC Heaters and CO Boiler received fuel gas from the No. 1 Fuel Gas Drum

** TCC and Coker Compressors received Dry Reabsorber Gas

APPLICATION FOR EMISSION REDUCTION CREDITS ASSOCIATED WITH THE FLUID COKER, CO BOILER, AND THERMOFOR CATALYTIC CRACKING UNITS AT TEXACO'S BAKERSFIELD REFINERY WEST PLANT

1/6

Prepared For:

TEXACO REFINING AND MARKETING INC.
Bakersfield, California

Prepared By:

D. A. Stein, P.E.

ENERGY SYSTEMS ASSOCIATES
Tustin, California
Pittsburgh, Pennsylvania

JULY 1987

ESA 26200-455

CONTENTS

SECTION 1.0

INTRODUCTION

In summer 1986, Texaco Refining and Marketing Inc. (TRMI) acquired all interest in Tosco Corporation's Bakersfield Refinery operated adjacent to TRMI's property. As part of TRMI's program to incorporate acquired Tosco equipment, TRMI has determined that the emissions associated with the Fluid Coking Unit, CO Boiler, and Thermofor Catalytic Cracking (TCC) Unit are available for emissions baking pursuant to KCAPCD Rule 210.3. This equipment was last operated in November 1983.

The materials which follow document Emission Reduction Credits (ERC's) requested by TRMI which are associated with the Fluid Coker, CO Boiler, and TCC Unit. These materials demonstrate that the requested ERC's are real, surplus, permanent, quantifiable, and enforceable. The ERC's being requested by TRMI are summarized in Table 1. The emission factors supporting each ERC calculation are shown in Table 2. The input data, emission factors, and calculations are discussed on an equipment specific basis in the following section.

See Revised Table
8/24/87 letter

TABLE 1.

7/22/87
Rev 0

EMISSION REDUCTIONS (LB/DAY)

Source Operation	PM	SO2	CO	NMHC	NOX
o TCC Compressors	0	~~208.3002~~ 2.0830	147.5872	480.5166	1166.968
o Coker Compressors	0	~~151.9694~~ 1.5196	107.6751	350.5700	851.3845
o TCC Heaters					
fuel gas	0.950613	341.6133	33.27147	2.661718	133.0859
resid oil	10.72502	124.8245	4.624027	0.258945	50.86430
o TCC Kiln		389.1491	24646.11	564.2662	32.42909
o TCC Catalyst Lift Scrubber	22.37607				
o CO Boiler	2.120543	762.0404	979.6910	5.937521	556.6426
o Valves					
Type II (gas)				24.51491	
Type III (light liquid)				2.092063	
Type IV (heavy liquid)				0.097339	
o Flanges				0.768019	
TOTALS	36.17225	~~1977.897~~ 1621.230	25918.96	1431.683	2791.375

Revised to reflect 99% H_2S removal in MEA absorber.

TABLE 2.

7/22/87
Rev 0

EMISSION FACTORS

Source Operation	Units	PM	SO2	CO	NMHC	NOX	Reference
o Compressors	lb/MSCF	0	0.007359 ~~0.735896~~	0.43	1.4	3.4	AP-42, Table 3.3.2-1 @ 1050 Btu/scf; 100 % conversion of fuel gas sulfur, Appendix L
w/adj for HHV-fg/HHV-ng		0	0.007359 ~~0.735896~~	0.521405	1.6976	4.122742	Emission factor multiplied by 1273.2/1050
o TCC Heaters							
fuel gas	lb/MMSCF	1	449.7145	35	2.8	140	AP-42, Table 1.4-1 @ 1050 Btu/scf; 100 % conversion of fuel gas sulfur, Appendix L
w/ adj for HHV-fg/HHV-ng		1.251428	449.7145	43.8	3.504	175.2	Emission factor multiplied by 1314/1050
resid oil	lb/1000 gal	11.59705	134.9738	5	0.28	55	AP-42, Table 1.3-1; S from calculated average Appendix L
o TCC Kiln	lb/1000 bbl	see catalyst lift scrubber	60	3800	87	5	AP-42, Table 9.1-1, Appendix L
o TCC Catalyst Lift Scrubber	lb/1000 bbl	3.45					KCAPCD Source Test, 8/3/76 - 1.9 lb/hr @ 550 bbl/hr, Appendix J
o CO Boiler	lb/MMSCF	1.251428	449.7145		3.504		Same as TCC Heaters
	lb/MMBtu			0.44		0.25	Chemecology Source test, 9/22/82 - Steam flow 130 Mlbs/hr, Fuel gas flow @ 110 Mscf/hr, 1034 Btu/scf, Appendix K
o Valves	lb/hr						
Type II (gas)					0.00531		AP-42, Table 9.1-2; 91 % control used for inspection and maintenance program (EPA-600/2-8-075a), Appendix G
Type III (light liquid)					0.00216		
Type IV (heavy liquid)					0.000045		
o Flanges	lb/hr				0.000050		AP-42, Table 9.1-2; 91 % control used for inspection and maintenance program (EPA-600/2-8-075a), Appendix G

See Revised Table 8/24/87 Letter

1-3

SECTION 2.0

CALCULATION METHODOLOGY

2.1 SOURCE IDENTIFICATION

Each process unit was reviewed for the presence of air pollution emitting components. The review including inspection of unit process flow diagrams, unit equipment lists, and a walk-through inspection of the refinery. The following quantifiable air pollution emitting sources were identified:

Fluid Coker 2007134

- Fluid Coker Compressor IC Engines
- Valves
- Flanges

TCC Unit 2007130

- TCC Compressor IC Engines
- TCC Process Heaters
- TCC Kiln
- TCC Catalyst Lift Scrubber
- Valves
- Flanges

CO Boiler 2007148

- CO Boiler

Appendix H contains a listing of all equipment affiliated with these process units along with process flow diagrams for the TCC and Fluid Coker.

2.2 EMISSIONS QUANTIFICATION

All calculations were performed on an IBM microcomputer with a LOTUS spreadsheet to eliminate calculation and round-off errors. In accordance with Rule 210.1, only historical operation over a two-year period within the last five years can be considered when quantifying emissions from existing sources. The two-year period considered in these applications reflect operation for 491 days, from July 1982 to November 1983, averaged over the consecutive 2-year, 730-day period, from July 1982 to July 1984. The effect of this averaging provision in Rule 210.1 is to reduce the actual emission reductions for a full representative two year period by roughly 50%. All underlying data including unit gas consumption, gas quality, fuel oil consumption, and unit throughput, used in the calculations are summarized in Tables 3 through 9.

2.2.1 Compressor IC Engines

Fuel Use

Fuel gas consumption by both the TCC compressor engines and the Fluid Coker compressor engines were separately metered and reported in Tosco's Monthly Gas Report. These data are summarized in Table 3. October through November 1983, data could not be located. However, throughput data was available for this period. Consequently, for these months fuel gas consumption was calculated from the average fuel gas scf per barrel throughput of 44.05 scf/bbl, calculated for the operating period. The fuel gas/throughput trend analysis is summarized in Table 7. As an example:

November 1983

$$\text{TCC Compressor Gas Consumption} = \frac{42723 \text{ bbl} \times 44.05 \text{ scf/bbl}}{1000 \text{ scf/Mscf}} = 1882 \text{ Mscf}$$

7/22/87
Rev 0

TABLE 3.

G A S C O N S U M P T I O N
(MSCF)

Month	Year	TCC Heaters	TCC Compressors	Coker Compressors
Nov	83	5070 *	1882 **	1102 **
Oct	93	33937 *	13093 **	10361 **
Sep	83	34620 *	11686 **	9895 **
Aug	83	27541	15255	10461
Jul	83	21602	13749	10007
Jun	83	30220	14201	9442
May	83	46683	16047	10113
Apr	83	42549	12153	8316
Mar	83	11812	2883	9187
Feb	83	25772	13306	9710
Jan	83	31266	13592	9550
Dec	82	43196	13660	9490
Nov	82	39178	10522	8242
Oct	82	35747	13559	10366
Sep	82	37741	15091	9194
Aug	82	40724	14716	9466
Jul	82	46846	11237	5850
	TOTALS	554524.5	206631.2	150751.7
2 YR AVGS		759.6227 MCF/Day	283.0564 MCF/Day	206.5092 MCF/Day

Source: Tosco monthly gas reports prepared by P.C. Daily, Appendix A

Footnotes:

* Oct - Nov 83 gas consumption data records could not be located; Values are calculated from an analysis of the average heat input to the TCC heaters per bbl of feedstock processed during 82 - 83

** Oct - Nov 83 gas consumption data records could not be located; Values are calculated from an analysis of the average fuel gas scf to the compressors per bbl of feedstock processed during 82 - 83

7/22/87
Rev 0

TABLE 4.

GAS QUALITY

Month	Year	TCC Heaters * (Btu/scf)	TCC Heaters * (% H2S, vol)	Compressors ** (Btu/scf)	Compressors ** (% H2S, vol)
Nov	83				
Oct	83	1396	0.8	1396	0.2
Sep	83	1438	0.2	1332	0.1
Aug	83	1315		1363	1.5
Jul	83	1269		1306	1
Jun	83	1258	0.2	1279	0.8
May	83				
Apr	83	1453		1273	0.3
Mar	83	1330		1449	0.2
Feb	83	1212	0.1	1271	0.3
Jan	83	1256	0.2	1196	
Dec	82	1182		1278	0.1
Nov	82	1142		1258	
Oct	82	1288	0.1	1183	0.1
Sep	82	1241		1257	
Aug	82	1125		1220	
Jul	82	1005		1037	0.2
	Avg	1314	0.266666	Avg 1273.2	0.436363

H_2S Control Eff = 99% MEA Scrubber

Avg H2S 1.672375 gr/scf Avg H2S ~~2.736615 gr/scf~~ 0.002737

Source: Tosco Monthly Gas Gravities Report, Appendix B

Footnotes:

* TCC Heaters and CO Boiler received fuel gas from the No. 1 Fuel Gas Drum

** TCC and Coker Compressors received Dry Reabsorber Gas

See Revised table 8/24/87 letter

7/22/87
Rev 0

TABLE 5.

O I L   C O N S U M P T I O N

Month	Year	TCC Heaters (burner-days)	TCC Heaters (bbl)	Fuel Sulfur (Wt Percent)
Nov	83	8	144	0.8
Oct	83	71	1278	0.795
Sep	83	13	234	0.811
Aug	83	103	1854	0.756
Jul	83	106	1908	0.772
Jun	83	87	1566	0.851
May	83	73	1314	0.944
Apr	83	32	576	0.932
Mar	83	0	0	0.558
Feb	83	59	1062	0.979
Jan	83	78	1404	0.845
Dec	82	28	504	0.87
Nov	82	23	414	0.922
Oct	82	44	792	0.913
Sep	82	52	936	0.863
Aug	82	51	918	0.974
Jul	82	65	1170	1.03
	TOTALS	893	16074	Avg 0.859705

2 YR AVG 22.01917 bbl/day

Source:

1 Burner-days from the daily operating log of the TCC Unit, sample in Appendix C

2 Fuel sulfur from MR-05 Final Unit Yield Reports, Appendix D

Footnote:

* TCC Heater fuel oil line was not metered. When burners were used, they were always fired at full throttle. Consumption can therefore be calculated from the product of burner-days and burner capacity of 18 bbl/day of 6.25 MMBtu/bbl (see Appendix E for documentation of burner capacity)

7/22/87
Rev 0

TABLE 6.

T H R O U G H P U T
(bbl)

Month	Year	TCC Unit	Fluid Coker
Nov	83	42723	24917
Oct	83	297210	234172
Sep	83	265267	223642
Aug	83	290070	206648
Jul	83	278936	215312
Jun	83	273800	221391
May	83	380180	219747
Apr	83	300902	194406
Mar	83	74903	206404
Feb	83	209047	194192
Jan	83	303807	215675
Dec	82	343547	225395
Nov	82	303554	200727
Oct	82	323170	221278
Sep	82	366915	223244
Aug	82	352708	233848
Jul	82	327909	144802
	TOTALS	4734648	3405800
	2 YR AVGS	6485.819 bbl/day	4665.479 bbl/day

Source: Final Unit Yield Report, Appendix F

TABLE 7.

F U E L U S E

V S .

T H R O U G H P U T

Month	TCC Compressors (scf/bbl) *	Coker Compressors (scf/bbl) **	TCC Heaters (Btu/bbl) ***
Aug 83	52.59075	50.62231	164706.3
Jul 83	49.29087	46.47674	144513.5
Jun 83	51.86632	42.64852	180776.4
May 83	42.20895	46.02110	182950.0
Apr 83	40.38856	42.77645	177769.9
Mar 83	38.48978	44.50979	207214.2
Feb 83	63.65075	50.00205	193745.4
Jan 83	44.73892	44.27958	164112.4
Dec 82	39.76166	42.10386	174385.2
Nov 82	34.66269	41.06074	178114.5
Oct 82	41.95624	46.84604	160663.2
Sep 82	41.12941	41.18363	151102.2
Aug 82	41.72289	40.47928	167982.6
Jul 82	34.26865	40.39999	210022.1
Avg	44.05189	44.24358	177004.1

Footnotes:

* Calculated from TCC Compressor fuel consumption and TCC throughput data as follows:

(MSCF/Month x 1000)/(bbl/Month)

** Calculated from Coker Compressor fuel consumption and Coker throughput data using the same equation noted in footnote *, above

*** Calculated from TCC Heater fuel gas consumption, gas heating value, oil consumption, and TCC throughput data as follows:

$$\frac{((\text{MSCF/Month} \times 1000 \times 1314\ \text{Btu/SCF}) + (\text{Bbl/Month} \times 6.25\ \text{E6 Btu/bbl}))}{(\text{Bbl throughput/Month})}$$

7/22/87
Rev 0

TABLE 8.

C O   B O I L E R

Month	Year	Operating Days	Steam Generated Avg Mlbs/hr	Steam Generated Mlbs/month *	Fuel Gas Avg MCF/day	Fuel Gas MCF/month *	Fuel/Steam MCF/Mlbs *
Nov	83	5	21.851	2622.12	566.333	2831.665	1.079914
Oct	83	31	125.587	93436.72	2726.226	84513.00	0.904494
Sep	83	30	124.453	89606.16	2817.833	84534.99	0.943406
Aug	83	31	127.587	94924.72	3017.226	93534.00	0.985349
Jul	83	31	127.341	94741.70	2842.226	88109.00	0.929991
Jun	83	30	127.947	92121.84	2779.467	83384.01	0.905149
May	83	31	117.253	87236.23	2651.161	82185.99	0.942108
Apr	83	29	113.68	79121.28	2740.5	79474.5	1.004464
Mar	83	31	46.437	34549.12	1008.746 ***	31271.15	
Feb	83	28	119.357	80207.90	2633.321	73732.98	0.919273
Jan	83	30	120.542	86790.24	2613.677	78410.31	0.903446
Dec	82	31	111.917	83266.24	2341.387	72582.99	0.871697
Nov	82	30	117.31	84463.2	2499.7	74991	0.887854
Oct	82	31	130.746	97275.02	2368.645 **	73428	0.754849
Sep	82	30	130.717	94116.24	2592 **	77760	0.826212
Aug	82	31	134.774	100271.8	2592 **	80352	0.801341
Jul	82	31	124.029	92277.57	2448 **	75888	0.822388
	Total	491	Avg 113.0310		Total	1236983.	Avg 0.905121

2 YR AVG HR/DY 16.14246   2 YR AVG 1694.498 MCF/Day

1.694×10^6 scfd.

Source:

1 Operating Days: Final Unit Yield Report, Appendix F

2 Steam Generated, Avg Mlbs/hr: MR-05 Final Unit Yield Reports, Appendix D

3 Fuel Gas, Avg MCF/day: Same as 2, above

Footnotes:

* Calculated from monitored operating data as follows:

Steam, Mlbs/Month = Mlbs/hr x 24hr/day x Operating Days

Fuel Gas, MCF/Month = Avg MCF/~~Month~~ Day x Operating Days month.

Fuel/Steam, MCF/Mlbs = (Steam Generated, Mlbs/Month)/(Fuel Gas,MCF/Month)

** Units of CF/D in the Final Unit Yield Report are erroneous. The correct units are MCF/hr

***Final Unit Yield Report indicated a value of 3727.064 Avg MCF/Day for this month. The value is obviously incorrect because it exceeds the capacity of the CO Boiler. Therefore, fuel gas consumption for this month was calculated from monthly steam generation data and the average Fuel/Steam for the period of 0.905121 MCF/Mlbs

---

TABLE 9.

VALVE / FLANGE COUNT

Unit	Type II Valves	Type III Valves	Type IV Valves	Flanges
TCC *	125	38	49	318
Fluid Coker **	161	22	85	626
TOTAL	286	60	134	944

Source: Tosco Operator Valve and Flange Count, Appendix G

Footnotes:

* Assumes 44% of liquid valves are in light liquid service (EPA-600/2-8-075a, p. 274 - see Appendix G)

** Assumes 21% of liquid valves are in light liquid service (EPA-600/2-8-075a, p. 268 - see Appendix G)

Gas Quality

Fuel gas quality is summarized in Table 4 including heating value and H_2S content data which were contained in Tosco's Monthly Gas Gravities Report in Appendix B. Both compressor sets received dry reabsorber gas. All available data were averaged for the period.

Emission Factor

Since source test data was not available for the compressor engines, ERC calculations were based on the AP-42 emission factors summarized in Table 2. These factors carry an "A" rating indicating that a high confidence level should be placed on their validity. For SO_2 emissions, 100% conversion of fuel sulfur was assumed:

$$SO_2\text{, lb/Mscf} = \frac{0.4364 \text{ lbmole } H_2S}{100 \text{ lbmole gas}} \times \frac{\text{lbmole}}{379.5 \text{ scf}} \times \frac{64 \text{ lb } SO_2}{\text{lbmole}} \times \frac{10^3 \text{ scf}}{\text{Mscf}}$$

$$= 0.736 \text{ lb/Mscf}$$

For the other pollutants, the AP-42 emission factor was prorated to reflect the higher Btu content of refinery fuel gas. (AP-42 basis is natural gas with 1050 Btu/ft^3). As an example, the NOx emission factor becomes:

$$\text{Fuel Gas} = \frac{3.4 \text{ lb}}{\text{Mscf gas}} \times \frac{1273.2 \text{ Btu/scf}}{1050 \text{ Btu/scf}} = 4.12 \text{ lb/Mscf Fuel Gas}$$

Emission Rate

Emissions in lb/day are calculated from the average fuel gas flow in Table 3 and the emission factor in Table 2 according to the following example:

$$\text{TCC Compressor NOx} = \frac{4.12 \text{ lb}}{\text{Mscf}} \times \frac{283.06 \text{ Mscf}}{\text{Day}}$$

$$= 1166.2 \text{ lb/day}$$

(Note: Table 1 shows slightly different results because round-off error is eliminated.)

2.2.2 TCC Heaters

Fuel Gas Consumption

Fuel gas consumption was directly metered and reported except near the refinery shutdown in fall 1983. For this period, missing gas consumption data was calculated from historical trends of scf burned per bbl throughput. An example calculation for this approach is given below for November 1983.

1. From Table 7, average TCC heater fuel use is shown to be 177004.1 Btu/bbl.

2. From Table 5, November 1983 fuel oil consumption was 144 bbl of 6.25 MM Btu/bbl oil.

3. From Table 6, November 1983 TCC throughput was 42723 bbl.

4. From Table 4, TCC fuel was 1314 Btu/scf.

$$\frac{\text{Total November 1983 Heat Required} - \text{Heat from Fuel Oil}}{\text{Fuel Gas Heating Value}} = \text{Fuel Gas scf}$$

$$\frac{\frac{177004.1\ \text{Btu}}{\text{bbl}} \times 42723\ \text{bbl} - 144\ \text{bbl} \times 6.25 \times 10^6\ \frac{\text{Btu}}{\text{bbl}}}{\frac{1314\ \text{Btu}}{\text{scf}} \times \frac{1000\ \text{scf}}{\text{Mscf}}} = 5070\ \text{Mscf}$$

Gas Quality

The TCC Heaters received fuel gas from the No. 1 fuel gas drum. Available fuel gas heating value and H_2S content data for the period are summarized and averaged in Table 4. These data originate from Monthly Gas Gravities Report contained in Appendix B.

Fuel Oil Consumption

Oil lines to the TCC main heater were not directly metered. However, the area operating log contained a notation each day for the number of burner guns firing on oil. Guns which used oil were operated at full throttle. Therefore, daily oil consumption can be calculated from the number of oil burners operating each day and the burner capacity. These data are summarized in Table 5. Appendix C contains a representative sample of the operating log summary. The full record of operating logs can be supplied upon request.

Appendix E contains a Tosco internal technical memorandum identifying heater burner capacities. It was assumed that the large center burner was always gas-fired. Appendix E also contains a copy of hand calculations which identify the design heating value of the fuel oil to be 6.25 MM Btu/bbl.

Fuel Oil Sulfur Content

Fuel oil sulfur content was monitored and reported in the Final Unit Yield Reports. Copies of the monthly reports are contained in Appendix D. The data is summarized in Table 5.

Emission Factor

Since no source test data for the TCC heaters could be located, the applicable emission factors were taken from AP-42 and are summarized in Table 2. These factors carry an "A" rating. The fuel gas emission factor contains an adjustment for the average heating value of 1314 Btu/scf. SO_2 emissions were calculated assuming 100% conversion of fuel H_2S. A sample calculation is included in Section 2.2.1 in the "Emission Factor" subsection.

Emission Rates

Fuel gas emissions are calculated from the product of the TCC heater average gas flow in Table 3 and the emission factors in Table 2, according to the following example:

TCC Heater Fuel Gas NOx:

$$= \frac{175.2 \text{ lb}}{\text{MMscf}} \times \frac{759.6 \text{ Mcf}}{\text{Day}} \times \frac{\text{MMscf}}{1000 \text{ Mcf}}$$

$$= 133.1 \text{ lb/day}$$

Fuel oil emissions are calculated from the product of the TCC heater average oil consumption in Table 5 and the emission factors in Table 7 according to the following example:

TCC Heater Fuel Oil NOx:

$$= \frac{55 \text{ lb}}{1000 \text{ gal}} \times \frac{22.02 \text{ bbl}}{\text{Day}} \times \frac{42 \text{ gal}}{\text{bbl}}$$

$$= 50.87 \text{ lb/day}$$

(Note: This value is slightly different from Table 1 because it includes some round-off error).

2.2.3 *TCC Kiln*

Throughput

TCC kiln throughput is assumed to be a direct function of the volume of gas oil feed processed by the TCC unit. The emission factors in the AP-42 are in fact based on this parameter, even though the kiln, not the fractionating vessel, is the primary emitting source. This is reasonable since catalyst degradation should closely tract the fractionating throughput and this parameter dictates the rate at which catalyst is regenerated in the kiln.

Throughput data are summarized in Table 6. The raw data can be found in the Final Unit Yield Reports included in Appendix F.

Emission Factors

No official source test data were located for the TCC kiln exhaust. Infrequent measurements of CO, NMHC, and O_2 were available, but no measured flue gas volume flowrate was available to complete an emission calculation. Instead, AP-42 emission factors with a "B" rating were used to quantify TCC kiln emissions. A comparison of the AP-42 emission factors with the limited CO/NMHC measurements and design flowrate indicate that AP-42 factors are quite conservative (i.e., underpredict) for these pollutants. For completeness, these calculations are presented below (TRMI is not requesting ERC's for CO or NMHC emissions exceeding the AP-42 based calculations summarized in Table 1.)

TCC Kiln A & B Combined Design Flowrate = 28,600 scfm

TCC Catalyst Lift System Design Flow Rate = 11,000 scfm

Total Stack Flowrate = 39,600 scfm

Reference: Process Flow Diagram, Appendix H

Average CO Concentration: 5.89% by volume at kiln outlet

Average NMHC Concentration: 1412 ppm NMHC (as CH_4) at stack

Reference: TCC Kiln Gas Analyses, Appendix I

$$CO = \frac{28{,}600\ \text{scf}}{\text{Min}} \times \frac{5.89\ \text{scf CO}}{100\ \text{scf}} \times \frac{\text{lbmole CO}}{379.5\ \text{scf}} \times \frac{28\ \text{lb}}{\text{lbmole}} \times \frac{60\ \text{Minutes}}{\text{Hour}} \times \frac{24\ \text{Hour}}{\text{Day}}$$

$$= 178{,}974\ \text{lb/day}$$

(Note: The AP-42 based calculation leads to an ERC of 24,646 lb/day.)

$$NMHC = \frac{39{,}600\ \text{scf}}{\text{Min}} \times \frac{1412\ \text{scf NMHC}}{10^6\ \text{scf}} \times \frac{\text{lb mole NMHC}}{379.5\ \text{scf}} \times \frac{16\ \text{lb}}{\text{lbmole}} \times \frac{60\ \text{Minutes}}{\text{Hour}} \times \frac{24\ \text{Hours}}{\text{Day}}$$

$$= 3{,}395\ \text{lb/day}$$

(Note: The AP-42 based calculation leads to an ERC of 564 lb/day.)

Emission Rates

TCC kiln emission rates are calculated from the product of the TCC average throughput calculated from Table 6 and the emission factors summarized in Table 2. An example calculation follows:

$$\text{TCC Kiln NOx} = \frac{5\ \text{lb}}{1000\ \text{bbl}} \times \frac{6485.8\ \text{bbl}}{\text{Day}}$$

$$= 32.4\ \text{lb/day}$$

2.2.4 TCC Catalyst Lift Scrubber

Throughput

Catalyst lift scrubber particulate emissions were considered to be the major contributor to TCC particulate emissions. Emissions were based on throughput, since catalyst circulation rate follows TCC unit throughput. These data are summarized in Table 6.

Emission Factor

The emission factor for the TCC unit was based on KCAPCD tests of August 3, 1976. The test summary is contained in Appendix J. The test results were converted to a throughput-based emission factor according to the following calculation:

$$\begin{array}{l}\text{Catalyst Lift} \\ \text{Scrubber PM}\end{array} = \frac{1.9\ \text{lb/hr}}{550\ \text{bbl/hr}} = \frac{3.45\ \text{lb}}{1000\ \text{bbl}}$$

Emission Rate

TCC catalyst lift scrubber emissions were calculated from the average TCC unit throughput in Table 6 and the emission factor calculated above as follows:

$$\begin{array}{l}\text{TCC Catalyst Lift} \\ \text{Scrubber PM}\end{array} \times \frac{3.45\ \text{lb}}{1000\ \text{bbl}} \times \frac{6485.8\ \text{bbl}}{\text{Day}} = 22.41\ \text{lb/day}$$

(Note: This value is slightly different from Table 1 because it includes round-off error.)

2.2.5 CO Boiler

Fuel Gas Consumption

CO boiler fuel gas consumption was directly monitored and reported in the Final Unit Yield Report included in Appendix D. The data are summarized in Table 8. The CO boiler received fuel gas from the No. 1 fuel gas drum.

Steam Production

Steam production for each month is also summarized in Table 8. The monthly steam make was calculated from the product of the average monthly steam rate and the number of operating days per month. Both parameters were reported in the Final Unit Yield Reports included in Appendix D.

An evaluation of fuel/steam trends revealed that the March, 1983 fuel gas consumption value in the yield report is incorrect. For this month, fuel gas consumption was calculated from the steam production rate and the average fuel/steam ratio observed during the period.

Emission Factors

Numerous tests were made of CO boiler emissions. Unfortunately, most of the testing was conducted with fuel oil firing. These data are not applicable because the unit operated exclusively on fuel gas during the period of interest. A single data set for CO and NOx emissions during refinery fuel gas firing was taken on September 22, 1982, by Chemecology to support an ARB determination of compliance. These data are summarized in Appendix K. For the remaining criteria pollutants, calculations were based on the AP-42 emission factors described in Section 2.2.2 for the TCC heater.

Emission Rates

Calculations using the AP-42 emission factors were based on the product of the factor reported in Table 2 and the average fuel gas consumption calculated in Table 8. An example calculation is presented below:

$$\text{CO Boiler } SO_2 = \frac{449.7 \text{ lb } SO_2}{10^6 \text{ scf}} \times \frac{1694.5 \times 10^3 \text{ scf}}{\text{Day}} = 762.02 \text{ lb/day}$$

Calculations for CO and NOx based on the September 22, 1982 source test were calculated from the data summarized in Table 2, the average fuel gas consumption in Table 8, and the average fuel gas heating value in Table 4 according to the following example:

$$\text{CO Boiler NOx} = \frac{0.25 \text{ lb}}{10^6 \text{ Btu}} \times \frac{1694.5 \times 10^3 \text{ scf}}{\text{Day}} \times \frac{1314 \text{ Btu}}{\text{scf}}$$

$$= 556.64 \text{ lb/day}$$

2.2.6 Valves and Flanges

Valve and Flange Count

Table 9 summarizes the results of an operator valve and flange count for the TCC and Fluid Coker Units. Liquid valves were segregated into light liquid service and heavy liquid service based on the relative distribution of liquid valves reported in the EPA Publication "Atmospheric Emissions from Petroleum Refining", EPA-600/2-8-075a. A copy of the operator notes and applicable pages from the EPA reference are included in Appendix G.

Emission Factors

Emission factors were based on AP-42 data with a rating of "A". The emission factors incorporate a 91% control efficiency for compliance with the inspection and maintenance provisions of KCAPCD Rules 414.1 and 414.5. Appendix G includes a reference for this control efficiency.

Emission Rates

Emissions are calculated from the product of the emission factor and the valve and flange count in Table 9. An example follows:

$$\text{Type II Valves} = 286 \text{ valves} \times .00531 \text{ lb/hr} \times 24 \text{ hr/day} \times 491 \text{ days/730 days}$$

$$= 24.51 \text{ lb/day}$$

SECTION 3.0

ERC CONFORMANCE WITH RULE 210.3 CRITERIA

3.1 ERC'S ARE "REAL"

A significant body of data have been submitted to confirm that the emissions presented in Table 1 are real. These data include detailed refinery operational records pertaining to fuel consumption, fuel quality, unit throughput and production. Emissions have been based on actual field measurements at the then Tosco refinery where available or upon highly rated AP-42 emission factors.

3.2 ERC'S ARE "SURPLUS"

The TCC Unit, Fluid Coker, and CO Boiler have been inactive since November 1983. Emission reductions attributable to their operating condition were not required by any contemporaneous rule or regulation.

3.3 ERC'S ARE "PERMANENT"

The emission reductions achieved by the TCC Unit, Fluid Coker, and CO Boiler will be restricted by appropriate Permit to Operate action to ensure their permanance.

3.4 ERC'S ARE "QUANTIFIABLE"

ERC calculations detailed in Section 2.0 demonstrate that the reductions can be quantified on the basis of highly reliable data.

3.5 ERC'S ARE "ENFORCEABLE"

After District review of these applications, TRMI will request appropriate modifications to the Permits to Operate and equipment associated with the TCC Unit, the Fluid Coker, and the CO Boiler in order to assure that the required emission levels continue to be achieved and verifiable by KCAPCD.

SECTION 4.0

SUMMARY

The foregoing materials validate TRMI's request for banking certificates for ERC's from the TCC Unit, Fluid Coker, and CO Boiler in the following amounts:

LB/DAY

PM	SO_2	CO	NMHC	NOx
36.2	1,977.9	25,919	1,431.7	2,791.4

ESA 26200-455

APPENDIX A

MONTHLY GAS REPORTS

TOSCO CORPORATION 8/3/82

GAS REPORT BAKERSFIELD REFINERY

Date: July, 1982

RECEIPTS:			
Purchase and Transport			
Gulf Oil Company	7373		
Mohawk Petroleum Corp.-Hydrogen	0		
So. Calif. Gas Co. - North	80740		
So. Calif. Gas Co. - South	165811		
Union Oil Company	2566		
TOTAL FIELD GAS TO REFINERY		256490	
Refinery Gases			
Tank Farm Vapors to Fuel	9593		
Propane to Selas Fuel	0		
Propane to Selas Process	0		
Coker Gas to Fuel	0		
Gas Con Deprop. Ovhd to Fuel	0		
"A" Reformer Debut. Vapors to Fuel	0		
"B" Reformer Off Gas to Fuel	18555		
"B" Reformer Debutanizer Vapors	0		
Crude Unit Vapors to Fuel	1010		
Stab. Ovhd Vapors to Fuel	0		
Deethanizer Dry Gas	220230		
Desulfurizer Off Gas	24131		
Desulfurizer Stripper	6706		
Propane to Fuel	49270		
Normal Butane to Fuel	6951		
Iso-Butane Mix to Fuel	0		
B-B to Fuel	0		
Recompressor Discard	15899		
Hydrocracker Gas to Fuel	146075		
Diene Gas	6712		
TOTAL REFINERY GASES		505132	
TOTAL FUEL GAS AVAILABLE			761622
DELIVERIES:			
Refinery Use and Sales:			
Refinery Use			
#1 Boiler Fuel	975		
#2 Boiler Fuel	162918		
Crude Heaters	80919		
TCC Heaters	46846		
Vacuum Heaters	25068		
Hydrocracker Heaters	77747		
Hydrogen Heaters-Purchased Fuel	67823		
Hydrogen Heaters-Refinery Fuel	32012		
"A" Reformer Fuel	37365		
"B" Reformer Fuel	62847		
Recompressor Fuel	859		
Coker Compressor Fuel	5850		
Reformer Compressor Fuel	4871		
TCC Compressor Fuel	11237		
Tank Farm	19163		
Purge Gas to Coker	6010		
Flare Gas & Pilots	1705		
Utility Stations, Comp. Purges, etc.	21583		
TOTAL REFINERY FUELS		665798	
Sales			
Mohawk Petroleum Corporation	0		
TOTAL SALES		0	
Gas to H_2 Process - So. Cal. Gas Co.	15617		
Mohawk Hydrogen	0		
"A" Ref Debut Vapors	0		
"B" " " "	0		
Propane Vapors	0		
TOTAL PROCESS GAS		15617	
TOTAL GAS USE			681415
[illegible] LOSS, MCF			80207
[illegible] LOSS, %			10.5

Copies to: H. F. Schulman-L.A., D. Guerrero, R. Hebert, H. E. Holst, M. E. Danitschek, G. D. Davis, J. A. Kamps, F. D. Stauffer, R. W. Traylor, L. D. Walsh, M. A. Zuniga

Prepared by P.C. Daily
P. C. Daily

Submitted by G. D. Davis
G. D. Davis

TOSCO CORPORATION 9/3/82

GAS REPORT BAKERSFIELD REFINERY

Date: Aug., 1982

RECEIPTS:			
Purchase and Transport			
Gulf Oil Company	4690		
Mohawk Petroleum Corp.-Hydrogen	0		
So. Calif. Gas Co. - North	50500		
So. Calif. Gas Co. - South	120664		
Union Oil Company	2018		
TOTAL FIELD GAS TO REFINERY		177872	
Refinery Gases			
Tank Farm Vapors to Fuel	9837		
Propane to Selas Fuel	0		
Propane to Selas Process	0		
Coker Gas to Fuel	0		
Gas Con Deprop. Ovhd to Fuel	0		
"A" Reformer Debut. Vapors to Fuel	0		
"B" Reformer Off Gas to Fuel	12964		
"B" Reformer Debutanizer Vapors	0		
Crude Unit Vapors to Fuel	1014		
Stab. Ovhd Vapors to Fuel	0		
Deethanizer Dry Gas	284867		
Desulfurizer Off Gas	19814		
Desulfurizer Stripper	6282		
Propane to Fuel	37567		
Normal Butane to Fuel	1547		
Iso-Butane Mix to Fuel	299		
B-B to Fuel	0		
Recompressor Discard	17446		
Hydrocracker Gas to Fuel	126415		
Diene Gas	5984		
TOTAL REFINERY GASES		524036	
TOTAL FUEL GAS AVAILABLE			701908
DELIVERIES:			
Refinery Use and Sales:			
Refinery Use			
#1 Boiler Fuel	0		
#2 Boiler Fuel	157915		
Crude Heaters	90062		
TCC Heaters	40724		
Vacuum Heaters	30029		
Hydrocracker Heaters	64255		
Hydrogen Heaters-Purchased Fuel	33267		
Hydrogen Heaters-Refinery Fuel	68784		
"A" Reformer Fuel	31126		
"B" Reformer Fuel	53129		
Recompressor Fuel	853		
Coker Compressor Fuel	9466		
Reformer Compressor Fuel	4999		
TCC Compressor Fuel	14716		
Tank Farm	21215		
Purge Gas to Coker	8565		
Flare Gas & Pilots	1705		
Utility Stations, Comp. Purges, etc.	26346		
TOTAL REFINERY FUELS		657156	
Sales			
Mohawk Petroleum Corporation	0		
TOTAL SALES		0	
Gas to H_2 Process - So. Cal. Gas Co.	36551		
Mohawk Hydrogen	0		
"A" Ref Debut Vapors	0		
"B" " " "	0		
Propane Vapors	0		
TOTAL PROCESS GAS		36551	
TOTAL GAS USE			693707
~~GAINxOR~~ LOSS, MCF			8201
~~GAINxOR~~ LOSS, %			1.2

Copies to: H. F. Schulman-L.A., D. Guerrero, R. Hebert, H. E. Holst, M. E. Danitschek, G. D. Davis, J. A. Kamps, F. D. Stauffer, R. W. Traylor, L. D. Walsh, M. A. Zuniga

Prepared by P.C. Daily
P. C. Daily

Submitted by G. D. Davis
G. D. Davis

TOSCO CORPORATION

10/4/82

GAS REPORT

BAKERSFIELD REFINERY

Date: Sept. 1982

RECEIPTS:

Purchase and Transport			
Gulf Oil Company	6456		
Mohawk Petroleum Corp.-Hydrogen	0		
So. Calif. Gas Co. - North	46560		
So. Calif. Gas Co. - South	149339		
Union Oil Company	2448		
TOTAL FIELD GAS TO REFINERY		204803	
Refinery Gases			
Tank Farm Vapors to Fuel	7359		
Propane to Selas Fuel	0		
Propane to Selas Process	0		
Coker Gas to Fuel	0		
Gas Con Deprop. Ovhd to Fuel	0		
"A" Reformer Debut. Vapors to Fuel	0		
"B" Reformer Off Gas to Fuel	14836		
"B" Reformer Debutanizer Vapors	0		
Crude Unit Vapors to Fuel	1049		
Stab. Ovhd Vapors to Fuel	0		
Deethanizer Dry Gas	261564		
Desulfurizer Off Gas	18996		
Desulfurizer Stripper	5943		
Propane to Fuel	42158		
Normal Butane to Fuel	0		
Iso-Butane Mix to Fuel	0		
B-B to Fuel	0		
Recompressor Discard	17150		
Hydrocracker Gas to Fuel	129010		
Diene Gas	5304		
TOTAL REFINERY GASES		503369	
TOTAL FUEL GAS AVAILABLE			708172

DELIVERIES:

Refinery Use and Sales:

Refinery Use			
#1 Boiler Fuel	0		
#2 Boiler Fuel	132158		
Crude Heaters	80933		
TCC Heaters	37741		
Vacuum Heaters	26020		
Hydrocracker Heaters	68763		
Hydrogen Heaters-Purchased Fuel	22975		
Hydrogen Heaters-Refinery Fuel	76856		
"A" Reformer Fuel	28522		
"B" Reformer Fuel	56277		
Recompressor Fuel	734		
Coker Compressor Fuel	9194		
Reformer Compressor Fuel	4796		
TCC Compressor Fuel	15091		
Tank Farm	21009		
Purge Gas to Coker	8048		
Flare Gas & Pilots	1650		
Utility Stations, Comp. Purges, etc.	17801		
TOTAL REFINERY FUELS		608568	
Sales			
Mohawk Petroleum Corporation	0		
TOTAL SALES		0	
Gas to H_2 Process - So. Cal. Gas Co.	47856		
Mohawk Hydrogen	0		
"A" Ref Debut Vapors	0		
"B" " " "	0		
Propane Vapors	0		
TOTAL PROCESS GAS		47856	
TOTAL GAS USE			656424
~~GAIN OR~~ LOSS, MCF			51748
~~GAIN OR~~ LOSS, %			7.3

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Prepared by P. C. Daily
P. C. Daily

Submitted by G D Davis
G. D. Davis

TOSCO CORPORATION 11/3/82

GAS REPORT BAKERSFIELD REFINERY

Date: Oct., 1982

RECEIPTS:

Purchase and Transport			
Gulf Oil Company	10486		
Mohawk Petroleum Corp.-Hydrogen	0		
So. Calif. Gas Co. - North	76940		
So. Calif. Gas Co. - South	67761		
Union Oil Company	1960		
TOTAL FIELD GAS TO REFINERY		157147	
Refinery Gases			
Tank Farm Vapors to Fuel	5336		
Propane to Selas Fuel	0		
Propane to Selas Process	0		
Coker Gas to Fuel	14771		
Gas Con Deprop. Ovhd to Fuel	0		
"A" Reformer Debut. Vapors to Fuel	416		
"B" Reformer Off Gas to Fuel	6098		
"B" Reformer Debutanizer Vapors	0		
Crude Unit Vapors to Fuel	1381		
Stab. Ovhd Vapors to Fuel	0		
Deethanizer Dry Gas	251737		
Desulfurizer Off Gas	16312		
Desulfurizer Stripper	2121		
Propane to Fuel	19816		
Normal Butane to Fuel	0		
Iso-Butane Mix to Fuel	900		
B-B to Fuel	0		
Recompressor Discard	14560		
Hydrocracker Gas to Fuel	22112		
Diene Gas	5349		
TOTAL REFINERY GASES		360909	
TOTAL FUEL GAS AVAILABLE			518056

DELIVERIES:

Refinery Use and Sales:

Refinery Use			
#1 Boiler Fuel	0		
#2 Boiler Fuel	140095		
Crude Heaters	73811		
TCC Heaters	35747		
Vacuum Heaters	28367		
Hydrocracker Heaters	20670		
Hydrogen Heaters-Purchased Fuel	14288		
Hydrogen Heaters-Refinery Fuel	26371		
"A" Reformer Fuel	16452		
"B" Reformer Fuel	25559		
Recompressor Fuel	701		
Coker Compressor Fuel	10366		
Reformer Compressor Fuel	3851		
TCC Compressor Fuel	13559		
Tank Farm	18992		
Purge Gas to Coker	8693		
Flare Gas & Pilots	1705		
Utility Stations, Comp. Purges, etc.	21633		
TOTAL REFINERY FUELS		460860	
Sales			
Mohawk Petroleum Corporation	0		
TOTAL SALES		0	
Gas to H_2 Process - So. Cal. Gas Co.	18573		
Mohawk Hydrogen	0		
"A" Ref Debut Vapors	0		
"B" " "	0		
Propane Vapors	0		
TOTAL PROCESS GAS		18573	
TOTAL GAS USE			479433
GAXXXXX LOSS, MCF			38623
GAXXXXX LOSS, %			7.5

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Prepared by P.C. Daily
P. C. Daily

Submitted by G.D. Davis
G. D. Davis

TOSCO CORPORATION 12/3/82

GAS REPORT — BAKERSFIELD REFINERY

Date: Nov., 1982

RECEIPTS:			
Purchase and Transport			
Gulf Oil Company	14118		
Mohawk Petroleum Corp.-Hydrogen	0		
So. Calif. Gas Co. - North	72640		
So. Calif. Gas Co. - South	191979		
Union Oil Company	2153		
TOTAL FIELD GAS TO REFINERY		280890	
Refinery Gases			
Tank Farm Vapors to Fuel	5911		
Propane to Selas Fuel	0		
Propane to Selas Process	0		
Coker Gas to Fuel	0		
Gas Con Deprop. Ovhd to Fuel	0		
"A" Reformer Debut. Vapors to Fuel	358		
"B" Reformer Off Gas to Fuel	11804		
"B" Reformer Debutanizer Vapors	70		
Crude Unit Vapors to Fuel	1504		
Stab. Ovhd Vapors to Fuel	0		
Deethanizer Dry Gas	246650		
Desulfurizer Off Gas	16082		
Desulfurizer Stripper	1168		
Propane to Fuel	31470		
Normal Butane to Fuel	0		
Iso-Butane Mix to Fuel	0		
B-B to Fuel	0		
Recompressor Discard	13551		
Hydrocracker Gas to Fuel	23216		
Diene Gas	5869		
TOTAL REFINERY GASES		357653	
TOTAL FUEL GAS AVAILABLE			638543
DELIVERIES:			
Refinery Use and Sales:			
Refinery Use			
#1 Boiler Fuel	2003		
#2 Boiler Fuel	125533		
Crude Heaters	65596		
TCC Heaters	39178		
Vacuum Heaters	26059		
Hydrocracker Heaters	47445		
Hydrogen Heaters-Purchased Fuel	31155		
Hydrogen Heaters-Refinery Fuel	50817		
"A" Reformer Fuel	22102		
"B" Reformer Fuel	30098		
Recompressor Fuel	649		
Coker Compressor Fuel	8242		
Reformer Compressor Fuel	4424		
TCC Compressor Fuel	10522		
Tank Farm	20409		
Purge Gas to Coker	7979		
Flare Gas & Pilots	1650		
Utility Stations, Comp. Purges, etc.	19387		
TOTAL REFINERY FUELS		513248	
Sales			
Mohawk Petroleum Corporation	0		
TOTAL SALES		0	
Gas to H_2 Process - So. Cal. Gas Co.	82778		
Mohawk Hydrogen	0		
"A" Ref Debut Vapors	0		
"B" " " "	0		
Propane Vapors	0		
TOTAL PROCESS GAS		82778	
TOTAL GAS USE			596026
~~GAIN OR~~ LOSS, MCF			42517
~~GAIN OR~~ LOSS, %			6.7

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M. A. Zuniga

Prepared by P.C. Daily
P. C. Daily

Submitted by G.D. Davis
G. D. Davis

TOSCO CORPORATION 1/4/83

GAS REPORT BAKERSFIELD REFINERY

RECEIPTS: Date: Dec., 1982

Purchase and Transport			
Gulf Oil Company	11210		
Mohawk Petroleum Corp.-Hydrogen	0		
So. Calif. Gas Co. - North	58710		
So. Calif. Gas Co. - South	222257		
Union Oil Company	1967		
TOTAL FIELD GAS TO REFINERY		294144	
Refinery Gases			
Tank Farm Vapors to Fuel	4893		
Propane to Selas Fuel	0		
Propane to Selas Process	0		
Coker Gas to Fuel	8386		
Gas Con Deprop. Ovhd to Fuel	0		
"A" Reformer Debut. Vapors to Fuel	1173		
"B" Reformer Off Gas to Fuel	12470		
"B" Reformer Debutanizer Vapors	0		
Crude Unit Vapors to Fuel	1319		
Stab. Ovhd Vapors to Fuel	0		
Deethanizer Dry Gas	262904		
Desulfurizer Off Gas	13328		
Desulfurizer Stripper	4372		
Propane to Fuel	6256		
Normal Butane to Fuel	0		
Iso-Butane Mix to Fuel	0		
B-B to Fuel	0		
Recompressor Discard	12522		
Hydrocracker Gas to Fuel	82948		
Diene Gas	4977		
TOTAL REFINERY GASES		415548	
TOTAL FUEL GAS AVAILABLE			709692
DELIVERIES:			
Refinery Use and Sales:			
Refinery Use			
#1 Boiler Fuel	7465		
#2 Boiler Fuel	140952		
Crude Heaters	64811		
TCC Heaters	43196		
Vacuum Heaters	33947		
Hydrocracker Heaters	59680		
Hydrogen Heaters-Purchased Fuel	53017		
Hydrogen Heaters-Refinery Fuel	36442		
"A" Reformer Fuel	28223		
"B" Reformer Fuel	56093		
Recompressor Fuel	610		
Coker Compressor Fuel	9490		
Reformer Compressor Fuel	4724		
TCC Compressor Fuel	13660		
Tank Farm	22344		
Purge Gas to Coker	8573		
Flare Gas & Pilots	1705		
Utility Stations, Comp. Purges, etc.	20102		
TOTAL REFINERY FUELS		605034	
Sales			
Mohawk Petroleum Corporation	0		
TOTAL SALES		0	
Gas to H_2 Process - So. Cal. Gas Co.	88769		
Mohawk Hydrogen	0		
"A" Ref Debut Vapors	0		
"B" " " "	0		
Propane Vapors	0		
TOTAL PROCESS GAS		88769	
TOTAL GAS USE			693803
LOSS, MCF			15889
LOSS, %			2.2

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Prepared by P.C. Daily
P. C. Daily

Submitted by G.D. Davis

TOSCO CORPORATION

2/3/83

GAS REPORT

BAKERSFIELD REFINERY

Date: Jan., 1983

RECEIPTS:

Purchase and Transport

Gulf Oil Company	6933		
Mohawk Petroleum Corp.-Hydrogen	0		
So. Calif. Gas Co. - North	130660		
So. Calif. Gas Co. - South	226779		
Union Oil Company	1500		
TOTAL FIELD GAS TO REFINERY		365872	
Refinery Gases			
Tank Farm Vapors to Fuel	5399		
Propane to Selas Fuel	0		
Propane to Selas Process	0		
Coker Gas to Fuel	6838		
Gas Con Deprop. Ovhd to Fuel	19051		
"A" Reformer Debut. Vapors to Fuel	179		
"B" Reformer Off Gas to Fuel	8747		
"B" Reformer Debutanizer Vapors	0		
Crude Unit Vapors to Fuel	847		
Stab. Ovhd Vapors to Fuel	0		
Deethanizer Dry Gas	237146		
Desulfurizer Off Gas	8893		
Desulfurizer Stripper	10160		
Propane to Fuel	7832		
Normal Butane to Fuel	249		
Iso-Butane Mix to Fuel	0		
B-B to Fuel	0		
Recompressor Discard	16478		
Hydrocracker Gas to Fuel	26998		
Diene Gas	4426		
TOTAL REFINERY GASES		353243	
TOTAL FUEL GAS AVAILABLE			719115

DELIVERIES:

Refinery Use and Sales:

Refinery Use			
#1 Boiler Fuel	17489		
#2 Boiler Fuel	151953		
Crude Heaters	56264		
TCC Heaters	31266		
Vacuum Heaters	22012		
Hydrocracker Heaters	56779		
Hydrogen Heaters-Purchased Fuel	29352		
Hydrogen Heaters-Refinery Fuel	53662		
"A" Reformer Fuel	14827		
"B" Reformer Fuel	42932		
Recompressor Fuel	520		
Coker Compressor Fuel	9550		
Reformer Compressor Fuel	4239		
TCC Compressor Fuel	13592		
Tank Farm	25635		
Purge Gas to Coker	8919		
Flare Gas & Pilots	1705		
Utility Stations, Comp. Purges, etc.	14336		
TOTAL REFINERY FUELS		555032	
Sales			
Mohawk Petroleum Corporation	0		
TOTAL SALES		0	
Gas to H_2 Process - So. Cal. Gas Co.	79317		
Mohawk Hydrogen	0		
"A" Ref Debut Vapors	0		
"B" " "	0		
Propane Vapors	0		
TOTAL PROCESS GAS		79317	
TOTAL GAS USE			634349
GAIN OR LOSS, MCF			84766
GAIN OR LOSS, %			11.8

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Prepared by P.C. Daily
P. C. Daily

Submitted by G.D. Davis
G. D. Davis

TOSCO CORPORATION 3/2/83

GAS REPORT — BAKERSFIELD REFINERY

Date: Feb., 1983

RECEIPTS:			
Purchase and Transport			
Gulf Oil Company	12768		
Mohawk Petroleum Corp.-Hydrogen	0		
So. Calif. Gas Co. - North	81693		
So. Calif. Gas Co. - South	212452		
Union Oil Company	745		
TOTAL FIELD GAS TO REFINERY		307658	
Refinery Gases			
Tank Farm Vapors to Fuel	4244		
Propane to Selas Fuel	0		
Propane to Selas Process	0		
Coker Gas to Fuel	23012		
Gas Con Deprop. Ovhd to Fuel	14986		
"A" Reformer Debut. Vapors to Fuel	0		
"B" Reformer Off Gas to Fuel	14004		
"B" Reformer Debutanizer Vapors	0		
Crude Unit Vapors to Fuel	1283		
Stab. Ovhd Vapors to Fuel	0		
Deethanizer Dry Gas	181615		
Desulfurizer Off Gas	10284		
Desulfurizer Stripper	11484		
Propane to Fuel	16045		
Normal Butane to Fuel	0		
Iso-Butane Mix to Fuel	0		
B-B to Fuel	0		
Recompressor Discard	17914		
Hydrocracker Gas to Fuel	224		
Diene Gas	4022		
TOTAL REFINERY GASES		299117	
TOTAL FUEL GAS AVAILABLE			606775
DELIVERIES:			
Refinery Use and Sales:			
Refinery Use			
#1 Boiler Fuel	16799		
#2 Boiler Fuel	117182		
Crude Heaters	19025		
TCC Heaters	25772		
Vacuum Heaters	14805		
Hydrocracker Heaters	70490		
Hydrogen Heaters-Purchased Fuel	42191		
Hydrogen Heaters-Refinery Fuel	47328		
"A" Reformer Fuel	14408		
"B" Reformer Fuel	64035		
Recompressor Fuel	631		
Coker Compressor Fuel	9710		
Reformer Compressor Fuel	4308		
TCC Compressor Fuel	13306		
Tank Farm	20300		
Purge Gas to Coker	7828		
Flare Gas & Pilots	1540		
Utility Stations, Comp. Purges, etc.	11602		
TOTAL REFINERY FUELS		501260	
Sales			
Mohawk Petroleum Corporation	0		
TOTAL SALES		0	
Gas to H_2 Process - So. Cal. Gas Co.	75142		
Mohawk Hydrogen	0		
"A" Ref Debut Vapors	0		
"B" " " "	0		
Propane Vapors	0		
TOTAL PROCESS GAS		75142	
TOTAL GAS USE			576402
XXXXXX LOSS, MCF			30373
XXXXXX LOSS, %			5.0

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Prepared by P.C. Daily
P. C. Daily

Submitted by GDDavis/JPm
G. D. Davis

TOSCO CORPORATION 4/5/83

GAS REPORT — BAKERSFIELD REFINERY

Date: March, 1983

RECEIPTS:

Purchase and Transport

Gulf Oil Company	14759		
Mohawk Petroleum Corp.-Hydrogen	0		
So. Calif. Gas Co. - North	53043		
So. Calif. Gas Co. - South	234816		
Union Oil Company	1663		
TOTAL FIELD GAS TO REFINERY		304281	

Refinery Gases

Tank Farm Vapors to Fuel	3567		
Propane to Selas Fuel	1318		
Propane to Selas Process	0		
Coker Gas to Fuel	136752		
Gas Con Deprop. Ovhd to Fuel	7635		
"A" Reformer Debut. Vapors to Fuel	5649		
"B" Reformer Off Gas to Fuel	12931		
"B" Reformer Debutanizer Vapors	1252		
Crude Unit Vapors to Fuel	1723		
Stab. Ovhd Vapors to Fuel	0		
Deethanizer Dry Gas	56383		
Desulfurizer Off Gas	9982		
Desulfurizer Stripper	12475		
Propane to Fuel	23714		
Normal Butane to Fuel	0		
Iso-Butane Mix to Fuel	0		
B-B to Fuel	0		
Recompressor Discard	17705		
Hydrocracker Gas to Fuel	54273		
Diene Gas	3016		
TOTAL REFINERY GASES		348375	
TOTAL FUEL GAS AVAILABLE			652656

DELIVERIES:

Refinery Use and Sales:

Refinery Use

#1 Boiler Fuel	12740		
#2 Boiler Fuel	130210		
Crude Heaters	51776		
TCC Heaters	11812		
Vacuum Heaters	23478		
Hydrocracker Heaters	62749		
Hydrogen Heaters-Purchased Fuel	96595		
Hydrogen Heaters-Refinery Fuel	20186		
"A" Reformer Fuel	12990		
"B" Reformer Fuel	61465		
Recompressor Fuel	802		
Coker Compressor Fuel	9187		
Reformer Compressor Fuel	4935		
TCC Compressor Fuel	2883		
Tank Farm	16543		
Purge Gas to Coker	8532		
Flare Gas & Pilots	1705		
Utility Stations, Comp. Purges, etc.	11138		
TOTAL REFINERY FUELS		539726	

Sales

Mohawk Petroleum Corporation	0		
TOTAL SALES		0	

Gas to H_2 Process -	So. Cal. Gas Co.	87355		
	Mohawk Hydrogen	0		
	"A" Ref Debut Vapors	0		
	"B" " " "	0		
	Propane Vapors	0		
TOTAL PROCESS GAS			87355	
TOTAL GAS USE				627081
XXXXXX LOSS, MCF				25575
XXXXXX LOSS, %				3.9

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Prepared by P. C. Daily
P. C. Daily

Submitted by G. D. Davis
G. D. Davis

TOSCO CORPORATION

5/5/83 CORRECTED COPY

GAS REPORT

BAKERSFIELD REFINERY

Date: April, 1983

RECEIPTS:

Purchase and Transport			
Gulf Oil Company	13414		
Mohawk Petroleum Corp.-Hydrogen	0		
So. Calif. Gas Co. - North	67705		
So. Calif. Gas Co. - South	167945		
Union Oil Company	2446		
TOTAL FIELD GAS TO REFINERY		251510	
Refinery Gases			
Tank Farm Vapors to Fuel	7122		
Propane to Selas Fuel	0		
Propane to Selas Process	0		
Coker Gas to Fuel	19800		
Gas Con Deprop. Ovhd to Fuel	14664		
"A" Reformer Debut. Vapors to Fuel	91		
"B" Reformer Off Gas to Fuel	11835		
"B" Reformer Debutanizer Vapors	2027		
Crude Unit Vapors to Fuel	1121		
Stab. Ovhd Vapors to Fuel	0		
Deethanizer Dry Gas	239546		
Desulfurizer Off Gas	8168		
Desulfurizer Stripper	6675		
Propane to Fuel	15170		
Normal Butane to Fuel	0		
Iso-Butane Mix to Fuel	0		
B-B to Fuel	0		
Recompressor Discard	20609		
Hydrocracker Gas to Fuel	98870		
Diene Gas	4744		
TOTAL REFINERY GASES		450442	
TOTAL FUEL GAS AVAILABLE			701952

DELIVERIES:

Refinery Use and Sales:

Refinery Use			
#1 Boiler Fuel	3501		
#2 Boiler Fuel	144620		
Crude Heaters	58999		
TCC Heaters	42549		
Vacuum Heaters	25204		
Hydrocracker Heaters	67000		
Hydrogen Heaters-Purchased Fuel	19832		
Hydrogen Heaters-Refinery Fuel	71363		
"A" Reformer Fuel	16719		
"B" Reformer Fuel	63911		
Recompressor Fuel	810		
Coker Compressor Fuel	8316		
Reformer Compressor Fuel	3835		
TCC Compressor Fuel	12153		
Tank Farm	19125		
Purge Gas to Coker	8502		
Flare Gas & Pilots	1650		
Utility Stations, Comp. Purges, etc.	21798		
TOTAL REFINERY FUELS		589887	
Sales			
Mohawk Petroleum Corporation	0		
TOTAL SALES		0	
Gas to H_2 Process - So. Cal. Gas Co.	88397		
Mohawk Hydrogen	0		
"A" Ref Debut Vapors	0		
"B" " " "	0		
Propane Vapors	0		
TOTAL PROCESS GAS		88397	
TOTAL GAS USE			678284
XXXXXX LOSS, MCF			23668
XXXXXX LOSS, %			3.4

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Prepared by P.C. Daily
P. C. Daily

Submitted by J.P. McKnight
J. P. McKnight

TOSCO CORPORATION 6/2/83

GAS REPORT BAKERSFIELD REFINERY

Date: May, 1983

RECEIPTS:			
Purchase and Transport			
Northern Michigan Expl. Co.	497		
Gulf Oil Company	12797		
Mohawk Petroleum Corp.-Hydrogen	0		
So. Calif. Gas Co. - North	48193		
So. Calif. Gas Co. - South	143748		
Union Oil Company	1575		
TOTAL FIELD GAS TO REFINERY		206810	
Refinery Gases			
Tank Farm Vapors to Fuel	7222		
Propane to Selas Fuel	0		
Propane to Selas Process	0		
Coker Gas to Fuel	0		
Gas Con Deprop. Ovhd to Fuel	9161		
"A" Reformer Debut. Vapors to Fuel	0		
"B" Reformer Off Gas to Fuel	12748		
"B" Reformer Debutanizer Vapors	2618		
Crude Unit Vapors to Fuel	1172		
Stab. Ovhd Vapors to Fuel	0		
Deethanizer Dry Gas	292237		
Desulfurizer Off Gas	14716		
Desulfurizer Stripper	11112		
Propane to Fuel	36784		
Normal Butane to Fuel	0		
Iso-Butane Mix to Fuel	0		
B-B to Fuel	0		
Recompressor Discard	21418		
Hydrocracker Gas to Fuel	71088		
Diene Gas	5560		
TOTAL REFINERY GASES		485836	
TOTAL FUEL GAS AVAILABLE			692646
DELIVERIES:			
Refinery Use and Sales:			
Refinery Use			
#1 Boiler Fuel	11336		
#2 Boiler Fuel	125073		
Crude Heaters	63614		
TCC Heaters	46683		
Vacuum Heaters	21647		
Hydrocracker Heaters	58012		
Hydrogen Heaters-Purchased Fuel	0		
Hydrogen Heaters-Refinery Fuel	84268		
"A" Reformer Fuel	32723		
"B" Reformer Fuel	62431		
Recompressor Fuel	820		
Coker Compressor Fuel	10113		
Reformer Compressor Fuel	4755		
TCC Compressor Fuel	16047		
Tank Farm	21484		
Purge Gas to Coker	8994		
Flare Gas & Pilots	1705		
Utility Stations, Comp. Purges, etc.	21332		
TOTAL REFINERY FUELS		591037	
Sales			
Mohawk Petroleum Corporation	0		
TOTAL SALES		0	
Gas to H_2 Process - So. Cal. Gas Co.	38718		
Mohawk Hydrogen	0		
"A" Ref Debut Vapors	0		
"B" " " "	0		
Propane Vapors	0		
TOTAL PROCESS GAS		38718	
TOTAL GAS USE			629755
[illegible] LOSS, MCF			62891
[illegible] LOSS, %			9.1

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Prepared by P.C. Daily
P. C. Daily

Submitted by J.P. McKnight
J. P. McKnight

TOSCO CORPORATION 7/5/83

GAS REPORT — BAKERSFIELD REFINERY

Date: June, 1983

RECEIPTS:			
Purchase and Transport			
Northern Michigan Expl. Co.	237		
Gulf Oil Company	8225		
Mohawk Petroleum Corp.-Hydrogen	0		
So. Calif. Gas Co. - North	42996		
So. Calif. Gas Co. - South	109182		
Union Oil Company	2220		
TOTAL FIELD GAS TO REFINERY		162860	
Refinery Gases			
Tank Farm Vapors to Fuel	7715		
Propane to Selas Fuel	0		
Propane to Selas Process	0		
Coker Gas to Fuel	0		
Gas Con Deprop. Ovhd to Fuel	8540		
"A" Reformer Debut. Vapors to Fuel	0		
"B" Reformer Off Gas to Fuel	5658		
"B" Reformer Debutanizer Vapors	3810		
Crude Unit Vapors to Fuel	1156		
Stab. Ovhd Vapors to Fuel	0		
Deethanizer Dry Gas	270526		
Desulfurizer Off Gas	13657		
Desulfurizer Stripper	6639		
Propane to Fuel	19202		
Normal Butane to Fuel	0		
Iso-Butane Mix to Fuel	0		
B-B to Fuel	0		
Recompressor Discard	21273		
Hydrocracker Gas to Fuel	74105		
Diene Gas	5633		
TOTAL REFINERY GASES		437914	
TOTAL FUEL GAS AVAILABLE			600774
DELIVERIES:			
Refinery Use and Sales:			
Refinery Use			
#1 Boiler Fuel	17186		
#2 Boiler Fuel	132215		
Crude Heaters	53707		
TCC Heaters	30220		
Vacuum Heaters	18728		
Hydrocracker Heaters	53721		
Hydrogen Heaters-Purchased Fuel	43457		
Hydrogen Heaters-Refinery Fuel	53808		
"A" Reformer Fuel	29699		
"B" Reformer Fuel	45506		
Recompressor Fuel	851		
Coker Compressor Fuel	9442		
Reformer Compressor Fuel	3769		
TCC Compressor Fuel	14201		
Tank Farm	16778		
Purge Gas to Coker	8373		
Flare Gas & Pilots	1650		
Utility Stations, Comp. Purges, etc.	20585		
TOTAL REFINERY FUELS		553896	
Sales			
Mohawk Petroleum Corporation	0		
TOTAL SALES		0	
Gas to H_2 Process - So. Cal. Gas Co.	31189		
Mohawk Hydrogen	0		
"A" Ref Debut Vapors	0		
"B" " "	0		
Propane Vapors	0		
TOTAL PROCESS GAS		31189	
TOTAL GAS USE			585085
~~GAIN OR~~ LOSS, MCF			15689
~~GAIN OR~~ LOSS, %			2.6

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Prepared by P. C. Daily
P. C. Daily

Submitted by J. P. McKnight
J. P. McKnight

TOSCO CORPORATION 8/2/83

GAS REPORT BAKERSFIELD REFINERY

RECEIPTS:			DATE: July, 1983
Purchase and Transport			
Getty Oil Co. - Hydrogen	0		
Gulf Oil Company	7677		
Northern Michigan Expl. Co.	196		
So. Calif. Gas Co. - North	70069		
So. Calif. Gas Co. - South	102955		
Union Oil Company	1883		
TOTAL FIELD GAS TO REFINERY		182780	
Refinery Gases			
Tank Farm Vapors to Fuel	7656		
Coker Gas to Fuel	0		
Gas Con Deprop. Ovhd to Fuel	8050		
"A" Reformer Debut. Vapors to Fuel	0		
"B" Reformer Off Gas to Fuel	13305		
"B" Reformer Debutanizer Vapors	1171		
Crude Unit Vapors to Fuel	748		
Stab. Ovhd Vapors to Fuel	0		
Deethanizer Dry Gas	256144		
Desulfurizer Off Gas	13904		
Desulfurizer Stripper	8041		
Propane to Fuel	32112		
Normal Butane to Fuel	0		
Iso-Butane Mix to Fuel	0		
B-B to Fuel	0		
Recompressor Discard	19023		
Hydrocracker Gas to Fuel	82635		
Diene Gas	5879		
TOTAL REFINERY GASES		448668	
TOTAL FUEL GAS AVAILABLE			631448
DELIVERIES:			
Refinery Use and Sales:			
Refinery Use			
#1 Boiler Fuel	21535		
#2 Boiler Fuel	149799		
Crude Heaters	47194		
TCC Heaters	21602		
Vacuum Heaters	17388		
Hydrocracker Heaters	65304		
Hydrogen Heaters-Purchased Fuel	21516		
Hydrogen Heaters-Refinery Fuel	72891		
"A" Reformer Fuel	33201		
"B" Reformer Fuel	40782		
Recompressor Fuel	765		
Coker Compressor Fuel	10007		
Reformer Compressor Fuel	4956		
TCC Compressor Fuel	13749		
Tank Farm	20880		
Purge Gas to Coker	8658		
Flare Gas & Pilots	1705		
Utility Stations, Comp. Purges, etc.	16892		
TOTAL REFINERY FUELS		568824	
Sales			
Getty Oil Company	0		
TOTAL SALES		0	
Gas to H_2 Process - So. Cal. Gas Co.	23636		
Getty Oil Co. - Hydrogen	0		
TOTAL PROCESS GAS		23636	
TOTAL GAS USE			592460
XXXXXX LOSS, MCF			38988
XXXXXX LOSS, %			6.2

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Prepared by: G. W. Johnson

G. W. Johnson

Submitted by: J. P. McKnight

J. P. McKnight

-6-83

TOSCO CORPORATION

GAS REPORT

BAKERSFIELD REFINERY

DATE: August, 1983

RECEIPTS:			
Purchase and Transport			
Getty Oil Co. - Hydrogen	0		
Gulf Oil Company	5,524		
Northern Michigan Expl. Co.	26		
So. Calif. Gas Co. - North	89,787		
So. Calif. Gas Co. - South	93,468		
Union Oil Company	2,309		
TOTAL FIELD GAS TO REFINERY		191,114	
Refinery Gases			
Tank Farm Vapors to Fuel	8,286		
Coker Gas to Fuel	0		
Gas Con Deprop. Ovhd to Fuel	18,517		
"A" Reformer Debut. Vapors to Fuel	0		
"B" Reformer Off Gas to Fuel	11,367		
"B" Reformer Debutanizer Vapors	813		
Crude Unit Vapors to Fuel	1,137		
Stab. Ovhd Vapors to Fuel	0		
Deethanizer Dry Gas	265,925		
Desulfurizer Off Gas	11,974		
Desulfurizer Stripper	8,146		
Propane to Fuel	11,136		
Normal Butane to Fuel	0		
Iso-Butane Mix to Fuel	0		
B-B to Fuel	0		
Recompressor Discard	19,276		
Hydrocracker Gas to Fuel	73,513		
Diene Gas	5,443		
TOTAL REFINERY GASES		435,533	
TOTAL FUEL GAS AVAILABLE			626,647
DELIVERIES:			
Refinery Use and Sales:			
Refinery Use			
#1 Boiler Fuel	25,083		
#2 Boiler Fuel	150,574		
Crude Heaters	49,519		
TCC Heaters	27,541		
Vacuum Heaters	21,607		
Hydrocracker Heaters	65,590		
Hydrogen Heaters-Purchased Fuel	18,047		
Hydrogen Heaters-Refinery Fuel	71,701		
"A" Reformer Fuel	28,323		
"B" Reformer Fuel	37,665		
Recompressor Fuel	743		
Coker Compressor Fuel	10,461		
Reformer Compressor Fuel	4,886		
TCC Compressor Fuel	15,255		
Tank Farm	16,992		
Purge Gas to Coker	8,938		
Flare Gas & Pilots	1,705		
Utility Stations, Comp. Purges, etc.	23,809		
TOTAL REFINERY FUELS		578,439	
Sales			
Getty Oil Company	0		
TOTAL SALES		0	
Gas to H_2 Process - So. Cal. Gas Co.	29,873		
Getty Oil Co. - Hydrogen	0		
TOTAL PROCESS GAS		29,873	
TOTAL GAS USED			608,312
GAIN OR LOSS, MCF			18,335
GAIN OR LOSS, %			2.9

Copies to : H. R. Schulman-L.A., D. Guerrero, R. Hebert, H. E. Holst, M. E. Danitschek, G. D. Davis, J. A. Kamps, F. D. Stauffer, R. W. Traylor, M. A. Zuniga

Prepared by: G. W. Johnson
G. W. Johnson

Submitted by: J. P. McKnight
J. P. McKnight

APPENDIX B

MONTHLY GAS GRAVITIES REPORTS

TOSCO CORPORATION
BAKERSFIELD REFINERY
GAS ANALYSIS REPORT

LABORATORY: Gas Lab			OPERATOR: J. Satcher		DATE: October 1983	
UNIT: Gas Gravities	'A' Ref. Recycle Gas	'B' Ref. Recycle Gas	No. 1 Fuel Gas Drum	Reabs. Gas	So. Cal Nat. Gas	Crude Comp. Vapors
SAMPLE DATE	10-6-83	10-6-83	10-13-83	10-14-83	10-14-83	10-14-83
SAMPLE TIME	7^{00} A.M.	7^{00} A.M.	7^{00} A.M.	7^{00} A.M.	9^{00} A.M.	10^{30} A.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13	71.9	91.5	11.6	14.4		
NITROGEN 9	0.5	0.3	1.7	1.8	0.9	11.1
OXYGEN						0.3
CARBON MONOXIDE 17			0.6	0.9		
CARBON DIOXIDE 21			1.6	1.5	2.0	7.0
HYDROGEN SULFIDE 25			0.8	0.2		
METHANE 29	13.4	3.8	43.3	37.7	85.0	49.7
ETHANE 33	7.1	1.6	14.9	15.9	8.4	15.9
ETHYLENE 37			6.0	7.3		
PROPANE 41	3.4	0.9	7.3	7.2	2.9	10.0
PROPYLENE 45			5.7	6.8		
ISOBUTANE 49	0.8	0.2	1.0	1.1	0.2	1.4
NORMAL BUTANE 53	0.9	0.2	1.2	1.0	0.2	3.4
TOTAL BUTENES 57			1.2	1.8		
1, 3-BUTADIENE 61						
ISOPENTANE 65	0.4	0.1	0.9	0.5		0.5
NORMAL PENTANE 69	0.2	0.1	0.4	0.3		0.5
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	1.4	1.3	1.7	1.5	0.1	0.2
Specific Gravity	0.4100	0.1733	0.8653	0.8616	0.6570	0.9382
BTU / Cu. Ft.	804	466	1396	1396	1102	1242

DIST.: GOD JPM(3) JAK P&I MED	REMARKS:	PREPARED BY: [signature] SUBMITTED BY: [signature]

81 089 (9-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY
GAS ANALYSIS REPORT

LABORATORY: Gas Lab | OPERATOR: J. Satcher | DATE: September 1983

UNIT: Gas Gravities	Crude Comp. Vapors	Recomp. Dry Gas	No. 1 Fuel Gas Drum	So Cal. Nat. Gas	Union Oil Co.	No. 2 Fuel Gas Drum
SAMPLE DATE	9-7-83	9-8-83	9-15-83	9-15-83	9-15-83	9-15-83
SAMPLE TIME	3:00 P.M.	2:00 P.M.	10:00 A.M.	10:00 A.M.	3:00 P.M.	1:30 P.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13			11.4			43.3
NITROGEN 9	4.0	5.4	1.7	0.6	1.0	0.6
OXYGEN	0.1					
CARBON MONOXIDE 17			0.9			0.3
CARBON DIOXIDE 21	7.1	1.2	1.5	2.3	16.9	0.8
HYDROGEN SULFIDE 25			0.2			
METHANE 29	38.5	56.7	42.4	86.3	80.2	31.0
ETHANE 33	13.5	5.7	14.0	8.2	1.2	7.6
ETHYLENE 37			5.8			2.2
PROPANE 41	21.7	3.7	7.8	2.0	0.1	5.8
PROPYLENE 45		0.1	6.5			2.9
ISOBUTANE 49	3.4	2.7	1.1	0.1	0.1	0.7
NORMAL BUTANE 53	8.1	9.1	1.6	0.2		1.1
TOTAL BUTENES 57	0.1	1.2	2.0			0.9
1, 3-BUTADIENE 61						
ISOPENTANE 65	1.3	5.7	0.9			0.7
NORMAL PENTANE 69	1.1	2.6	0.5			0.5
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	1.1	6.1	1.6	0.2	0.4	1.7
Specific Gravity	1.1574	1.1601	0.8887	0.6486	0.7425	0.5882
BTU / Cu. Ft	1694	1792	1438	1088	860	1044

DIST.: GDD JPM(3)
MED P&I
JAK

REMARKS:

PREPARED BY: Joe Satcher

SUBMITTED BY:

81 089 (9-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY

GAS ANALYSIS REPORT

LABORATORY: Gas Lab | OPERATOR: J. Satcher | DATE: August 30 1983

UNIT: Gas Gravities		So. Cal Nat. Gas	No. 1 Fuel Gas Drum	No. 2 Fuel Gas Drum	'A' Ref Recycle Gas	'B' Ref Recycle Gas	H_2 Plant Furnace Fuel
SAMPLE DATE		8-2-83	8-2-83	8-2-83	8-11-83	8-11-83	8-11-83
SAMPLE TIME		7:00 A.M.	7:00 A.M.	8:30 A.M.	7:00 A.M.	7:00 A.M.	8:30 A.M.
PERCENT		Gas Vol.	—	—	—	—	—
HYDROGEN	13		5.7	29.0	72.5	88.6	13.9
NITROGEN	9	1.0	1.3	0.5	0.6	0.3	2.0
OXYGEN							
CARBON MONOXIDE	17		0.5	0.3			1.1
CARBON DIOXIDE	21	2.4	2.0	0.4			
HYDROGEN SULFIDE	25						
METHANE	29	87.0	60.7	38.3	13.4	4.4	41.2
ETHANE	33	7.9	10.6	15.7	6.9	2.2	14.8
ETHYLENE	37		3.2	2.4			7.9
PROPANE	41	1.2	6.4	8.0	3.2	1.4	4.8
PROPYLENE	45		4.6	2.2			7.1
ISOBUTANE	49	0.1	0.6	1.2	0.6	0.3	0.7
NORMAL BUTANE	53	0.2	1.2	0.6	0.8	0.3	0.5
TOTAL BUTENES	57		1.1	0.6			1.8
1, 3-BUTADIENE	61						
ISOPENTANE	65		0.6	0.1	0.3	0.1	0.3
NORMAL PENTANE	69		0.3	0.1	0.2	0.1	0.3
TOTAL PENTENES	73						
TOTAL C_6 PLUS	77	0.1	1.0	0.6	1.3	2.2	3.6
Specific Gravity		0.6386	0.8066	0.6564	0.3368	0.2215	0.8631
BTU / Cu. Ft		1064	1315	1159	703	534	1419

DIST.: GDD, JAK, MED, P&I, JPM(3)

REMARKS:

PREPARED BY: J. Satcher

SUBMITTED BY: D. Sprague

81 089 (9-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY
GAS ANALYSIS REPORT

LABORATORY: Gas Lab		OPERATOR: J. Satcher			DATE: August 30 1983	
UNIT: Gas Gravities	Rearb. Gas	Crude Comp. Vapors	Recomp. Dry Gas	Diene Off-Gas	B' Ref Deca. Off-Gas	Hydrocracker Dry Gas
SAMPLE DATE	8-12-83	8-12-83	8-16-83	8-16-83	8-16-83	8-16-83
SAMPLE TIME	7:00 A.M.	11:00 A.M.	7:00 A.M.	11:30 A.M.	2:00 P.M.	3:00 P.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13	13.0			52.3	23.8	33.7
NITROGEN 9	1.8	6.4	4.3	0.6	0.4	0.2
OXYGEN			0.6			
CARBON MONOXIDE 17	1.2	0.1				
CARBON DIOXIDE 21	1.7	7.1	1.5			0.1
HYDROGEN SULFIDE 25	1.5					
METHANE 29	41.0	39.8	60.9	2.2	6.7	32.1
ETHANE 33	14.1	11.8	5.5	0.1	27.9	11.3
ETHYLENE 37	7.6			0.1		
PROPANE 41	4.8	19.6	3.4	11.2	20.2	18.2
PROPYLENE 45	7.3		0.3	8.3	0.1	0.1
ISOBUTANE 49	0.7	3.3	2.1	6.0	6.0	2.2
NORMAL BUTANE 53	0.5	8.3	7.1	6.9	7.5	1.3
TOTAL BUTENES 57	1.7		1.7	12.0	0.2	
1, 3-BUTADIENE 61						
ISOPENTANE 65	0.3	1.4	4.9	0.2	1.7	0.2
NORMAL PENTANE 69	0.3	1.2	2.5	0.1	0.8	
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	2.6	0.7	5.0		4.7	0.5
Specific Gravity	0.8624	1.1373	1.0857	0.8478	1.1441	0.6930
BTU / Cu. Ft.	1363	1626	1681	1474	1909	1239

DIST: GDD JAK
MED P&I
JPM(3)

REMARKS:

PREPARED BY: [signature]

SUBMITTED BY: [signature]

81 089 (9-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY

GAS ANALYSIS REPORT

LABORATORY: Gas Lab		OPERATOR: J. Satcher			DATE: July 27 1983	
UNIT: Gas Gravities	Reabs. Gas	No. 1 Fuel Gas Drum	No. 2 Fuel Gas Drum	B Ref. Recycle Gas	'A' Ref. Recycle Gas	So. Cal Nat. Gas
SAMPLE DATE	7-1-83	7-5-83	7-5-83	7-7-83	7-7-83	7-8-83
SAMPLE TIME	700 A.M.	7 00 A.M.	7 00 A.M.	7 00 A.M.	7 00 A.M.	12 00 P.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13	13.7	13.1	37.9	88.5	75.4	
NITROGEN 9	1.5	1.7	0.2	0.3	0.6	0.9
OXYGEN						
CARBON MONOXIDE 17	0.9	0.8				
CARBON DIOXIDE 21	1.7	1.6	0.1			2.2
HYDROGEN SULFIDE 25	1.0					
METHANE 29	41.2	48.0	27.2	5.1	12.4	85.5
ETHANE 33	16.4	16.4	11.9	2.4	6.9	8.2
ETHYLENE 37	7.8	6.8	0.2			
PROPANE 41	5.9	3.8	18.1	1.4	2.2	2.6
PROPYLENE 45	6.4	3.2	0.3			
ISOBUTANE 49	0.7	0.6	2.5	0.3	0.5	0.2
NORMAL BUTANE 53	0.5	0.8	1.1	0.3	0.6	0.3
TOTAL BUTENES 57	1.0	0.8	0.1			
1, 3-BUTADIENE 61						
ISOPENTANE 65	0.3	0.6	0.1	0.1	0.2	
NORMAL PENTANE 69	0.2	0.3		0.1	0.1	
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	0.7	1.4	0.3	1.4	1.0	0.1
Specific Gravity	0.8069	0.7753	0.6724	0.2016	0.2960	0.6545
BTU / Cu. Ft.	1306	1269	1211	507	644	1096

DIST.: GDD JPM(3) JAK P&I MED

REMARKS:

PREPARED BY: [signature]

SUBMITTED BY: [signature]

81 089 (9-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY
GAS ANALYSIS REPORT

LABORATORY: Gas Lab | OPERATOR: J. Satcher | DATE: June 30, 1983

UNIT: Gas Gravities	Reabs. Gas	No. 2 Fuel Gas Drum	So. Cal Nat. Gas	HDS Accum. Off-Gas	HDS Stripper Gas	Gas Con Dic3 OVHD Gas
SAMPLE DATE	6-1-83	6-1-83	6-1-83	6-13-83	6-29-83	6-28-83
SAMPLE TIME	7⁰⁰ A.M.	1⁰⁰ P.M.	10⁰⁰ A.M.	4⁰⁰ P.M.	3³⁰ P.M.	10⁰⁰ A.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13	14.3	30.7		83.8	42.8	
NITROGEN 9	1.4	0.7	0.7	0.3	1.0	0.3
OXYGEN						
CARBON MONOXIDE 17	1.2	0.1				
CARBON DIOXIDE 21	1.7	0.3	1.1		0.1	0.1
HYDROGEN SULFIDE 25	0.8				0.2	9.4
METHANE 29	41.8	44.6	91.4	12.4	40.2	0.1
ETHANE 33	16.6	14.9	6.1	1.7	8.7	9.6
ETHYLENE 37	8.2	1.2				0.5
PROPANE 41	4.5	2.9	0.6	0.3	3.2	29.5
PROPYLENE 45	6.5	0.6				47.1
ISOBUTANE 49	0.4	0.6	0.1	0.1	1.4	1.3
NORMAL BUTANE 53	0.5	0.6	0.1		1.1	0.4
TOTAL BUTENES 57	1.2	0.1				1.4
1, 3-BUTADIENE 61						0.1
ISOPENTANE 65	0.2	0.4			0.3	
NORMAL PENTANE 69	0.2	0.1			0.2	
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	0.7	2.1	0.1	1.4	0.7	
Specific Gravity	0.7887	0.6053	0.6078	0.1978	0.4914	1.4208
BTU/Cu. Ft.	1279	1076	1055	498	914	2188

DIST.: GDD JPM(3) JAK P&I MED

REMARKS:

PREPARED BY: [signature]

SUBMITTED BY: T. Sprague

81 089 (9-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY

GAS ANALYSIS REPORT

LABORATORY: Gas Lab		OPERATOR: J. Satcher			DATE: June 30 1983	
UNIT: Gas Gravities	Diene Off-Gas	Recomp. Dry-Gas	Crude Comp. Vapors	'B' Ref. Recycle Gas	'A' Ref. Recycle Gas	No. 1 Fuel Gas Drum
SAMPLE DATE	6-9-83	6-7-83	6-3-83	6-2-83	6-2-83	6-1-83
SAMPLE TIME	2^{00} P.M.	10^{00} A.M.	11^{00} A.M.	7^{00} A.M.	7^{00} A.M.	10^{00} A.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13	49.7			90.6	74.9	6.5
NITROGEN 9	0.3	5.8	5.4	0.5	0.1	2.5
OXYGEN		0.6	0.1			
CARBON MONOXIDE 17						0.5
CARBON DIOXIDE 21		0.7	7.2			1.3
HYDROGEN SULFIDE 25						0.2
METHANE 29	3.5	67.1	46.0	3.9	14.7	62.0
ETHANE 33	0.1	4.7	12.0	1.8	6.5	11.0
ETHYLENE 37	0.1					3.7
PROPANE 41	10.8	1.5	17.7	0.8	1.8	5.3
PROPYLENE 45	12.0					2.2
ISOBUTANE 49	4.5	1.4	2.7	0.2	0.4	0.4
NORMAL BUTANE 53	4.6	4.6	6.6	0.2	0.4	0.8
TOTAL BUTENES 57	13.9	0.9				0.4
1, 3-BUTADIENE 61						
ISOPENTANE 65	0.1	4.1	1.0	0.1	0.2	0.7
NORMAL PENTANE 69		2.2	0.8			0.4
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	0.3	6.4	0.3	1.8	1.0	1.6
Specific Gravity	0.8632	1.0157	1.0545	0.1892	0.2818	0.7738
BTU/Cu. Ft.	1495	1562	1513	484	629	1258

DIST.: GDD JPM(3) MEO PLI JAK

REMARKS:

PREPARED BY: Joe Satcher

SUBMITTED BY: [signature]

81 089 (9-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY
GAS ANALYSIS REPORT

LABORATORY: Gas Lab	OPERATOR: J. Satcher	DATE: April 29 1983

UNIT: Gas Gravities	Crude Comp. Vapors	H_2 Plant Furnace Fuel	Reabs Gas	Hydrocracker Dry Gas	Recomp. Dry Gas	So. Cal. Nat. Gas
SAMPLE DATE	4-11-83	4-5-83	4-7-83	4-12-83	4-16-83	4-18-83
SAMPLE TIME	3:00 P.M.	11:00 A.M.	7:00 A.M.	11:30 A.M.	2:00 P.M.	2:00 P.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13		13.8	13.7	13.4		
NITROGEN 9	3.8	1.0	1.7	1.1	4.5	0.5
OXYGEN	0.1				1.1	
CARBON MONOXIDE 17		1.0	1.2			
CARBON DIOXIDE 21	5.6	0.3	1.6	0.6	0.9	1.1
HYDROGEN SULFIDE 25			0.3			
METHANE 29	58.0	47.8	42.6	74.1	77.0	90.3
ETHANE 33	8.2	16.8	16.6	7.3	5.1	6.6
ETHYLENE 37		7.4	8.3			
PROPANE 41	11.9	4.7	5.3	1.9	1.2	0.9
PROPYLENE 45		5.0	5.6		0.1	
ISOBUTANE 49	2.2	0.3	0.7	0.8	0.8	0.1
NORMAL BUTANE 53	5.9	0.4	0.5	0.4	2.2	0.1
TOTAL BUTENES 57		0.7	1.0		0.2	
1, 3-BUTADIENE 61						
ISOPENTANE 65	1.2	0.2	0.3		1.9	
NORMAL PENTANE 69	1.0	0.1	0.2		1.1	
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	1.9	0.5	0.3	0.3	4.0	0.3
Specific Gravity	0.9908	0.7407	0.7820	0.5805	0.8332	0.6187
BTU / Cu. Ft.	(1470	1262	1273	1024	1302	1072)

DIST	REMARKS	
600(3) P&I MED JAK		PREPARED BY Jan Satcher SUBMITTED BY [signature]

81 389 (9-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY

GAS ANALYSIS REPORT

LABORATORY: Gas Lab | OPERATOR: J. Satcher | DATE: April 29, 1983

UNIT: Gas Gravities	No. 1 Fuel Gas Drum	Diene Off-Gas	No. 2 Fuel Gas Drum	B Ref O-G Off-Gas	HDS Accum Off-Gas	B' Ref Recycle Gas
SAMPLE DATE	4-18-83	4-19-83	4-19-83	4-19-83	4-26-83	4-27-83
SAMPLE TIME	3^{30} P.M.	7^{00} A.M.	8^{00} A.M.	8^{00} A.M.	9^{30} A.M.	8^{00} A.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13	8.5	63.8	43.2	24.6	84.5	89.4
NITROGEN 9	2.9	0.6	0.4	0.3	0.3	0.3
OXYGEN						
CARBON MONOXIDE 17	0.4					
CARBON DIOXIDE 21	1.1	0.1	0.3			
HYDROGEN SULFIDE 25					0.1	
METHANE 29	46.2	11.9	41.3	11.3	12.5	4.9
ETHANE 33	11.6	0.3	8.5	23.6	1.7	2.0
ETHYLENE 37	4.2	0.1	1.2			
PROPANE 41	11.0	4.2	2.7	28.8	0.1	1.1
PROPYLENE 45	7.4	2.3	0.4			
ISOBUTANE 49	1.7	3.7	0.9	4.8	0.1	0.3
NORMAL BUTANE 53	1.5	4.3	0.4	2.8	0.1	0.3
TOTAL BUTENES 57	1.3	8.6	0.1			
1, 3-BUTADIENE 61						
ISOPENTANE 65	0.6		0.2	0.5		0.1
NORMAL PENTANE 69	0.3		0.1	0.2		0.1
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	1.4		0.3	3.1	0.5	1.5
Specific Gravity	0.9025	0.5481	0.4581	1.0337	0.1892	0.1953
BTU / Cu. Ft	1453	1022	873	1749	489	498

DIST: GDD(3), P&I, MED, JAIC

REMARKS:

PREPARED BY: J. Satcher

SUBMITTED BY: D. Sprague

41-089 (9-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY

GAS ANALYSIS REPORT

LABORATORY: GAS LAB		OPERATOR: J. SATCHER			DATE: MARCH 31, 1983	
UNIT: GAS GRAVITIES	No. 1 FUEL GAS DRUM	CRUDE COMP. VAPORS	B REF. RECYCLE GAS	So. CAL NAT. GAS	RECOMP. DRY GAS	GULF NORTH
SAMPLE DATE	3-1-83	3-1-83	3-3-83	3-3-83	3-4-83	3-5-83
SAMPLE TIME	10:00 A.M.	10:00 A.M.	8:00 A.M.	2:00 P.M.	8:00 A.M.	3:00 P.M.
PERCENT	GAS VOL.	—	—	—	—	—
HYDROGEN 13	5.8	0.6	80.4			
NITROGEN 9	2.6	15.5	0.4	0.6	4.5	1.0
OXYGEN		0.1				
CARBON MONOXIDE 17	1.6	0.3				
CARBON DIOXIDE 21	2.5	5.7		1.0	0.8	7.4
HYDROGEN SULFIDE 25						
METHANE 29	54.0	48.0	8.6	90.7	76.2	89.1
ETHANE 33	14.6	9.4	5.1	6.3	4.5	1.4
ETHYLENE 37	7.8	2.4				
PROPANE 41	1.8	8.5	1.6	0.7	1.6	0.1
PROPYLENE 45	2.3	0.6			0.1	
ISOBUTANE 49	0.2	1.8	0.5	0.1	2.0	0.1
NORMAL BUTANE 53	0.6	4.5	0.5	0.1	3.7	0.1
TOTAL BUTENES 57	1.8	0.5			0.6	
1, 3-BUTADIENE 61	0.1					
ISOPENTANE 65	0.2	0.8	0.4		2.4	
NORMAL PENTANE 69	0.3	0.6	0.2		1.2	
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	3.9	0.4	2.2	0.4	2.5	1.0
Specific Gravity	0.8584	0.9543	0.2898	0.6174	0.8487	0.7184
BTU / Cu. Ft.	1330	1222	632	1069	1338	1043

DIST GDD(3) PE I JAK MED	REMARKS:	PREPARED BY: Jac Satcher SUBMITTED BY: DSpragne

31 C59 (9-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY
GAS ANALYSIS REPORT

LABORATORY: Gas Lab	OPERATOR: J. Satcher			DATE: March 31, 1983	
UNIT: Gas Gravities	A Ref Recycle Gas	ReAbs Gas	H_2 Plant Furnace Fuel	Diene Off-Gas		
SAMPLE DATE	3-17-83	3-24-83	3-28-83	3-29-83		
SAMPLE TIME	8:00 A.M.	8:00 A.M	4:30 P.M.	3:30 P.M.		
PERCENT	Gas Vol.	—	—	—		
HYDROGEN 13	63.7	10.2	16.1	8.9		
NITROGEN 9	0.2	3.0	1.6	0.3		
OXYGEN						
CARBON MONOXIDE 17		1.9	1.2			
CARBON DIOXIDE 21		1.4	0.1			
HYDROGEN SULFIDE 25		0.2				
METHANE 29	14.7	50.8	44.2	2.9		
ETHANE 33	8.2	11.4	14.7	0.1		
ETHYLENE 37		7.0	7.7			
PROPANE 41	4.6	2.5	3.7	22.0		
PROPYLENE 45		3.7	5.3	14.8		
ISOBUTANE 49	1.2	1.9	0.3	14.2		
NORMAL BUTANE 53	1.3	1.0	0.5	13.1		
TOTAL BUTENES 57		1.0	1.1	23.4		
1, 3-BUTADIENE 61		0.1		0.1		
ISOPENTANE 65	0.6	0.3	0.4			
NORMAL PENTANE 69	0.4	0.2	0.2			
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	5.1	3.4	2.8			
Specific Gravity	0.5201	0.9402	0.7873	1.5811		
BTU / Cu. Ft.	965	1449	1312	2574		

DIST: GDD (3) P & I MED JAC	REMARKS	PREPARED BY: Jan Satcher SUBMITTED BY: [signature]

81 C33 (9-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY
GAS ANALYSIS REPORT

LABORATORY: Gas Lab		OPERATOR: J. Satcher		DATE: March 30, 1983	
UNIT: Fuel Gas	No. 1 Fuel Gas Drum				
SAMPLE DATE	3-30-83				
SAMPLE TIME	8:30 A.M.				
PERCENT	Gas Vol.				
HYDROGEN 13	7.4				
NITROGEN 9	1.4				
OXYGEN					
CARBON MONOXIDE 17	0.4				
CARBON DIOXIDE 21	0.7				
HYDROGEN SULFIDE 25					
METHANE 29	30.9				
ETHANE 33	7.1				
ETHYLENE 37	2.2				
PROPANE 41	21.2				
PROPYLENE 45	7.2				
ISOBUTANE 49	5.1				
NORMAL BUTANE 53	5.7				
TOTAL BUTENES 57	8.3				
1, 3-BUTADIENE 61					
ISOPENTANE 65	0.9				
NORMAL PENTANE 69	0.4				
TOTAL PENTENES 73					
TOTAL C_6 PLUS 77	1.0				
Specific Gravity	1.1709				
BTU / Cu. Ft.	1907				

DIST.: 600(2)	REMARKS:	PREPARED BY: Jan Satcher SUBMITTED BY:

81 089 (2-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY
GAS ANALYSIS REPORT

LABORATORY: GAS LAB		OPERATOR: D. SPRAGUE			DATE: FEBRUARY 25, 1983	
UNIT: FUEL GAS	NO. 1 FUEL GAS DRUM					
SAMPLE DATE	2-24-83					
SAMPLE TIME	4³⁰ PM					
PERCENT	GAS VOL.					
HYDROGEN 13	7.0					
NITROGEN 9	2.4					
OXYGEN	0.3					
CARBON MONOXIDE 17	0.9					
CARBON DIOXIDE 21	1.8					
HYDROGEN SULFIDE 25						
METHANE 29	56.4					
ETHANE 33	11.5					
ETHYLENE 37	4.9					
PROPANE 41	10.2					
PROPYLENE 45	0.9					
ISOBUTANE 49	0.4					
NORMAL BUTANE 53	0.6					
TOTAL BUTENES 57	0.4					
1, 3-BUTADIENE 61						
ISOPENTANE 65	0.4					
NORMAL PENTANE 69	0.2					
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	1.5					
BTU/ CU. FT.	1294.76					
SPECIFIC GRAVITY	0.8082					

DIST: GDD

REMARKS

PREPARED BY: D Sprague

SUBMITTED BY: [signature]

TOSCO CORPORATION
BAKERSFIELD REFINERY
GAS ANALYSIS REPORT

LABORATORY: Gas Lab	OPERATOR: J. Satcher	DATE: February 24, 1983

UNIT: Gas Gravities	Reabs. Gas	A Ref. Recycle Gas	HDS Accum. Off-Gas	HDS Stripper Gas	H_2 Plant Furnace Fuel	So. Cal Nat. Gas
SAMPLE DATE	2-3-83	2-3-83	2-3-83	2-3-83	2-8-83	2-9-83
SAMPLE TIME	8:00 A.M.	8:30 A.M.	8:30 A.M.	8:30 A.M.	11:00 A.M.	4:30 P.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13	14.1	68.6	72.5	5.7	14.6	
NITROGEN 9	1.4	0.1	0.1	0.1	2.1	0.6
OXYGEN						
CARBON MONOXIDE 17	1.0				1.4	
CARBON DIOXIDE 21	1.4			0.1		1.1
HYDROGEN SULFIDE 25	0.3			5.6		
METHANE 29	46.1	14.2	23.0	24.5	48.3	90.8
ETHANE 33	14.4	7.7	3.3	26.0	15.2	6.5
ETHYLENE 37	7.7				8.2	
PROPANE 41	3.8	3.6	0.3	16.0	2.9	0.5
PROPYLENE 45	5.5				3.8	
ISOBUTANE 49	0.6	0.8		4.2	0.2	0.1
NORMAL BUTANE 53	0.7	1.0		6.3	0.3	0.1
TOTAL BUTENES 57	1.6				0.6	
1, 3-BUTADIENE 61						
ISOPENTANE 65	0.3	0.4		4.1	0.5	
NORMAL PENTANE 69	0.2	0.3		4.1	0.3	
TOTAL PENTENES 73						
TOTAL C_6 PLUS	0.9	3.3	0.6	3.3	1.5	0.4
Specific Gravity	0.7735	0.4212	0.2397	1.2414	0.7397	0.6163
BTU / Cu. Ft	1271	828	565	1984	1234	1069

DIST	REMARKS	PREPARED BY / SUBMITTED BY
GDD(3) P & I MED JAK		PREPARED BY: Joe Satcher SUBMITTED BY: [signature]

81 083 (3-83)

TOSCO CORPORATION
BAKERSFIELD REFINERY

GAS ANALYSIS REPORT

LABORATORY:	OPERATOR:	DATE:
Gas Lab	J. Satcher	February 24, 1983

UNIT: Gas Gravities	Crude Comp. Vapors	No. 1 Fuel Gas Drum	Diene Off-Gas	Recomp. Dry-Gas	Vac. Unit Seal Gas	Feed Prep. Seal Gas
SAMPLE DATE	2-10-83	2-10-83	2-11-83	2-14-83	2-15-83	2-15-83
SAMPLE TIME	9:30 A.M.	3:30 P.M.	3:00 P.M.	2:30 P.M.	9:30 A.M.	9:30 A.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13		10.2	45.2	0.3	4.7	0.9
NITROGEN 9	3.2	1.4	0.7	2.6	1.3	0.5
OXYGEN	0.1			0.5		
CARBON MONOXIDE 17		0.8			2.6	1.6
CARBON DIOXIDE 21	4.9	1.3		0.8	4.7	3.5
HYDROGEN SULFIDE 25	0.1	0.3	0.1		2.1	1.4
METHANE 29	63.7	59.7	2.8	66.0	44.3	43.0
ETHANE 33	8.7	12.5	3.6	4.3	10.6	13.9
ETHYLENE 37		5.1	0.1		2.6	1.4
PROPANE 41	11.8	2.6	12.9	2.5	9.8	10.6
PROPYLENE 45	0.1	1.8	13.8	1.1	4.3	4.9
ISOBUTANE 49	1.9	0.5	5.1	3.5	1.3	1.6
NORMAL BUTANE 53	4.2	0.5	4.9	6.3	2.5	3.8
TOTAL BUTENES 57	0.3	0.9	10.7	1.1	3.3	5.0
1, 3-BUTADIENE 61					0.1	0.1
ISOPENTANE 65	0.5	0.2		3.7	1.0	1.4
NORMAL PENTANE 69	0.3	0.1		1.3	1.0	1.4
TOTAL PENTENES 73					0.7	1.1
TOTAL C_6 PLUS	0.1	1.9		6.0	3.1	4.0
Specific Gravity	0.8842	0.7366	0.9006	1.0406	1.0395	1.1607
BTU/Cu.Ft.	1343	1212	1545	1654	1533	1779

DIST	REMARKS	PREPARED BY / SUBMITTED BY
GDD (3) P & I MED JAK		Joe Satcher

01535 (4-57)

TOSCO CORPORATION
BAKERSFIELD REFINERY

GAS ANALYSIS REPORT

LABORATORY	OPERATOR:	DATE:
Gas Lab	J. Satcher	January 31 1983

UNIT Gas Gravities	So. Cal. Nat. Gas	No. 1 Fuel Gas Drum	Crude Comp. Vapors	Reans. Gas	HDS Accum. Off-Gas	No. 2 Fuel Gas Drum
SAMPLE DATE	1-4-83	1-4-83	1-5-83	1-6-83	1-3-83	1-11-83
SAMPLE TIME	11^{00} A.M.	11^{00} A.M.	11^{30} A.M.	8^{00} A.M.	1^{30} P.M.	1^{30} P.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13		12.6	10.2	14.8	62.6	14.7
NITROGEN 9	1.0	1.2	2.2	1.4	0.4	1.0
OXYGEN		0.1	0.1			
CARBON MONOXIDE 17		0.8	0.8	1.4		0.3
CARBON DIOXIDE 21	0.9	1.3	4.1	1.6		0.4
HYDROGEN SULFIDE 25		0.2	0.1		0.2	
METHANE 29	90.9	49.8	59.5	48.0	32.4	61.9
ETHANE 33	6.6	15.7	11.9	15.5	3.4	12.1
ETHYLENE 37		5.9	2.5	8.0		1.4
PROPANE 41	0.3	4.5	4.7	2.9	0.2	4.2
PROPYLENE 45		4.8	0.3	4.0		1.2
ISOBUTANE 49		0.5	0.9	0.2		0.7
NORMAL BUTANE 53		0.5	2.0	0.3	0.1	0.5
TOTAL BUTENES 57		0.9	0.1	0.7		0.1
1, 3-BUTADIENE 61						
ISOPENTANE 65		0.2	0.3	0.3		0.4
NORMAL PENTANE 69		0.1	0.2	0.2		0.2
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	0.2	0.8	0.1	0.7	0.6	0.8
Specific Gravity	0.6075	0.7587	0.7313	0.7266	0.2903	0.6597
BTU/Cu. Ft.	1054	1256	1137	1196	629	1147

DIST.:	REMARKS	
GDD(3) P&I MED JAK		PREPARED BY Joe Satcher SUBMITTED BY A. G. Wigman

81 089 (9-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY
GAS ANALYSIS REPORT

LABORATORY	OPERATOR	DATE
Gas Lab	J. Satcher	December 30, 1982

UNIT: Gas Gravities	No. 1 Fuel Gas Drum	So. Cal. Nat. Gas	Diene Off-Gas	Crude Comp. Vapors	Recomp. Dry Gas	HDS Stripper Gas
SAMPLE DATE	11-30-82	12-1-82	12-1-82	12-1-82	12-2-82	12-2-82
SAMPLE TIME	11:00 A.M.	3:30 P.M.	8:00 A.M.	3:30 P.M.	10:30 A.M.	11:00 A.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13	10.5		47.5			9.4
NITROGEN 9	1.2	0.5	0.3	3.6	5.9	
OXYGEN				0.1	1.1	
CARBON MONOXIDE 17	0.5					
CARBON DIOXIDE 21	1.2	1.0		5.2	0.8	0.1
HYDROGEN SULFIDE 25						3.7
METHANE 29	63.3	91.1	3.3	61.6	70.7	30.9
ETHANE 33	13.2	6.1	0.4	8.8	3.9	26.6
ETHYLENE 37	4.8			0.1		
PROPANE 41	1.5	0.8	14.3	12.0	1.2	9.8
PROPYLENE 45	1.5		16.3	0.2	0.1	
ISOBUTANE 49	0.2	0.1	4.4	1.9	1.2	2.2
NORMAL BUTANE 53	0.3	0.1	3.5	4.7	5.2	3.0
TOTAL BUTENES 57	0.4		9.8	0.3	0.9	
1, 3-BUTADIENE 61						
ISOPENTANE 65	0.2			0.6	3.1	3.2
NORMAL PENTANE 69	0.1			0.5	1.5	2.8
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	1.1	0.2	0.1	0.3	4.5	8.2
Specific Gravity	0.7077	0.6107	0.8653	0.9098	0.9346	1.1649
BTU / Cu. Ft.	1182	1063	1500	1368	1435	1862

DIST: GOD (3) P&I, MED, JAK

REMARKS:

PREPARED BY: Jan Satcher

SUBMITTED BY:

81-035 (9-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY
GAS ANALYSIS REPORT

LABORATORY	OPERATOR:	DATE:
Gas Lab	J. Satcher	December 30 1982

UNIT Gas Gravities	Reabs. Gas	No. 2 Fuel Gas Drum	Hydro. Dry Gas	B Ref. DeC4 Off-Gas	B Ref. Recycle Gas	Union Oil Co.
SAMPLE DATE	12-2-82	12-2-82	12-7-82	12-9-82	12-22-82	12-23-82
SAMPLE TIME	8⁰⁰ A.M.	2³⁰ P.M.	3³⁰ P.M.	10⁰⁰ A.M.	4⁰⁰ P.M.	10⁰⁰ A.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13	14.4	41.6	27.8	37.8	91.6	
NITROGEN 9	1.0	0.6	0.6	0.3		0.6
OXYGEN						
CARBON MONOXIDE 17	1.2	0.2				
CARBON DIOXIDE 21	1.5	0.2	0.5			21.9
HYDROGEN SULFIDE 25	0.1		0.2			
METHANE 29	43.7	34.2	61.7	13.2	4.8	76.3
ETHANE 33	17.2	9.4	6.2	25.5	1.6	0.9
ETHYLENE 37	8.4	2.1				
PROPANE 41	3.9	6.0	1.5	16.7	0.5	0.1
PROPYLENE 45	5.3	0.8				
ISOBUTANE 49	0.3	3.4	0.9	1.5	0.1	
NORMAL BUTANE 53	0.4	0.8	0.3	1.4	0.1	
TOTAL BUTENES 57	0.9	0.2				
1, 3-BUTADIENE 61						
ISOPENTANE 65	0.4	0.1		0.4	0.1	
NORMAL PENTANE 69	0.2	0.1		0.2	0.1	
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	1.1	0.5	0.2	2.9	0.9	0.2
Specific Gravity	0.7755	0.5560	0.4953	0.7871	0.1572	0.7806
BTU / Cu. Ft.	1278	1020	910	1375	448	798

DIST	REMARKS	PREPARED BY	SUBMITTED BY
6DD(3) P&I JAK MED		Jim Satcher	

81 03919 60

TOSCO CORPORATION
BAKERSFIELD REFINERY
GAS ANALYSIS REPORT

LABORATORY: Gas Lab | OPERATOR: J. Satcher | DATE: November 29, 1982

UNIT: Gas Gravities	B Ref. Recycle Gas	Reabs. Gas	So. Cal Nat Gas	No. 1 Fuel Gas Drum	H_2 Plant Furnace Fuel	HDS Stopper Gas
SAMPLE DATE	11-9-82	11-4-82	11-12-82	11-12-82	11-15-82	11-16-82
SAMPLE TIME	9:00 A.M.	8:30 A.M.	11:00 A.M.	11:00 A.M.	4:00 P.M.	11:00 A.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13	94.1	13.5		9.0	12.4	13.6
NITROGEN 9	0.2	1.7	0.5	1.6	1.3	
OXYGEN		0.1	0.1		0.1	
CARBON MONOXIDE 17		1.1		0.5	0.9	
CARBON DIOXIDE 21		1.4	1.1	1.3		
HYDROGEN SULFIDE 25						1.6
METHANE 29	3.1	45.5	92.0	65.5	45.4	40.7
ETHANE 33	1.5	17.1	6.0	12.2	20.6	33.5
ETHYLENE 37		8.0		4.2	7.4	
PROPANE 41	0.3	3.5	0.2	1.9	7.3	4.4
PROPYLENE 45		5.0		1.5	3.0	
ISOBUTANE 49	0.1	0.2		0.4	0.3	0.9
NORMAL BUTANE 53	0.1	0.3		0.6	0.2	1.3
TOTAL BUTENES 57		0.8		0.4	0.4	
1, 3-BUTADIENE 61						
ISOPENTANE 65		0.3		0.2	0.2	1.1
NORMAL PENTANE 69		0.2		0.1	0.1	0.7
TOTAL PENTENES 73						
TOTAL C_6 PLUS	0.5	1.2	0.1	0.5	0.4	2.1
Specific Gravity	0.1275	0.7694	0.5990	0.6810	0.7594	0.8274
BTU/Cu. Ft.	403	1258	1043	1142	1294	1410

DIST: GDD (3) P&I, MED, JAK

REMARKS:

PREPARED BY: Joe Satcher

SUBMITTED BY: [signature]

81 089 ?? 80

TOSCO CORPORATION
BAKERSFIELD REFINERY
GAS ANALYSIS REPORT

LABORATORY		OPERATOR			DATE	
Gas Lab		J. Satcher			October 22, 1982	
UNIT Gas Gravities	Reabs. Gas	No. 2 Fuel Gas Drum	Union Oil Co.	HDS Stripper Gas	HDS Accum. Gas	A Ref. Recycle Gas
SAMPLE DATE	10-7-82	10-13-82	10-13-82	10-18-82	10-19-82	10-19-82
SAMPLE TIME	8:00 A.M.	11:00 A.M.	2:30 P.M.	4:30 P.M.	11:00 A.M.	11:00 A.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13	13.0	22.2		23.1	75.5	72.0
NITROGEN 9	1.6	1.5	0.2	0.3	0.1	0.3
OXYGEN	0.1					
CARBON MONOXIDE 17	1.5	1.0				
CARBON DIOXIDE 21	1.7		24.9	0.1		
HYDROGEN SULFIDE 25	0.1			0.7		
METHANE 29	47.9	45.3	73.8	43.0	21.1	17.3
ETHANE 33	18.0	17.4	0.9	26.7	2.9	7.6
ETHYLENE 37	8.8	7.3				
PROPANE 41	2.1	1.7	0.1	1.3	0.1	1.5
PROPYLENE 45	3.8	2.0				
ISOBUTANE 49	0.1	0.3		0.3		0.3
NORMAL BUTANE 53	0.2	0.2		0.6		0.3
TOTAL BUTENES 57	0.5	0.4				
1, 3-BUTADIENE 61						
ISOPENTANE 65	0.1	0.1		0.9		0.1
NORMAL PENTANE 69	0.1	0.1		0.7		0.1
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	0.3	0.5	0.1	2.2	0.2	0.5
Specific Gravity	0.7240	0.6371	0.8028	0.6936	0.2103	0.2829
Volatile Residue	1183	1108	767	1213	523	629

DIST. 600(3) P&I
MED
JAK

REMARKS

PREPARED BY Jan Satcher

SUBMITTED BY A. G. Wegman

81 089 (9 80)

TOSCO CORPORATION
BAKERSFIELD REFINERY

GAS ANALYSIS REPORT

LABORATORY	OPERATOR	DATE
Gas Lab	J. Satcher	October 22 1982

UNIT: Gas Gravities	So. Cal Nat. Gas	No. 1 Fuel Gas Drum	Recomp. Dry Gas	Crude Comp. Vapors	Diene Off-Gas	H_2 Plant Furnace Fuel
SAMPLE DATE	10-5-82	10-5-82	10-5-82	10-5-82	10-5-82	10-7-82
SAMPLE TIME	8^{30} A.M.	8^{30} A.M.	11^{00} A.M.	11^{00} A.M.	4^{30} P.M.	10^{00} A.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13		6.4			58.8	13.5
NITROGEN 9	0.6	2.0	7.6	2.6	0.6	1.2
OXYGEN	0.1	0.2	1.5	0.1		
CARBON MONOXIDE 17		0.5				1.4
CARBON DIOXIDE 21	2.3	1.6	1.6	5.6		
HYDROGEN SULFIDE 25						
METHANE 29	89.5	61.5	72.4	52.7	3.1	47.0
ETHANE 33	6.4	9.3	5.0	10.9		18.0
ETHYLENE 37		2.6		0.1		8.7
PROPANE 41	0.6	11.9	1.3	14.8	10.1	2.8
PROPYLENE 45		1.0		0.2	12.0	4.5
ISOBUTANE 49	0.1	0.4	0.6	2.8	3.2	0.7
NORMAL BUTANE 53	0.1	0.7	2.3	6.9	2.5	0.5
TOTAL BUTENES 57		0.4	0.6	0.4	9.2	0.8
1, 3-BUTADIENE 61						
ISOPENTANE 65		0.5	2.5	1.3	0.1	0.2
NORMAL PENTANE 69		0.3	1.3	1.0		0.1
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	0.4	0.8	3.3	0.7	0.1	0.6
Specific Gravity	0.6280	0.7879	0.8563	1.0257	0.6943	0.7401
Volatile Residue	1054	1288	1264	1552	1238	1258

DIST: GDD(3) P&I, MED, JAK

REMARKS:

PREPARED BY:

SUBMITTED BY:

81 035 (9-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY
GAS ANALYSIS REPORT

LABORATORY	OPERATOR	DATE
Gas Lab.	J. Satcher	September 30, 1982

UNIT: Gas Gravities	No. 1 Fuel Gas Drum	So. Cal Nat. Gas	Crude Comp. Vapors	Reabs. Gas	Feed Prep. Seal Gas	Vac. Unit Seal Gas
SAMPLE DATE	9-2-82	9-2-82	9-2-82	9-2-82	9-8-82	9-8-82
SAMPLE TIME	1 30 P.M.	1 30 P.M.	3 30 P.M.	8 00 A.M.	2 00 P.M.	2 00 P.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN	11.2			13.9	0.8	7.6
NITROGEN	2.5	0.3	2.8	1.5	0.7	1.2
OXYGEN	0.4		0.2	0.1		
CARBON MONOXIDE	0.7			1.2	1.4	3.5
CARBON DIOXIDE	1.5	2.4	4.7	1.4	2.8	5.7
HYDROGEN SULFIDE					1.1	1.7
METHANE	51.1	88.2	37.2	45.2	40.1	36.7
ETHANE	14.8	7.9	10.7	16.6	12.4	11.1
ETHYLENE	5.8			8.2	1.8	2.8
PROPANE	6.0	0.7	22.1	3.5	9.4	8.1
PROPYLENE	2.8		0.1	5.3	4.8	4.6
ISOBUTANE	0.5	0.1	4.0	0.4	1.1	1.5
NORMAL BUTANE	0.6	0.1	11.1	0.3	4.2	3.1
TOTAL BUTENES	0.6		0.2	1.0	5.3	2.5
1, 3-BUTADIENE						
ISOPENTANE	0.3		2.4	0.2	1.9	1.3
NORMAL PENTANE	0.2		2.0	0.2	2.4	1.6
TOTAL PENTENES						
TOTAL C_6 PLUS	0.9	0.1	2.3	1.0	9.8	7.1
Specific Gravity	0.7665	0.6316	1.2495	0.7668	1.2854	
BTU / Cu. Ft.	1241	1063	1907	1257	1963	

DIST	REMARKS	
GDD (3) P&I MED JAK		PREPARED BY: J. Satcher SUBMITTED BY: G. G. Wigman

51 C89 (-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY

GAS ANALYSIS REPORT

LABORATORY: Gas Lab
OPERATOR: J. Satchez
DATE: August 31 1982

UNIT: Gas Gravities	No. 1 Fuel Gas Drum	So. Cal Nat. Gas	Crude Comp. Vapors	Recomp. Dry Gas	Diene Off-Gas	No. 2 Fuel Gas Drum
SAMPLE DATE	8-3-82	8-3-82	8-3-82	8-3-82	8-3-82	8-19-82
SAMPLE TIME	10:00 A.M.	10:00 A.M.	11:30 A.M.	11:30 A.M.	2:30 P.M.	11:00 A.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13	3.7				55.4	27.5
NITROGEN 9	1.3	0.5	4.6	3.5	0.5	0.5
OXYGEN	0.1	0.1	0.2	0.7	0.1	
CARBON MONOXIDE 17	0.2					0.1
CARBON DIOXIDE 21	2.2	2.4	4.6	1.7		0.1
HYDROGEN SULFIDE 25						
METHANE 29	77.0	87.1	48.8	68.1	2.6	21.7
ETHANE 33	9.8	9.5	12.4	7.0		15.1
ETHYLENE 37	1.1					1.1
PROPANE 41	1.5	0.2	15.9	2.2	10.3	22.8
PROPYLENE 45	0.4				11.4	1.0
ISOBUTANE 49	0.3		2.9	1.0	4.7	7.3
NORMAL BUTANE 53	0.6		7.1	4.7	3.4	1.6
TOTAL BUTENES 57	0.3		0.1	0.3	11.4	0.3
1, 3-BUTADIENE 61						
ISOPENTANE 65	0.6		1.4	3.7		0.4
NORMAL PENTANE 69	0.2		1.2	2.1		0.1
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	0.8		0.8	4.8	0.1	0.3
Specific Gravity	0.6826	0.6311	1.0506	0.9710	0.7693	0.9163
BTU/Cu. Ft.	1125	1060	1581	1512	1352	1564

DIST: GDD(3) P&I
MED
JAK

REMARKS:

PREPARED BY: [signature]

SUBMITTED BY: [signature]

81 089 (9-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY
GAS ANALYSIS REPORT

LABORATORY: GAS LAB
OPERATOR: J. SATCHER
DATE: AUGUST 31, 1982

UNIT: GAS GRAVITIES	H_2 PLANT FURNACE FUEL	REABS GAS	UNION OIL CO.	A REF. RECYCLE GAS	HDS ACCUM. OFF-GAS	GULF NAT. GAS
SAMPLE DATE	8-19-82	8-12-82	8-23-82	8-23-82	8-24-82	9-1-82
SAMPLE TIME	11^{00} A.M.	8^{00} A.M.	2^{30} P.M.	4^{00} P.M.	6^{00} A.M.	3^{30} P.M.
PERCENT	GAS VOL.	—	—	—	—	—
HYDROGEN 13	17.6	14.9		74.2	83.0	
NITROGEN 9	1.3	1.6	1.0	0.1	0.5	1.3
OXYGEN		0.1	0.3			
CARBON MONOXIDE 17	1.3	0.9				
CARBON DIOXIDE 21		1.4	28.7			8.2
HYDROGEN SULFIDE 25						
METHANE 29	50.8	45.4	68.4	14.2	13.6	88.7
ETHANE 33	18.0	16.8	1.3	6.2	1.9	1.1
ETHYLENE 37	9.1	8.5				
PROPANE 41	0.4	3.1	0.1	2.3	0.2	0.1
PROPYLENE 45	0.6	4.9				
ISOBUTANE 49	0.1	0.3	0.1	0.4		0.1
NORMAL BUTANE 53	0.1	0.3		0.5		
TOTAL BUTENES 57	0.4	0.9				
1, 3-BUTADIENE 61						
ISOPENTANE 65		0.2		0.2		
NORMAL PENTANE 69		0.1		0.1		
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	0.3	0.4	0.1	1.5	0.7	0.4
SPECIFIC GRAVITY	0.6297	0.7378	0.8497	0.3092	0.1844	0.6573
BTU/CU. FT.	1094	1220	726	665	475	941

DIST.: GPD (3) P & I
MED
JAK

REMARKS:

PREPARED BY: Jan Satcher

SUBMITTED BY: [signature]

81 089 (9-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY

GAS ANALYSIS REPORT

LABORATORY: Gas Lab	OPERATOR: J. Satcher	DATE: July 30 1982

UNIT: Gas Gravities	B Ref DeC4 Accum. Off-Gas	H_2 Plant Furnace Fuel	B Ref. Recycle Gas	Hydro. Dry Gas	Reabs. Gas	Gulf North
SAMPLE DATE	7-12-82	7-13-82	7-13-82	7-14-82	7-15-82	7-15-82
SAMPLE TIME	3^{30} P.M.	9^{45} A.M.	10^{30} A.M.	4^{30} P.M.	8^{00} A.M.	2^{30} P.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13	27.9	27.5	89.2	50.8	27.4	
NITROGEN 9	0.5	0.5		0.4	0.5	12.8
OXYGEN	0.1	0.1			0.1	0.3
CARBON MONOXIDE 17		0.3			0.4	
CARBON DIOXIDE 21					0.3	13.6
HYDROGEN SULFIDE 25				0.5	0.2	
METHANE 29	12.2	45.8	6.0	24.5	42.7	71.8
ETHANE 33	26.8	14.8	2.5	10.5	17.4	1.0
ETHYLENE 37		8.6			8.5	
PROPANE 41	21.0	0.2	0.5	8.4	0.5	
PROPYLENE 45		0.4			1.3	
ISOBUTANE 49	5.3	0.2	0.1	3.6	0.1	
NORMAL BUTANE 53	4.3	0.1	0.1	1.0	0.1	
TOTAL BUTENES 57		0.4			0.3	
1, 3-BUTADIENE 61						
ISOPENTANE 65	0.7	0.2	0.1	0.2	0.1	
NORMAL PENTANE 69	0.3	0.1	0.1			
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	0.8	0.7	1.3	0.1	0.1	0.5
Specific Gravity	0.9340	0.5727	0.1816	0.5190	0.5789	0.7582
BTU/Cu. Ft.	1604	1033	482	974	1037	767

DIST.:	REMARKS:	
GDD(3) P&I JAK MEO		PREPARED BY: Jan Satcher SUBMITTED BY: G. G. Wyman

81 089 (9-80)

TOSCO CORPORATION
BAKERSFIELD REFINERY

GAS ANALYSIS REPORT

LABORATORY: Gas Lab			OPERATOR: J. Satcher		DATE: July 30, 1982	
UNIT: Gas Gravities	So. Cal Nat. Gas	No. 1 Fuel Gas Drum	Crude Comp. Vapors	No. 2 Fuel Gas Drum	Recomp. Dry Gas	Diene Off-Gas
SAMPLE DATE	7-2-82	7-2-82	7-2-82	7-6-82	7-9-82	7-8-82
SAMPLE TIME	11⁰⁰ A.M.	11⁰⁰ A.M.	1⁰⁰ P.M.	3³⁰ P.M.	3⁰⁰ P.M.	10³⁰ A.M.
PERCENT	Gas Vol.	—	—	—	—	—
HYDROGEN 13		8.1		29.9		58.4
NITROGEN 9	0.4	2.0	4.9	0.5	5.6	0.5
OXYGEN		0.2	0.4		1.5	
CARBON MONOXIDE 17		0.5		0.2		
CARBON DIOXIDE 21	2.4	1.3	4.9	0.6	1.7	
HYDROGEN SULFIDE 25						
METHANE 29	86.4	34.9	46.0	39.1	55.9	3.6
ETHANE 33	8.8	9.9	14.1	14.8	6.1	0.1
ETHYLENE 37		3.7		2.5		
PROPANE 41	1.4	6.3	18.6	9.9	4.1	9.0
PROPYLENE 45		7.9		1.0		11.0
ISOBUTANE 49	0.1	1.5	3.0	0.5	1.4	5.8
NORMAL BUTANE 53	0.3	19.8	6.8	0.3	6.1	2.6
TOTAL BUTENES 57		1.2		0.1	0.4	8.8
1, 3-BUTADIENE 61						
ISOPENTANE 65		1.0	0.9	0.2	4.5	
NORMAL PENTANE 69		0.4	0.6	0.1	2.1	
TOTAL PENTENES 73						
TOTAL C_6 PLUS 77	0.1	1.2	0.2	0.4	10.7	
Specific Gravity	0.6444	1.1217	1.0484	0.6334	1.1947	0.7076
BTU/Cu.Ft.	1083	1805	1574	1125	1776	1262

DIST.: GDO(3) P&I
MED
JAK

REMARKS:

PREPARED BY: J. Satcher

SUBMITTED BY: A. R. Wigmen

61 089 (9-80)

APPENDIX C

REPRESENTATIVE AREA "B"

OPERATING SUMMARIES, AUGUST 1983

ESA 26200-455

AUG 31 1983

Date ______

TCC UNIT

5.95 CHARGE 10,019 B/D

LT. COKER NAP 0 B/D

TOTAL CHARGE 10,019 B/D

SURGE DRUM TEMP 379° °F

CHARGE GRAVITY 18.1

REACTOR OUTLET 946° °F

AVERAGE KILN TEMP 1363° °F

LT. CYCLE OIL E. P. 735

56 TAR SEPARATOR PRESS. x .3 16.8 LBS.

42 REACTOR PRESSURE x .3 12.6 LBS.

6.5 TAR BOTTOMS x 484.5 3150 B/D

4.2 TAR BOTTOMS QUENCH x 79.4 334 B/D

NET TAR BOTTOMS 2816 B/D

2.6 FEED PREP BOTTOMS x 345.9 889 B/D

2.8 LTCC GASOLINE x 383.8 1074 B/D 3470

4.5 MTCC GASOLINE X 304.2 1369 B/D 667

TOTAL 2443 B/D

7.0 STEAM TO HTR OUT x 1286.7= 9007 LBS/HR

6.9 STEAM TO T.O. x 542 = 3740 LBS/HR

VAPOR LOAD 21,525

REMARKS:

Med TCC to Desulf – 651 B/D

HEATER TRANSFER TEMP 839° °F

7.5 LIQUID FEED x 210 = 1575 B/D

COOLER ROUNDS 0

5.5 LT. CYCLE OIL x 550.2 = 0 B/D

LT. CYCLE OIL BYPASS x 115.3 = 3026 B/D

TOTAL = 3026

REACTOR INLET PRESS 16.0 ΔP 0.8 LBS

SYN TOWER PRESS 9.0 ΔP 7.6 LBS

5.4 SYN TOWER x 152.5 = 824 B/D

9.7 LT CYCLE OIL TO WEED OIL x 97.6 946 B/D

% PITCH x 495.4= 0 B/D

% LCCO x 463.8= 0 B/D

TOTAL = 0 B/D

RECYCLE TO F. O.X 84.6= 0 B/D

WEEKLY AVG. CAT. USEAGE ______

HYDROGEN PROBE 242

WET SCRUBBER ΔP 5.5 "

WATER WASH 26431 G/D

HEATER: OIL BURNERS 3

VACUUM UNIT

4.9 CHARGE x 2581.8 = 12,779 B/D

2.9 GAS OIL MAKE x 1381.9 = 4007 B/D

HEAVY GAS OIL TRAY TEMP 628° °F

6.2 LT. GAS OIL TO HYDRO x 379.9 = 2356 B/D

PITCH VIS 171

REMARKS:

HEATER TRANSFER TEMP 765° °F

VACUUM AT FLASH 22.2 "

VACUUM AT OVERHEAD 25.0 "

5.1 PITCH TO COKER x 855.4= 4376 B/D

HEATER: OIL BURNERS 0

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE [illegible] "

SPENT CAUSTIC TANK ______ "

REVISED 7-5-83

TCC UNIT

Date AUG 3 0 1983

5.95 CHARGE 10,014 B/D

LT. COKER NAP ⊖ B/D

TOTAL CHARGE 10,014 B/D

SURGE DRUM TEMP 383° °F

CHARGE GRAVITY 18.1

REACTOR OUTLET 944° °F

AVERAGE KILN TEMP 1260° °F

LT. CYCLE OIL E. P. 725

5.5 TAR SEPARATOR PRESS. x .3 16.3 LBS.

4.1 REACTOR PRESSURE x .3 12.3 LBS.

6.6 TAR BOTTOMS x 484.5 3198 B/D

.41 TAR BOTTOMS QUENCH x 79.4 325 B/D

NET TAR BOTTOMS 2873 B/D

2.0 FEED PREP BOTTOMS x 345.9 692 B/D

2.8 LTCC GASOLINE x 383.8 1074 B/D 3490

4.5 MTCC GASOLINE X 304.2 1369 B/D 6690

TOTAL 3094 B/D

7.0 STEAM TO HTR OUT x 1286.7= 9007 LBS/HR

6.9 STEAM TO T.O. x 542 = 3740 LBS/HR

VAPOR LOAD 21,494

REMARKS:

Med TCC to Desulf = 6310/D

HEATER TRANSFER TEMP 845° °F

7.6 LIQUID FEED x 210 = 1596 B/D

COOLER ROUNDS 6¾

5.6 LT. CYCLE OIL x 550.2 = 3081 B/D

⊖ LT. CYCLE OIL BYPASS x 115.3 = ⊖ B/D

TOTAL = 3081

REACTOR INLET PRESS 15.2 ΔP 1.1 LBS

SYN TOWER PRESS 8.6 ΔP 3.7 LBS

5.1 SYN TOWER x 152.5 = 778 B/D

9.7 LT CYCLE OIL TO WEED OIL x 97.6 946 B/D

1.5% PITCH x 495.4= 742 B/D

% LCCO x 463.8= ⊖ B/D

TOTAL = 742 B/D

RECYCLE TO F. O.X 84.6= ⊖ B/D

WEEKLY AVG. CAT. USEAGE

HYDROGEN PROBE 242

WET SCRUBBER ΔP 5.5 "

WATER WASH 4649 G/D

HEATER: OIL BURNERS 3

VACUUM UNIT

5.2 CHARGE x 2581.8 = 13,426 B/D

3.2 GAS OIL MAKE x 1381.9 = 4423 B/D

HEAVY GAS OIL TRAY TEMP 638° °F

7.6 LT. GAS OIL TO HYDRO x 379.9 = 2887 B/D

PITCH VIS 112

REMARKS:

HEATER TRANSFER TEMP 765° °F

VACUUM AT FLASH 24.0 "

VACUUM AT OVERHEAD 25.0 "

7.0 PITCH TO COKER x 855.4 = 5988 B/D

HEATER: OIL BURNERS ⊖

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 343 270 "

SPENT CAUSTIC TANK "

REVISED 7-5-83

AUG 2 9 1983

Date

TCC UNIT

5.95 CHARGE 10,008 B/D

LT. COKER NAP ~~0~~ B/D

TOTAL CHARGE 10,008 B/D	HEATER TRANSFER TEMP 840° °F
SURGE DRUM TEMP 381° °F	7.7 LIQUID FEED x 210 = 1617 B/D
CHARGE GRAVITY 18.3	COOLER ROUNDS 6314
REACTOR OUTLET 938° °F	5.6 LT. CYCLE OIL x 550.2 = 3081 B/D
AVERAGE KILN TEMP 1342° °F	0 LT. CYCLE OIL BYPASS x 115.3 = 0 B/D
LT. CYCLE OIL E. P. 707	TOTAL = 3081
56 TAR SEPARATOR PRESS. x .3 16.8 LBS.	REACTOR INLET PRESS 10.6 ΔP 6.2 LBS
41 REACTOR PRESSURE x .3 12.3 LBS.	SYN TOWER PRESS 8.4 ΔP 3.9 LBS
5.8 TAR BOTTOMS x 484.5 2810 B/D	6.0 SYN TOWER x 152.5 = 915 B/D
2.5 TAR BOTTOMS QUENCH x 79.4 199 B/D	9.7 LT CYCLE OIL TO WEED OIL x 97.6 946 B/D
NET TAR BOTTOMS 2611 B/D	3.4% PITCH x 495.4= 1685 B/D
3.0 FEED PREP BOTTOMS x 345.9 1038 B/D	1.5% LCCO x 463.8= 696 B/D
2.8 LTCC GASOLINE x 383.8 1074 B/D 3490	TOTAL = 2381 B/D
4.5 MTCC GASOLINE X 304.2 1369 B/D 66%	3.2 RECYCLE TO F. O.X 84.6= 270 B/D
TOTAL 2443 B/D	WEEKLY AVG. CAT. USEAGE
7.0 STEAM TO HTR OUT x 1286.7= 9007 LBS/HR	HYDROGEN PROBE 246
6.9 STEAM TO T.O. x 542 = 3740 LBS/HR	WET SCRUBBER ΔP 5.8 "
VAPOR LOAD 21,761	WATER WASH 1881 G/D
REMARKS:	HEATER: OIL BURNERS 7

med. TCC. to Dealf = 651 b/d

VACUUM UNIT

5.8 CHARGE x 2581.8 = 14,974 B/D	HEATER TRANSFER TEMP 759° °F
3.0 GAS OIL MAKE x 1381.9 = 4146 B/D	VACUUM AT FLASH 24.2 "
HEAVY GAS OIL TRAY TEMP 632° °F	VACUUM AT OVERHEAD 25.0 "
7.9 LT. GAS OIL TO HYDRO x 379.9 = 3001 B/D	
PITCH VIS 115	6.8 PITCH TO COKER x 855.4= 5816 B/D
REMARKS:	HEATER: OIL BURNERS 0

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 26' 2 @ 277" SPENT CAUSTIC TANK "

Water wash pump problems since 10 am
Finally shut down at 12:00 noon

REVISED 7-5-83

TCC UNIT

Date AUG 2 8 1983

5.95 CHARGE 10,222 B/D

LT. COKER NAP ~~0~~ B/D

TOTAL CHARGE 10,222 B/D

SURGE DRUM TEMP 383° °F

CHARGE GRAVITY 19.7

REACTOR OUTLET 946° °F

AVERAGE KILN TEMP 1368° °F

LT. CYCLE OIL E. P. 703

5.7 TAR SEPARATOR PRESS. x .3 17.1 LBS.

4.2 REACTOR PRESSURE x .3 12.6 LBS.

6.2 TAR BOTTOMS x 484.5 3004 B/D

2.8 TAR BOTTOMS QUENCH x 79.4 222 B/D

NET TAR BOTTOMS 2782 B/D

3.6 FEED PREP BOTTOMS x 345.9 1245 B/D

3.4 LTCC GASOLINE x 383.8 1304 B/D 39%

4.4 MTCC GASOLINE X 304.2 1339 B/D 61% 6.1

TOTAL 2643 B/D

7.1 STEAM TO HTR OUT x 1286.7= 9136 LBS/HR

7.0 STEAM TO T.O. x 542 = 3794 LBS/HR

VAPOR LOAD 21,987

REMARKS:

Med. TCC to Deswaff. 651 B/D

HEATER TRANSFER TEMP 844° °F

7.7 LIQUID FEED x 210 = 1617 B/D

COOLER ROUNDS 63/4

5.1 LT. CYCLE OIL x 550.2 = 2806 B/D

LT. CYCLE OIL BYPASS x 115.3 = ~~0~~ B/D

TOTAL = 2860

REACTOR INLET PRESS 15.7 ΔP 1.4 LBS

SYN TOWER PRESS 9.0 ΔP 3.6 LBS

5.9 SYN TOWER x 152.5 = 900 B/D

LT CYCLE OIL TO WEED OIL x 97.6 ~~0~~ B/D

2.9 % PITCH x 495.4= 1437 B/D

5.0% LCCO x 463.8= 2319 B/D

TOTAL = 3756 B/D

RECYCLE TO F. O. X 84.6= 517 B/D

WEEKLY AVG. CAT. USEAGE

HYDROGEN PROBE 246

WET SCRUBBER ΔP 4.9 "

WATER WASH 10,988 G/D

HEATER: OIL BURNERS 2

VACUUM UNIT

5.95 CHARGE x 2581.8 = 15,361 B/D

3.0 GAS OIL MAKE x 1381.9 = 4146 B/D

HEAVY GAS OIL TRAY TEMP 637° °F

7.9 LT. GAS OIL TO HYDRO x 379.9 = 3001 B/D

PITCH VIS 110

REMARKS:

HEATER TRANSFER TEMP 765° °F

VACUUM AT FLASH 22.2 "

VACUUM AT OVERHEAD 25.0 "

7.3 PITCH TO COKER x 855.4= 6444 B/D

HEATER: OIL BURNERS ~~0~~

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 20 @ 277 "

SPENT CAUSTIC TANK "

REVISED 7-5-83

TCC UNIT

Date AUG 2 7 1983

595 CHARGE 10,014 B/D

LT. COKER NAP ~~0~~ B/D

TOTAL CHARGE 10,014 B/D

SURGE DRUM TEMP 385° °F

CHARGE GRAVITY 18.3

REACTOR OUTLET 941° °F

AVERAGE KILN TEMP 1349° °F

LT. CYCLE OIL E. P. 706

56 TAR SEPARATOR PRESS. x .3 16.8 LBS.

42 REACTOR PRESSURE x .3 12.6 LBS.

5.8 TAR BOTTOMS x 484.5 2810 B/D

1.5 TAR BOTTOMS QUENCH x 79.4 119 B/D

NET TAR BOTTOMS 2691 B/D

2.2 FEED PREP BOTTOMS x 345.9 761 B/D

2.6 LTCC GASOLINE x 383.8 998 B/D 3490

4.3 MTCC GASOLINE X 304.2 1309 B/D 6692.0

TOTAL 2958 B/D

7.0 STEAM TO HTR OUT x 1286.7= 9006 LBS/HR

6.9 STEAM TO T.O. x 542 = 3739 LBS/HR

VAPOR LOAD 21,685

REMARKS:

Med TCC to Dcs wt 651 B/D

HEATER TRANSFER TEMP 839° °F

7.7 LIQUID FEED x 210 = 1617 B/D

COOLER ROUNDS 9

6.0 LT. CYCLE OIL x 550.2 = 3301 B/D

0 LT. CYCLE OIL BYPASS x 115.3 = 0 B/D

TOTAL = 3301

REACTOR INLET PRESS 11.1 ΔP 5.7 LBS

SYN TOWER PRESS 9.2 ΔP 3.4 LBS

6.8 SYN TOWER x 152.5 = 1037 B/D

LT CYCLE OIL TO WEED OIL x 97.6 0 B/D

% PITCH x 495.4= 0 B/D

% LCCO x 463.8= 0 B/D

TOTAL = 0 B/D

RECYCLE TO F. O.X 84.6= 253 B/D

WEEKLY AVG. CAT. USEAGE

HYDROGEN PROBE 240

WET SCRUBBER ΔP 6.0 "

WATER WASH 12,460 G/D

HEATER: OIL BURNERS 2

VACUUM UNIT

4.8 CHARGE x 2581.8 = 12,392 B/D

3.4 GAS OIL MAKE x 1381.9 = 4697 B/D

HEAVY GAS OIL TRAY TEMP 603 °F

2.2 LT. GAS OIL TO HYDRO x 379.9 = 836 B/D

PITCH VIS 102

REMARKS:

HEATER TRANSFER TEMP 765° °F

VACUUM AT FLASH 22.5 "

VACUUM AT OVERHEAD 25 "

7.1 PITCH TO COKER x 855.4= 6073 B/D

HEATER: OIL BURNERS 0

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE "

SPENT CAUSTIC TANK "

REVISED 7-5-83

TCC UNIT

Date AUG 26 1983

CHARGE 10,075 B/D

LT. COKER NAP 0 B/D

TOTAL CHARGE 10,075 B/D

SURGE DRUM TEMP 383 °F

CHARGE GRAVITY 18.4

REACTOR OUTLET 941 °F

AVERAGE KILN TEMP 1365 °F

LT. CYCLE OIL E. P. 647

57 TAR SEPARATOR PRESS. x .3 17.1 LBS.

43 REACTOR PRESSURE x .3 12.9 LBS.

5.7 TAR BOTTOMS x 484.5 2762 B/D

2.0 TAR BOTTOMS QUENCH x 79.4 159 B/D

NET TAR BOTTOMS 2603 B/D

2.3 FEED PREP BOTTOMS x 345.9 796 B/D

LTCC GASOLINE x 383.8 1497 B/D 45%

4.0 MTCC GASOLINE X 304.2 1834 B/D 55%

TOTAL 3331 B/D

7.0 STEAM TO HTR OUT x 1286.7= 9007 LBS/HR

7.0 STEAM TO T.O. x 542 = 3794 LBS/HR

VAPOR LOAD 21,890

REMARKS: 617 BPD OF MED TO DESULF. 1217

HEATER TRANSFER TEMP 848 °F

7.7 LIQUID FEED x 210 = 1617 B/D

COOLER ROUNDS 7

6.0 LT. CYCLE OIL x 550.2 = 3301 B/D

0 LT. CYCLE OIL BYPASS x 115.3 = 0 B/D

TOTAL = 3301

REACTOR INLET PRESS 16.6 ΔP .5 LBS

SYN TOWER PRESS 9.5 ΔP 3.4 LBS

6.3 SYN TOWER x 152.5 = 961 B/D

LT CYCLE OIL TO WEED OIL x 97.6 0 B/D

2.4 % PITCH x 495.4= 1189 B/D

1.6 % LCCO x 463.8= 742 B/D

TOTAL 1931 B/D

2.5 RECYCLE TO F. O. X 84.6= 212 B/D

WEEKLY AVG. CAT. USEAGE

HYDROGEN PROBE 240

WET SCRUBBER ΔP 6.4 "

WATER WASH 17,632 G/D

HEATER: OIL BURNERS 0

VACUUM UNIT

6.0 CHARGE x 2581.8 = 15,491 B/D

3.5 GAS OIL MAKE x 1381.9 = 4837 B/D

HEAVY GAS OIL TRAY TEMP 632 °F

6.6 LT. GAS OIL TO HYDRO x 379.9 2507 B/D

PITCH VIS 115

REMARKS:

HEATER TRANSFER TEMP 767 °F

VACUUM AT FLASH 22.4 "

VACUUM AT OVERHEAD 25.0 "

7.5 PITCH TO COKER x 855.4= 6416 B/D

HEATER: OIL BURNERS 3

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 33" 267°

SPENT CAUSTIC TANK "

REVISED 7-5-83

TCC UNIT

Date AUG 25 1983

CHARGE 10,075 B/D

LT. COKER NAP 0 B/D

TOTAL CHARGE 10,075 B/D

SURGE DRUM TEMP 385 °F

CHARGE GRAVITY 18.5

REACTOR OUTLET 941 °F

AVERAGE KILN TEMP 1364 °F

LT. CYCLE OIL E. P. 703

57 TAR SEPARATOR PRESS. x .3 17.1 LBS.

43 REACTOR PRESSURE x .3 12.9 LBS.

5.7 TAR BOTTOMS x 484.5 2762 B/D

2.4 TAR BOTTOMS QUENCH x 79.4 191 B/D

NET TAR BOTTOMS 2571 B/D

2.2 FEED PREP BOTTOMS x 345.9 761 B/D

3.2 LTCC GASOLINE x 383.8 1228 B/D 40%

4.0 MTCC GASOLINE X 304.2 1834 B/D 60%

TOTAL 3062 B/D

6.5 STEAM TO HTR OUT x 1286.7= 9364 LBS/HR

7.0 STEAM TO T.O. x 542 = 3794 LBS/HR

VAPOR LOAD 21,279

REMARKS: 617 BPD of. Med T. to Desulf.

HEATER TRANSFER TEMP 848 °F

7.7 LIQUID FEED x 210 = 1617 B/D

COOLER ROUNDS 6

5.5 LT. CYCLE OIL x 550.2 = 3026 B/D

LT. CYCLE OIL BYPASS x 115.3 = 0 B/D

TOTAL = 3026

REACTOR INLET PRESS 16.6 ΔP .5 LBS

SYN TOWER PRESS 10.0 ΔP 2.9 LBS

6.8 SYN TOWER x 152.5 = 1037 B/D

LT CYCLE OIL TO WEED OIL x 97.6 0 B/D

2.4 % PITCH x 495.4= 1189 B/D

1.0 % LCCO x 463.8= 464 B/D

TOTAL 1653 B/D

3.8 RECYCLE TO F. O. X 84.6= 321 B/D

WEEKLY AVG. CAT. USEAGE

HYDROGEN PROBE 234

WET SCRUBBER ΔP 6.2 "

WATER WASH 21436 G/D

HEATER: OIL BURNERS 0

VACUUM UNIT

6.0 CHARGE x 2581.8 = 15,491 B/D

3.4 GAS OIL MAKE x 1381.9 = 4,698 B/D

HEAVY GAS OIL TRAY TEMP 625 °F

6.5 LT. GAS OIL TO HYDRO x 379.9 = 2469 B/D

PITCH VIS 118

REMARKS:

HEATER TRANSFER TEMP 762 °F

VACUUM AT FLASH 22.4 "

VACUUM AT OVERHEAD 25.0 "

7.7 PITCH TO COKER x 855.4= 6,587 B/D

HEATER: OIL BURNERS 2

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 24 3/4" @ 266°"

SPENT CAUSTIC TANK "

REVISED 7-5-83

TCC UNIT

Date AUG 24 1983

CHARGE	0531 B/D		
LT. COKER NAP	0 B/D		
TOTAL CHARGE	0531 B/D	HEATER TRANSFER TEMP	856 °F
SURGE DRUM TEMP	395 °F	LIQUID FEED x 210 =	1533 B/D
CHARGE GRAVITY	19.2	COOLER ROUNDS	7 1/4
REACTOR OUTLET	942 °F	4.3 LT. CYCLE OIL x 550.2 =	2366 B/D
AVERAGE KILN TEMP	1307 °F	LT. CYCLE OIL BYPASS x 115.3 =	0 B/D
LT. CYCLE OIL E. P.	700	TOTAL =	2366
TAR SEPARATOR PRESS. x .3	15 LBS.	REACTOR INLET PRESS	14 4 ΔP .6 LBS
38 REACTOR PRESSURE x .3	11.4 LBS.	SYN TOWER PRESS	3.6 ΔP 2.8 LBS
5.0 TAR BOTTOMS x 484.5	2423 B/D	6.0 SYN TOWER x 152.5 =	915 B/D
2.0 TAR BOTTOMS QUENCH x 79.4	159 B/D	LT CYCLE OIL TO WEED OIL x 97.6	0 B/D
NET TAR BOTTOMS	2,264 B/D	1.5 % PITCH x 495.4 =	743 B/D
1.5 FEED PREP BOTTOMS x 345.9	519 B/D	1.0 % LCCO x 463.8 =	464 B/D
3.7 LTCC GASOLINE x 383.8	1420 B/D 51%	TOTAL =	1207 B/D
4.4 MTCC GASOLINE X 304.2	1347 B/D 49%	RECYCLE TO F. O. X 84.6=	0 B/D
TOTAL	2767 B/D	WEEKLY AVG. CAT. USEAGE	
6.4 STEAM TO HTR OUT x 1286.7=	8235 LBS/HR	HYDROGEN PROBE	38
6.9 STEAM TO T.O. x 542 =	3740 LBS/HR	WET SCRUBBER ΔP	3.1 "
VAPOR LOAD	19775	WATER WASH	18,286 G/D
REMARKS:	617 BPD OF MED. TO DESULF. 730 1347	HEATER: OIL BURNERS	0

VACUUM UNIT

5.4 CHARGE x 2581.8 =	13,942 B/D	HEATER TRANSFER TEMP	765 °F
3.3 GAS OIL MAKE x 1381.9 =	4560 B/D	VACUUM AT FLASH	22.4 "
HEAVY GAS OIL TRAY TEMP	522 °F	VACUUM AT OVERHEAD	25.0 "
5.8 LT. GAS OIL TO HYDRO x 379.9 =	2203 B/D		
PITCH VIS	93	7.0 PITCH TO COKER x 855.4 =	5988 B/D
REMARKS:		HEATER: OIL BURNERS	2

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 72" 277° "

SPENT CAUSTIC TANK ____ "

REVISED 7-5-83

Date 'AUG 2 3 1983

TCC UNIT

CHARGE 8,511 B/D

SURGE DRUM TEMP 427 °F

CHARGE GRAVITY 19.1

REACTOR OUTLET 942 °F

AVERAGE KILN TEMP 1310 °F

LT. CYCLE OIL E. P. 744

4.8 TAR SEPARATOR PRESS. x .3 14.4 LBS.

36 REACTOR PRESSURE x .3 10.8 LBS.

6.4 TAR BOTTOMS x 484.5 3101 B/D

1.5 TAR BOTTOMS QUENCH x 79.4 119 B/D

NET TAR BOTTOMS 2,982 B/D

3.4 FEED PREP BOTTOMS x 345.9 1176 B/D

3.5 LTCC GASOLINE x 383.8 1343 B/D 51%

4.4 MTCC GASOLINE x 304.2 1313 B/D 49%

TOTAL 26562 B/D

6.8 STEAM TO HTR OUT x 1286.7= 8,750 LBS/HR

7.0 STEAM TO T.O. x 542 = 3794 LBS/HR

VAPOR LOAD 19,711

HEATER TRANSFER TEMP 848 °F

7.8 LIQUID FEED x 210 = 1638 B/D

COOLER ROUNDS 9 1/4

4.2 LT. CYCLE OIL x 550.2 = 2311 B/D

.5 LT. CYCLE OIL BYPASS x 115.3 = 58 B/D

TOTAL = 2369

REACTOR INLET PRESS 136 ΔP .8 LBS

SYN TOWER PRESS 8.2 ΔP 2.6 LBS

6.0 SYN TOWER x 152.5 = 915 B/D

LT CYCLE OIL TO WEED OIL x 97.6 0 B/D

30 % PITCH x ~~247.7~~ 495.4 = 1,486 B/D

20 % LCCO x ~~231.9~~ 463.8 = 928 B/D

TOTAL = 2414 B/D

RECYCLE TO FUEL OIL 0 B/D

WEEKLY AVG. CAT. USEAGE

HYDROGEN PROBE 235

WET SCRUBBER ΔP 6.2 "

WATER WASH 33,980 G/D

HEATER: OIL BURNERS 0

REMARKS: 583BPD. OF MED. T to DESULF.
MADE ADJ. TO WATER WASH RATES.

VACUUM UNIT

6.25 CHARGE x 2581.8 = 16,136 B/D

3.8 GAS OIL MAKE x 1381.9 = 5251 B/D

HEAVY GAS OIL TRAY TEMP 615 °F

5.1 LT. GAS OIL TO HYDRO x ~~200.6~~ 394.9 2013 B/D

PITCH VIS 110

REMARKS:

HEATER TRANSFER TEMP 765 °F

VACUUM AT FLASH 22.2 "

VACUUM AT OVERHEAD 25.0 "

7.8 PITCH TO COKER x ~~813~~ 855.4 6672 B/D

HEATER: OIL BURNERS 2

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 34" 273° "

SPENT CAUSTIC TANK "

REVISED 12-81

1711
5.05

Date AUG 22 1983

TCC UNIT

CHARGE 8511 B/D

LT. COKER NAP ____ B/D

TOTAL CHARGE 8511 B/D

SURGE DRUM TEMP 419 °F

CHARGE GRAVITY 18.9

REACTOR OUTLET 941 °F

AVERAGE KILN TEMP 1319 °F

LT. CYCLE OIL E. P. 714

TAR SEPARATOR PRESS. x .3 15 LBS.

38 REACTOR PRESSURE x .3 11.4 LBS.

4.9 TAR BOTTOMS x 484.5 2374 B/D

TAR BOTTOMS QUENCH x 79.4 40 B/D

NET TAR BOTTOMS 2334 B/D

1.8 FEED PREP BOTTOMS x 345.9 623 B/D

5.0 LTCC GASOLINE x 383.8 1919 B/D 62%

2.0 MTCC GASOLINE X 304.2 1225 B/D 38%

TOTAL 3144 B/D

6.8 STEAM TO HTR OUT x 1286.7= 8,750 LBS/HR

6.9 STEAM TO T.O. x 542 = 3740 LBS/HR

VAPOR LOAD 20,242

HEATER TRANSFER TEMP 841 °F

7.5 LIQUID FEED x 210 = 1575 B/D

COOLER ROUNDS 6

4.4 LT. CYCLE OIL x 550.2 = 2421 B/D

2.0 LT. CYCLE OIL BYPASS x 115.3 = 231 B/D

TOTAL 2652

REACTOR INLET PRESS 14.0 ΔP 1.0 LBS

SYN TOWER PRESS 8.4 ΔP 3 LBS

5.7 SYN TOWER x 152.5 = 869 B/D

LT CYCLE OIL TO WEED OIL x 97.6 0 B/D

32 % PITCH x 495.4= 1585 B/D

15 % LCCO x 463.8= 696 B/D

TOTAL 2281 B/D

RECYCLE TO F. O. X 84.6= 0 B/D

WEEKLY AVG. CAT. USEAGE ____

HYDROGEN PROBE ____

WET SCRUBBER ΔP 6.0 "

WATER WASH 24,967 G/D

REMARKS: 617 608 BPD OF MED. T.C.C. TO DESULF

HEATER: OIL BURNERS 0

VACUUM UNIT

5.95 CHARGE x 2581.8 = 15,362 B/D

3.6 GAS OIL MAKE x 1381.9 = 4,975 B/D

HEAVY GAS OIL TRAY TEMP 623 °F

5.3 LT. GAS OIL TO HYDRO x 379.9 = 2013 B/D

PITCH VIS 127

REMARKS:

HEATER TRANSFER TEMP 764 °F

VACUUM AT FLASH 22.5 "

VACUUM AT OVERHEAD 25 "

7.4 PITCH TO COKER x 855.4= 6330 B/D

HEATER: OIL BURNERS 6

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 25½ @ 285° "

SPENT CAUSTIC TANK ____ "

REVISED 7-5-83

AUG 19 1983

Date

TCC UNIT

CHARGE 9205 B/D

LT. COKER NAP ____ B/D

TOTAL CHARGE 9205 B/D	HEATER TRANSFER TEMP 843 °F
SURGE DRUM TEMP 397 °F	LIQUID FEED x 210 = 1575 B/D
CHARGE GRAVITY 18.3	COOLER ROUNDS 10½
REACTOR OUTLET 948 °F	LT. CYCLE OIL x 550.2 = 2861 B/D
AVERAGE KILN TEMP 1340 °F	LT. CYCLE OIL BYPASS x 115.3 = 0 B/D
LT. CYCLE OIL E. P. 754	TOTAL = 2861
TAR SEPARATOR PRESS. x .3 15.3 LBS.	REACTOR INLET PRESS 13.5 ΔP 1.8 LBS
REACTOR PRESSURE x .3 11.7 LBS.	SYN TOWER PRESS 9.0 ΔP 2.7 LBS
TAR BOTTOMS x 484.5 2762 B/D	SYN TOWER x 152.5 = 580 B/D
TAR BOTTOMS QUENCH x 79.4 199 B/D	LT CYCLE OIL TO WEED OIL x 97.6 0 B/D
NET TAR BOTTOMS 2563 B/D	% PITCH x 495.4= 1437 B/D
FEED PREP BOTTOMS x 345.9 899 B/D	% LCCO x 463.8= 1345 B/D
LTCC GASOLINE x 383.8 2226 B/D	TOTAL = 2782 B/D
MTCC GASOLINE X 304.2 1330 B/D	RECYCLE TO F. O. X 84.6= 0 B/D
TOTAL 3556 B/D	WEEKLY AVG. CAT. USEAGE ____
STEAM TO HTR OUT x 1286.7= 8106 LBS/HR	HYDROGEN PROBE ____
STEAM TO T.O. x 542 = 3577 LBS/HR	WET SCRUBBER ΔP 6.4 "
VAPOR LOAD 19900	WATER WASH 18176 G/D
REMARKS:	HEATER: OIL BURNERS 0

VACUUM UNIT

CHARGE x 2581.8 = 13554 B/D	HEATER TRANSFER TEMP 768 °F
GAS OIL MAKE x 1381.9 = 4837 B/D	VACUUM AT FLASH 22.5 "
HEAVY GAS OIL TRAY TEMP 628 °F	VACUUM AT OVERHEAD 25.0 "
LT. GAS OIL TO HYDRO x 379.9 = 1900 B/D	
PITCH VIS 123	PITCH TO COKER x 855.4= 5389 B/D
REMARKS:	HEATER: OIL BURNERS 0

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 25 "	SPENT CAUSTIC TANK 0 "
280°	

REVISED 7-5-83

Date AUG 18 1983

TCC UNIT

CHARGE	8301 T/c B/D		
LT. COKER NAP	0 B/D		
TOTAL CHARGE	8301 T/c B/D	HEATER TRANSFER TEMP	412 °F
SURGE DRUM TEMP	412 °F	LIQUID FEED x 210 =	1575 B/D
CHARGE GRAVITY	19.3	COOLER ROUNDS	11
REACTOR OUTLET	932 °F	LT. CYCLE OIL x 550.2 =	2861 B/D
AVERAGE KILN TEMP	1290 °F	LT. CYCLE OIL BYPASS x 115.3 =	0 B/D
LT. CYCLE OIL E. P.	155	TOTAL =	2861
TAR SEPARATOR PRESS. x .3	14.1 LBS.	REACTOR INLET PRESS	135 ΔP 0.6 LBS
REACTOR PRESSURE x .3	10.5 LBS.	SYN TOWER PRESS	8.0 ΔP 2.5 LBS
TAR BOTTOMS x 484.5	2277 B/D	SYN TOWER x 152.5 =	869 B/D
TAR BOTTOMS QUENCH x 79.4	79 B/D	LT CYCLE OIL TO WEED OIL x 97.6	0 B/D
NET TAR BOTTOMS	2198 B/D	% PITCH x 495.4 =	0 B/D
FEED PREP BOTTOMS x 345.9	1072 B/D	% LCCO x 463.8 =	0 B/D
LTCC GASOLINE x 383.8	1996 B/D	TOTAL =	0 B/D
MTCC GASOLINE X 304.2	1330 B/D	RECYCLE TO F. O.X 84.6=	0 B/D
TOTAL	3326 B/D	WEEKLY AVG. CAT. USEAGE	
STEAM TO HTR OUT x 1286.7=	5335 LBS/HR	HYDROGEN PROBE	Ø
STEAM TO T.O. x 542 =	3577 LBS/HR	WET SCRUBBER ΔP	6.0 "
VAPOR LOAD	19520	WATER WASH	16,889 G/D
REMARKS:		HEATER: OIL BURNERS	0

VACUUM UNIT

CHARGE x 2581.8 =	10327 B/D	HEATER TRANSFER TEMP	769 °F
GAS OIL MAKE x 1381.9 =	4008 B/D	VACUUM AT FLASH	25.5 "
HEAVY GAS OIL TRAY TEMP	608 °F	VACUUM AT OVERHEAD	25.0 "
LT. GAS OIL TO HYDRO x 379.9	= 944 B/D		
PITCH VIS	125	PITCH TO COKER x 855.4 =	5304 B/D
REMARKS:		HEATER: OIL BURNERS	0

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 25" "

SPENT CAUSTIC TANK 7 "

REVISED 7-5-83

AUG 17 1983

TCC UNIT

Date AUG 17 1983

CHARGE 9227 B/D	
LT. COKER NAP 0 B/D	
TOTAL CHARGE 9229 B/D	HEATER TRANSFER TEMP 835 °F
SURGE DRUM TEMP 366 °F	LIQUID FEED x 210 = 1575 B/D
CHARGE GRAVITY 19.4	COOLER ROUNDS 131/4
REACTOR OUTLET 938 °F	LT. CYCLE OIL x 550.2 = 3191 B/D
AVERAGE KILN TEMP 1314 °F	LT. CYCLE OIL BYPASS x 115.3 = 300 B/D
LT. CYCLE OIL E. P. 696	TOTAL = 3491
TAR SEPARATOR PRESS. x .3 15.0 LBS.	REACTOR INLET PRESS 14.1 ΔP 0.9 LBS
REACTOR PRESSURE x .3 11.1 LBS.	SYN TOWER PRESS 8.5 ΔP 2.6 LBS
TAR BOTTOMS x 484.5 2519 B/D	SYN TOWER x 152.5 = 915 B/D
TAR BOTTOMS QUENCH x 79.4 119 B/D	LT CYCLE OIL TO WEED OIL x 97.6 0 B/D
NET TAR BOTTOMS 2400 B/D	% PITCH x 495.4 = 0 B/D
FEED PREP BOTTOMS x 345.9 691 B/D	% LCCO x 463.8 = 0 B/D
LTCC GASOLINE x 383.8 2380 B/D	TOTAL = 0 B/D
MTCC GASOLINE X 304.2 1300 B/D	RECYCLE TO F. O. X 84.6 = 0 B/D
TOTAL 3680 B/D	WEEKLY AVG. CAT. USEAGE
STEAM TO HTR OUT x 1286.7 = 1978 LBS/HR	HYDROGEN PROBE ø
STEAM TO T.O. x 542 = 3523 LBS/HR	WET SCRUBBER ΔP 6.8 "
VAPOR LOAD 19903	WATER WASH 17,142 G/D
REMARKS:	HEATER: OIL BURNERS 0

VACUUM UNIT

CHARGE x 2581.8 = 10069 B/D	HEATER TRANSFER TEMP 764 °F
GAS OIL MAKE x 1381.9 = 3455 B/D	VACUUM AT FLASH 22.5 "
HEAVY GAS OIL TRAY TEMP 606 °F	VACUUM AT OVERHEAD 25.0 "
LT. GAS OIL TO HYDRO x 379.9 = 1026 B/D	
PITCH VIS 131	PITCH TO COKER x 855.4 = 5218 B/D
REMARKS:	HEATER: OIL BURNERS 0

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 26 1/2 "	SPENT CAUSTIC TANK ø "

REVISED 7-5-83

TCC UNIT

Date AUG 16 1983

CHARGE 8647 B/D	
LT. COKER NAP 0 B/D	
TOTAL CHARGE 8647 B/D	HEATER TRANSFER TEMP 826 °F
SURGE DRUM TEMP 385 °F	LIQUID FEED x 210 = 1575 B/D
CHARGE GRAVITY 19.5	COOLER ROUNDS 15
REACTOR OUTLET 946 °F	LT. CYCLE OIL x 550.2 = 3136 B/D
AVERAGE KILN TEMP 1292 °F	LT. CYCLE OIL BYPASS x 115.3 = 300 B/D
LT. CYCLE OIL E. P. 719	TOTAL = 3436
TAR SEPARATOR PRESS. x .3 15.6 LBS.	REACTOR INLET PRESS 15.0 ΔP .6 LBS
REACTOR PRESSURE x .3 12.0 LBS.	SYN TOWER PRESS 9.0 ΔP 3.0 LBS
TAR BOTTOMS x 484.5 2180 B/D	SYN TOWER x 152.5 = 656 B/D
TAR BOTTOMS QUENCH x 79.4 79 B/D	LT CYCLE OIL TO WEED OIL x 97.6 0 B/D
NET TAR BOTTOMS 2101 B/D	% PITCH x 495.4= 0 B/D
FEED PREP BOTTOMS x 345.9 519 B/D	% LCCO x 463.8= 0 B/D
LTCC GASOLINE x 383.8 2341 B/D 64.6%	TOTAL = 0 B/D
MTCC GASOLINE X 304.2 1282 B/D 35.4%	RECYCLE TO F. O.X 84.6= 0 B/D
TOTAL 3623 B/D	WEEKLY AVG. CAT. USEAGE
STEAM TO HTR OUT x 1286.7= 8492 LBS/HR	HYDROGEN PROBE ø
STEAM TO T.O. x 542 = 3523 LBS/HR	WET SCRUBBER ΔP 6.5 "
VAPOR LOAD 20,136	WATER WASH 5153 G/D
REMARKS:	HEATER: OIL BURNERS 2

VACUUM UNIT

CHARGE x 2581.8 = 10,844 B/D	HEATER TRANSFER TEMP 768 °F
GAS OIL MAKE x 1381.9 = 4837 B/D	VACUUM AT FLASH 22.4 "
HEAVY GAS OIL TRAY TEMP 616 °F	VACUUM AT OVERHEAD 25.0 "
LT. GAS OIL TO HYDRO x 379.9 = 0 B/D	
PITCH VIS 121	PITCH TO COKER x 855.4= 5560 B/D
REMARKS:	HEATER: OIL BURNERS 2

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 20'1/2 / 290° "	SPENT CAUSTIC TANK ø "

REVISED 7-5-83

TCC UNIT

Date AUG 15 1983

CHARGE 8647 B/D

LT. COKER NAP ~~0~~ B/D

TOTAL CHARGE	8647 B/D	HEATER TRANSFER TEMP	820 °F
SURGE DRUM TEMP	344 °F	LIQUID FEED x 210 =	1575 B/D
CHARGE GRAVITY	18.6	COOLER ROUNDS	13 1/2
REACTOR OUTLET	937 °F	LT. CYCLE OIL x 550.2 =	3191 B/D
AVERAGE KILN TEMP	1260 °F	LT. CYCLE OIL BYPASS x 115.3 =	311 B/D
LT. CYCLE OIL E. P.	728	TOTAL =	3502
TAR SEPARATOR PRESS. x .3	15.3 LBS.	REACTOR INLET PRESS 14.0 ΔP	1.3 LBS
REACTOR PRESSURE x .3	11.7 LBS.	SYN TOWER PRESS 9.0 ΔP	2.7 LBS
TAR BOTTOMS x 484.5	2277 B/D	SYN TOWER x 152.5 =	610 B/D
TAR BOTTOMS QUENCH x 79.4	40 B/D	LT CYCLE OIL TO WEED OIL x 97.6	0 B/D
NET TAR BOTTOMS	2237 B/D	% PITCH x 495.4=	0 B/D
FEED PREP BOTTOMS x 345.9	553 B/D	% LCCO x 463.8=	0 B/D
LTCC GASOLINE x 383.8	1957 B/D	TOTAL =	0 B/D
MTCC GASOLINE X 304.2	848 B/D	RECYCLE TO F. O.X 84.6=	0 B/D
TOTAL	2805 B/D	WEEKLY AVG. CAT. USEAGE	
STEAM TO HTR OUT x 1286.7=	8235 LBS/HR	HYDROGEN PROBE	ϕ
STEAM TO T.O. x 542 =	3523 LBS/HR	WET SCRUBBER ΔP	6.0 "
VAPOR LOAD	19743	WATER WASH	34,506 G/D
REMARKS:		HEATER: OIL BURNERS	6

VACUUM UNIT

CHARGE x 2581.8 =	10069 B/D	HEATER TRANSFER TEMP	769 °F
GAS OIL MAKE x 1381.9 =	4784 B/D	VACUUM AT FLASH	22.5 "
HEAVY GAS OIL TRAY TEMP	619 °F	VACUUM AT OVERHEAD	25.0 "
LT. GAS OIL TO HYDRO x 379.9 =	0 B/D		
PITCH VIS	115	PITCH TO COKER x 855.4=	5131 B/D
REMARKS:		HEATER: OIL BURNERS	6

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 26" "
280°

SPENT CAUSTIC TANK ϕ "

REVISED 7-5-83

AUG 14 1983

TCC UNIT

Date ____________

CHARGE 9647 B/D

LT. COKER NAP 0 B/D

TOTAL CHARGE 9647 B/D

SURGE DRUM TEMP 401 °F

CHARGE GRAVITY 18.9

REACTOR OUTLET 937 °F

AVERAGE KILN TEMP 1292 °F

LT. CYCLE OIL E. P. 705

TAR SEPARATOR PRESS. x .3 14.7 LBS.

REACTOR PRESSURE x .3 10.8 LBS.

TAR BOTTOMS x 484.5 2277 B/D

TAR BOTTOMS QUENCH x 79.4 35 B/D

NET TAR BOTTOMS 2242 B/D

FEED PREP BOTTOMS x 345.9 519 B/D

LTCC GASOLINE x 383.8 2034 B/D 63%

MTCC GASOLINE X 304.2 1208 B/D 37%

TOTAL 3242 B/D

STEAM TO HTR OUT x 1286.7= 8364 LBS/HR

STEAM TO T.O. x 542 = 3523 LBS/HR

VAPOR LOAD 19846

REMARKS:

HEATER TRANSFER TEMP 827 °F

LIQUID FEED x 210 = 1554 B/D

COOLER ROUNDS 15

LT. CYCLE OIL x 550.2 = 3191 B/D

LT. CYCLE OIL BYPASS x 115.3 = 300 B/D

TOTAL = 3491

REACTOR INLET PRESS 14.4 ΔP .3 LBS

SYN TOWER PRESS 9.0 ΔP 1.8 LBS

SYN TOWER x 152.5 = 762 B/D

LT CYCLE OIL TO WEED OIL x 97.6 0 B/D

% PITCH x 495.4= 0 B/D

% LCCO x 463.8= 0 B/D

TOTAL = 0 B/D

RECYCLE TO F. O.X 84.6= 0 B/D

WEEKLY AVG. CAT. USEAGE ____________

HYDROGEN PROBE 17,666

WET SCRUBBER ΔP 6.0 "

WATER WASH ____________ G/D

HEATER: OIL BURNERS 5

VACUUM UNIT

CHARGE x 2581.8 = 12,134 B/D

GAS OIL MAKE x 1381.9 = 5251 B/D

HEAVY GAS OIL TRAY TEMP 612 °F

LT. GAS OIL TO HYDRO x 379.9 = 0 B/D

PITCH VIS 131

REMARKS:

HEATER TRANSFER TEMP 768 °F

VACUUM AT FLASH 22.5 "

VACUUM AT OVERHEAD 25.0 "

PITCH TO COKER x 855.4= 1330 B/D

HEATER: OIL BURNERS 6

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 18" "

252

SPENT CAUSTIC TANK ____________ "

REVISED 7-5-83

TCC UNIT

Date AUG 13 1983

CHARGE 8647 B/D

LT. COKER NAP Ø B/D

TOTAL CHARGE 8647 B/D

SURGE DRUM TEMP 410 °F

CHARGE GRAVITY 18.8

REACTOR OUTLET 944 °F

AVERAGE KILN TEMP 1295 °F

LT. CYCLE OIL E. P. 714

TAR SEPARATOR PRESS. x .3 14.7 LBS.

REACTOR PRESSURE x .3 11.1 LBS.

TAR BOTTOMS x 484.5 2277 B/D

TAR BOTTOMS QUENCH x 79.4 79 B/D

NET TAR BOTTOMS 2198 B/D

FEED PREP BOTTOMS x 345.9 553 B/D

LTCC GASOLINE x 383.8 1957 B/D 59%

13% Add MTCC GASOLINE X 304.2 1361 B/D 41%

TOTAL 3318 B/D

STEAM TO HTR OUT x 1286.7= 8492 LBS/HR

STEAM TO T.O. x 542 = 3523 LBS/HR

VAPOR LOAD 20018

REMARKS:

HEATER TRANSFER TEMP 826 °F

LIQUID FEED x 210 = 1554 B/D

COOLER ROUNDS 13

LT. CYCLE OIL x 550.2 = 3246 B/D

LT. CYCLE OIL BYPASS x 115.3 = 0 B/D

TOTAL = 3246

REACTOR INLET PRESS 14.3 ΔP .4 LBS

SYN TOWER PRESS 9 ΔP 2.1 LBS

SYN TOWER x 152.5 = 839 B/D

LT CYCLE OIL TO WEED OIL x 97.6 Ø B/D

% PITCH x 495.4= Ø B/D

% LCCO x 463.8= Ø B/D

TOTAL = Ø B/D

RECYCLE TO F. O.X 84.6= Ø B/D

WEEKLY AVG. CAT. USEAGE

HYDROGEN PROBE Ø

WET SCRUBBER ΔP 5.9 "

WATER WASH 21,600 G/D

HEATER: OIL BURNERS 5

VACUUM UNIT

CHARGE x 2581.8 = 11,618 B/D

GAS OIL MAKE x 1381.9 = 5251 B/D

HEAVY GAS OIL TRAY TEMP 616 °F

LT. GAS OIL TO HYDRO x 379.9 = Ø B/D

PITCH VIS 122

REMARKS:

HEATER TRANSFER TEMP 764 °F

VACUUM AT FLASH 22.5 "

VACUUM AT OVERHEAD 25.5 "

PITCH TO COKER x 855.4= 6144 B/D

HEATER: OIL BURNERS 6

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 18" "

SPENT CAUSTIC TANK Ø "

REVISED 7-5-83

TCC UNIT

Date ~~AUG 1 2 1983~~

.1 CHARGE 9558 B/D

LT. COKER NAP Ø B/D

TOTAL CHARGE 8557 B/D

SURGE DRUM TEMP 410 °F

CHARGE GRAVITY 18.4

REACTOR OUTLET 944 °F

AVERAGE KILN TEMP 1277 °F

LT. CYCLE OIL E. P. 668

50 TAR SEPARATOR PRESS. x .3 15 LBS.

38 REACTOR PRESSURE x .3 11.4 LBS.

4.8 TAR BOTTOMS x 484.5 2326 B/D

1.4 TAR BOTTOMS QUENCH x 79.4 111 B/D

NET TAR BOTTOMS 2215 B/D

1.5 FEED PREP BOTTOMS x 345.9 519 B/D

5.8 LTCC GASOLINE x 383.8 2226 B/D

2 MTCC GASOLINE X 304.2 608 B/D

TOTAL 2834 B/D

6.6 STEAM TO HTR OUT x 1286.7= 8492 LBS/HR

6.5 STEAM TO T.O. x 542 = 3523 LBS/HR

VAPOR LOAD 19870

REMARKS:

HEATER TRANSFER TEMP 823 °F

7.2 LIQUID FEED x 210 = 1512 B/D

COOLER ROUNDS 14½

5.8 LT. CYCLE OIL x 550.2 = 3191 B/D

1.0 LT. CYCLE OIL BYPASS x 115.3 = 115 B/D

TOTAL = 3306

10 REACTOR INLET PRESS 14.2 ΔP .8 LBS

14.2 SYN TOWER PRESS 10 ΔP 1.4 LBS

4.5 SYN TOWER x 152.5 = 686 B/D

LT CYCLE OIL TO WEED OIL x 97.6 0 B/D

% PITCH x 495.4= 0 B/D

% LCCO x 463.8= 0 B/D

TOTAL = 0 B/D

RECYCLE TO F. O. X 84.6= Ø B/D

WEEKLY AVG. CAT. USEAGE Ø

HYDROGEN PROBE 240.

WET SCRUBBER ΔP 5.4 "

WATER WASH 15955 G/D

HEATER: OIL BURNERS 6

VACUUM UNIT

5.1 CHARGE x 2581.8 = 13167 B/D

4.2 GAS OIL MAKE x 1381.9 = 5804 B/D

HEAVY GAS OIL TRAY TEMP 610 °F

LT. GAS OIL TO HYDRO x 379.9 = Ø B/D

PITCH VIS 84

REMARKS:

HEATER TRANSFER TEMP 762 °F

VACUUM AT FLASH 22.7 "

VACUUM AT OVERHEAD 25 "

7.5 PITCH TO COKER x 855.4= 6415 B/D

HEATER: OIL BURNERS 6

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 39 @ 285 "

~~SPENT CAUSTIC TANK~~ "

REVISED 7-5-83

AUG 11 1983

TCC UNIT

Date AUG 11 1983

5.8 CHARGE 97_ B/D

LT. COKER NAP Ø B/D

TOTAL CHARGE 9731 B/D

SURGE DRUM TEMP 425 °F

CHARGE GRAVITY 19.2

REACTOR OUTLET 935 °F

AVERAGE KILN TEMP 1311 °F

LT. CYCLE OIL E. P. 662

5.3 TAR SEPARATOR PRESS. x .3 15.9 LBS.

REACTOR PRESSURE x .3 12 LBS.

5.5 TAR BOTTOMS x 484.5 2665 B/D

1.6 TAR BOTTOMS QUENCH x 79.4 127 B/D

NET TAR BOTTOMS 2538 B/D

2 FEED PREP BOTTOMS x 345.9 692 B/D

5.8 LTCC GASOLINE x 383.8 2226 B/D

2.4 MTCC GASOLINE X 304.2 730 B/D

TOTAL 2956 B/D

6.7 STEAM TO HTR OUT x 1286.7= 8621 LBS/HR

6.6 STEAM TO T.O. x 542 = 3577 LBS/HR

VAPOR LOAD 2090_

REMARKS:

HEATER TRANSFER TEMP 831 °F

LIQUID FEED x 210 = 1512 B/D

COOLER ROUNDS 10 1/2

6.6 LT. CYCLE OIL x 550.2 = 3631 B/D

1 LT. CYCLE OIL BYPASS x 115.3 = 115 B/D

TOTAL = 3746

REACTOR INLET PRESS 15 ΔP .9 LBS

SYN TOWER PRESS 9 ΔP 3 LBS

5 SYN TOWER x 152.5 = 763 B/D

LT CYCLE OIL TO WEED OIL x 97.6 Ø B/D

% PITCH x 495.4= Ø B/D

% LCCO x 463.8= Ø B/D

TOTAL = Ø B/D

RECYCLE TO F. O. X 84.6= Ø B/D

WEEKLY AVG. CAT. USEAGE

HYDROGEN PROBE 140.

WET SCRUBBER ΔP 5.4 "

WATER WASH G/D

HEATER: OIL BURNERS 6

VACUUM UNIT

5 CHARGE x 2581.8 = 12909 B/D

4.3 GAS OIL MAKE x 1381.9 = 5942 B/D

HEAVY GAS OIL TRAY TEMP 612 °F

LT. GAS OIL TO HYDRO x 379.9 = Ø B/D

PITCH VIS 109

REMARKS:

HEATER TRANSFER TEMP 770 °F

VACUUM AT FLASH 23.5 "

VACUUM AT OVERHEAD 25 "

PITCH TO COKER x 855.4= 6501 B/D

HEATER: OIL BURNERS 6

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 56" "

278°

~~SPENT CAUSTIC TANK~~ "

REVISED 7-5-83

TCC UNIT

Date AUG 1 0 1983

CHARGE 9912 B/D

LT. COKER NAP Ø B/D

TOTAL CHARGE 9912 B/D

SURGE DRUM TEMP [illegible] °F

CHARGE GRAVITY 17.3

REACTOR OUTLET 945 °F

AVERAGE KILN TEMP [illegible] °F

LT. CYCLE OIL E. P. 697

TAR SEPARATOR PRESS. x .3 16.5 LBS.

REACTOR PRESSURE x .3 12 LBS.

4.9 TAR BOTTOMS x 484.5 2374 B/D

1.4 TAR BOTTOMS QUENCH x 79.4 111 B/D

NET TAR BOTTOMS 2263 B/D

1.5 FEED PREP BOTTOMS x 345.9 519 B/D

5.2 LTCC GASOLINE x 383.8 1996 B/D

4.2 MTCC GASOLINE X 304.2 1278 B/D

TOTAL 3274 B/D

7 STEAM TO HTR OUT x 1286.7= 9007 LBS/HR

6.4 STEAM TO T.O. x 542 = 3469 LBS/HR

VAPOR LOAD 20125

REMARKS:

HEATER TRANSFER TEMP 837 °F

7.4 LIQUID FEED x 210 = 1554 B/D

COOLER ROUNDS 9½

LT. CYCLE OIL x 550.2 = 3741 B/D

LT. CYCLE OIL BYPASS x 115.3 = 231 B/D

TOTAL = 3972

REACTOR INLET PRESS 14 ΔP 2.5 LBS

SYN TOWER PRESS 7 ΔP 3 LBS

5 SYN TOWER x 152.5 = 762 B/D

LT CYCLE OIL TO WEED OIL x 97.6 Ø B/D

% PITCH x 495.4= Ø B/D

% LCCO x 463.8= Ø B/D

TOTAL = Ø B/D

RECYCLE TO F. O. X 84.6= Ø B/D

WEEKLY AVG. CAT. USEAGE

HYDROGEN PROBE 240

WET SCRUBBER ΔP 5.4 "

WATER WASH G/D

HEATER: OIL BURNERS [illegible]

VACUUM UNIT

CHARGE x 2581.8 = [illegible] B/D

4 GAS OIL MAKE x 1381.9 = 5528 B/D

HEAVY GAS OIL TRAY TEMP 607 °F

LT. GAS OIL TO HYDRO x 379.9 = Ø B/D

PITCH VIS [illegible]

REMARKS:

HEATER TRANSFER TEMP [illegible] °F

VACUUM AT FLASH [illegible] "

VACUUM AT OVERHEAD [illegible] "

PITCH TO COKER x 855.4 = [illegible] B/D

HEATER: OIL BURNERS 6

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 33 @ 285° "

~~SPENT CAUSTIC TANK~~ "

REVISED 7-5-83

AUG - 9 1983

TCC UNIT

Date ______________

9	CHARGE 9918 B/D		
	LT. COKER NAP Ø B/D		
	TOTAL CHARGE 9918 B/D		HEATER TRANSFER TEMP 838 °F
	SURGE DRUM TEMP 418 °F	7.2	LIQUID FEED x 210 = 1512 B/D
	CHARGE GRAVITY 19.2		COOLER ROUNDS 11 3/4
	REACTOR OUTLET 940 °F	7	LT. CYCLE OIL x 550.2 = 3851 B/D
	AVERAGE KILN TEMP 1327 °F	2.0	LT. CYCLE OIL BYPASS x 115.3 = 231 B/D
	LT. CYCLE OIL E. P. 694		TOTAL = 4082
54	TAR SEPARATOR PRESS. x .3 16.2 LBS.	10	REACTOR INLET PRESS 10 ΔP 6.2 LBS
41	REACTOR PRESSURE x .3 12.3 LBS.	9.2	SYN TOWER PRESS 9.2 ΔP 3.1 LBS
5.2	TAR BOTTOMS x 484.5 2519 B/D	4.4	SYN TOWER x 152.5 = 671 B/D
1.5	TAR BOTTOMS QUENCH x 79.4 119 B/D		LT CYCLE OIL TO WEED OIL x 97.6 Ø B/D
	NET TAR BOTTOMS 2400 B/D		% PITCH x 495.4= Ø B/D
2.0	FEED PREP BOTTOMS x 345.9 692 B/D		% LCCO x 463.8= Ø B/D
4.6	LTCC GASOLINE x 383.8 1765 B/D		TOTAL = Ø B/D
4.5	MTCC GASOLINE X 304.2 1369 B/D		RECYCLE TO F. O.X 84.6= Ø B/D
	TOTAL 3134 B/D		WEEKLY AVG. CAT. USEAGE ______
7.1	STEAM TO HTR OUT x 1286.7= 9136 LBS/HR		HYDROGEN PROBE 240
7.0	STEAM TO T.O. x 542 = 3794 LBS/HR		WET SCRUBBER ΔP ______ "
	VAPOR LOAD 20448		WATER WASH [illegible] G/D
	REMARKS:		HEATER: OIL BURNERS 6 [illegible] 7

VACUUM UNIT

4.6	CHARGE x 2581.8 = 11876 B/D		HEATER TRANSFER TEMP 764 °F
4	GAS OIL MAKE x 1381.9 = 5528 B/D		VACUUM AT FLASH 23.5 "
	HEAVY GAS OIL TRAY TEMP 607 °F		VACUUM AT OVERHEAD 25 "
	LT. GAS OIL TO HYDRO x 379.9 = Ø B/D		
	PITCH VIS 110	7.2	PITCH TO COKER x 855.4= 6159 B/D
	REMARKS:		HEATER: OIL BURNERS 6

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 32' @ 215° "

~~SPENT~~ CAU~~STIC~~ ~~TANK~~ ______ "

REVISED 7-5-83

TCC UNIT

Date AUG - 8 1983

5.9 CHARGE 9918 B/D	
LT. COKER NAP Ø B/D	
TOTAL CHARGE ____ B/D	HEATER TRANSFER TEMP 838 °F
SURGE DRUM TEMP 40[illegible] °F	7.2 LIQUID FEED x 210 = 1512 B/D
CHARGE GRAVITY 18.9	COOLER ROUNDS 10
REACTOR OUTLET [illegible] °F	6.9 LT. CYCLE OIL x 550.2 = 3796 B/D
AVERAGE KILN TEMP 1260 °F	1.8 LT. CYCLE OIL BYPASS x 115.3 = 208 B/D
LT. CYCLE OIL E. P. 686	TOTAL = 4004
56 TAR SEPARATOR PRESS. x .3 16.8 LBS.	REACTOR INLET PRESS 10.8 ΔP 6 LBS
41 REACTOR PRESSURE x .3 12.3 LBS.	SYN TOWER PRESS 9 ΔP 3.3 LBS
4.9 TAR BOTTOMS x 484.5 2374 B/D	5.7 SYN TOWER x 152.5 = 869 B/D
1.5 TAR BOTTOMS QUENCH x 79.4 119 B/D	LT CYCLE OIL TO WEED OIL x 97.6 Ø B/D
NET TAR BOTTOMS 2255 B/D	% PITCH x 495.4= Ø B/D
1.8 FEED PREP BOTTOMS x 345.9 623 B/D	% LCCO x 463.8= Ø B/D
4.5 LTCC GASOLINE x 383.8 1727 B/D	TOTAL = Ø B/D
4.8 MTCC GASOLINE X 304.2 1460 B/D	RECYCLE TO F. O. X 84.6= Ø B/D
TOTAL 3187 B/D	WEEKLY AVG. CAT. USEAGE ____
7.1 STEAM TO HTR OUT x 1286.7= 9136 LBS/HR	HYDROGEN PROBE 238
7.1 STEAM TO T.O. x 542 = 3848 LBS/HR	WET SCRUBBER ΔP 5.6 "
VAPOR LOAD 20647	WATER WASH 9872392 G/D
REMARKS:	HEATER: OIL BURNERS 6[illegible]

VACUUM UNIT

4.3 CHARGE x 2581.8 = 11,102 B/D	HEATER TRANSFER TEMP 760 °F
3.7 GAS OIL MAKE x 1381.9 = 5113 B/D	VACUUM AT FLASH 22.7 "
HEAVY GAS OIL TRAY TEMP 617 °F	VACUUM AT OVERHEAD 25 "
LT. GAS OIL TO HYDRO x 379.9 = Ø B/D	
PITCH VIS NONE	7 PITCH TO COKER x 855.4= 5988 B/D
REMARKS:	HEATER: OIL BURNERS 6

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 274 "	SPENT CAUSTIC TANK ____ "
280	

REVISED 7-5-83

AUG 7 1983

Date ____________ 7693

TCC UNIT

9 CHARGE 9924 B/D

LT. COKER NAP Ø B/D

TOTAL CHARGE 9924 B/D

SURGE DRUM TEMP 402 °F

CHARGE GRAVITY 19.1

REACTOR OUTLET 945 °F

AVERAGE KILN TEMP 1354 °F

LT. CYCLE OIL E. P. 736

55 TAR SEPARATOR PRESS. x .3 16.5 LBS.

40 REACTOR PRESSURE x .3 12 LBS.

4.8 TAR BOTTOMS x 484.5 2326 B/D

1.2 TAR BOTTOMS QUENCH x 79.4 95 B/D

NET TAR BOTTOMS 2231 B/D

2 FEED PREP BOTTOMS x 345.9 692 B/D

4.6 LTCC GASOLINE x 383.8 1765 B/D

4.8 MTCC GASOLINE X 304.2 1460 B/D

TOTAL 3225 B/D

7.1 STEAM TO HTR OUT x 1286.7= 9136 LBS/HR

7.1 STEAM TO T.O. x 542 = 3848 LBS/HR

VAPOR LOAD 20677

REMARKS:

HEATER TRANSFER TEMP 836 °F

7.2 LIQUID FEED x 210 = 1512 B/D

COOLER ROUNDS 10½

6.7 LT. CYCLE OIL x 550.2 = 3686 B/D

1.8 LT. CYCLE OIL BYPASS x 115.3 = 207 B/D

TOTAL = 3893

REACTOR INLET PRESS 10.5 ΔP 6 LBS

SYN TOWER PRESS 8.5 ΔP 3.5 LBS

5.5 SYN TOWER x 152.5 = 839 B/D

LT CYCLE OIL TO WEED OIL x 97.6 Ø B/D

% PITCH x 495.4= Ø B/D

% LCCO x 463.8= Ø B/D

TOTAL = Ø B/D

RECYCLE TO F. O.X 84.6= Ø B/D

WEEKLY AVG. CAT. USEAGE ____________

HYDROGEN PROBE Ø

WET SCRUBBER ΔP 5.6 "

*WATER WASH 5207 G/D

HEATER: OIL BURNERS 6

*PUMP BACK IN SERVICE

VACUUM UNIT

4.3 CHARGE x 2581.8 = 11,102 B/D

3.7 GAS OIL MAKE x 1381.9 = 5113 B/D

HEAVY GAS OIL TRAY TEMP 615 °F

LT. GAS OIL TO HYDRO x 379.9 = Ø B/D

PITCH VIS 110

REMARKS:

HEATER TRANSFER TEMP 767 °F

VACUUM AT FLASH 22.5 "

VACUUM AT OVERHEAD 25 "

7.2 PITCH TO COKER x 855.4= 6159 B/D

HEATER: OIL BURNERS 6

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 26½ "

SPENT CAUSTIC TANK Ø "

REVISED 7-5-83

7814

TCC UNIT

Date AUG 6 1983

.9 CHARGE 10,118 B/D

LT. COKER NAP Ø B/D

TOTAL CHARGE 10,118 B/D

SURGE DRUM TEMP 417 °F

CHARGE GRAVITY 19.4

REACTOR OUTLET 941 °F

AVERAGE KILN TEMP 1334 °F

LT. CYCLE OIL E. P. 682

55 TAR SEPARATOR PRESS. x .3 16.5 LBS.

39 REACTOR PRESSURE x .3 11.7 LBS.

5 TAR BOTTOMS x 484.5 2423 B/D

1.5 TAR BOTTOMS QUENCH x 79.4 119 B/D

NET TAR BOTTOMS 2304 B/D

2.0 FEED PREP BOTTOMS x 345.9 692 B/D

4.5 LTCC GASOLINE x 383.8 1727 B/D

4.7 MTCC GASOLINE X 304.2 1430 B/D

TOTAL 3157 B/D

1.2 STEAM TO HTR OUT x 1286.7= 9264 LBS/HR

7.1 STEAM TO T.O. x 542 = 3848 LBS/HR

VAPOR LOAD 20926

REMARKS:

HEATER TRANSFER TEMP 838 °F

7.4 LIQUID FEED x 210 = 1554 B/D

COOLER ROUNDS 11

6.8 LT. CYCLE OIL x 550.2 = 3741 B/D

1.8 LT. CYCLE OIL BYPASS x 115.3 = 208 B/D

TOTAL = 3949

REACTOR INLET PRESS 10.4 ΔP 6.1 LBS

SYN TOWER PRESS 8.2 ΔP 3.5 LBS

6.3 SYN TOWER x 152.5 = 961 B/D

LT CYCLE OIL TO WEED OIL x 97.6 Ø B/D

% PITCH x 495.4= Ø B/D

% LCCO x 463.8= Ø B/D

TOTAL = Ø B/D

RECYCLE TO F. O. X 84.6= Ø B/D

WEEKLY AVG. CAT. USEAGE

HYDROGEN PROBE Ø

WET SCRUBBER ΔP 5.8 "

*WATER WASH Ø G/D

HEATER: OIL BURNERS 6

*PUMP NOT PUMPING

VACUUM UNIT

4.5 CHARGE x 2581.8 = 11618 B/D

4 GAS OIL MAKE x 1381.9 = 5528 B/D

HEAVY GAS OIL TRAY TEMP 614 °F

LT. GAS OIL TO HYDRO x 379.9 = Ø B/D

PITCH VIS 139

REMARKS:

HEATER TRANSFER TEMP 771 °F

VACUUM AT FLASH 22.5 "

VACUUM AT OVERHEAD 25 "

7.5 PITCH TO COKER x 855.4= 6416 B/D

HEATER: OIL BURNERS 6

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 31" "

SPENT CAUSTIC TANK Ø "

REVISED 7-5-83

TCC UNIT

Date AUG 5 1983

5.9 CHARGE 9,906 B/D

LT. COKER NAP 0 B/D

TOTAL CHARGE 9,906 B/D

SURGE DRUM TEMP 411 °F

CHARGE GRAVITY 19.0

REACTOR OUTLET 939° °F

AVERAGE KILN TEMP 1317° °F

LT. CYCLE OIL E. P. 714

5.4 TAR SEPARATOR PRESS. x .3 16.2 LBS.

3.5 REACTOR PRESSURE x .3 11.4 LBS.

4.9 TAR BOTTOMS x 484.5 2375 B/D

1.0 TAR BOTTOMS QUENCH x 79.4 79 B/D

NET TAR BOTTOMS 2296 B/D

2.0 FEED PREP BOTTOMS x 345.9 692 B/D

4.5 LTCC GASOLINE x 383.8 1727 B/D 44%

4.5 MTCC GASOLINE X 304.2 1217 B/D 56%

TOTAL 2944 B/D

7.0 STEAM TO HTR OUT x 1286.7= 9007 LBS/HR

7.0 STEAM TO T.O. x 542 = 3794 LBS/HR

VAPOR LOAD 21,923

REMARKS:
Med. TCC to Desulf - 900 B/D

HEATER TRANSFER TEMP 833° °F

7.2 LIQUID FEED x 210 = 1512 B/D

COOLER ROUNDS 12 1/4

6.5 LT. CYCLE OIL x 550.2 = 3576 B/D

1.0 LT. CYCLE OIL BYPASS x 115.3 = 115 B/D

TOTAL = 3691

REACTOR INLET PRESS 15.0 ΔP 1.2 LBS

SYN TOWER PRESS 8.0 ΔP 3.4 LBS

6.5 SYN TOWER x 152.5 = 992 B/D

LT CYCLE OIL TO WEED OIL x 97.6 0 B/D

% PITCH x 495.4= 0 B/D

% LCCO x 463.8= 0 B/D

TOTAL = 0 B/D

RECYCLE TO F. O. X 84.6= 0 B/D

WEEKLY AVG. CAT. USEAGE

HYDROGEN PROBE

WET SCRUBBER ΔP 5.6 "

WATER WASH motor Broken G/D

HEATER: OIL BURNERS 6

VACUUM UNIT

4.45 CHARGE x 2581.8 = 11,489 B/D

3.9 GAS OIL MAKE x 1381.9 = 5389 B/D

HEAVY GAS OIL TRAY TEMP 615° °F

0 LT. GAS OIL TO HYDRO x 379.9 0 B/D

PITCH VIS 131

REMARKS:

HEATER TRANSFER TEMP 764° °F

VACUUM AT FLASH 22.8 "

VACUUM AT OVERHEAD 25.0 "

7.7 PITCH TO COKER x 855.4= 6587 B/D

HEATER: OIL BURNERS 6

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 30 1/4 "
275°

SPENT CAUSTIC TANK "

REVISED 7-5-83

AUG 4 1983

TCC UNIT

Date ____________

5.0 CHARGE 8,390 B/D

LT. COKER NAP ⊖ B/D

TOTAL CHARGE 8,390 B/D

SURGE DRUM TEMP 420° °F

CHARGE GRAVITY 19.1

REACTOR OUTLET 938° °F

AVERAGE KILN TEMP 1288° °F

LT. CYCLE OIL E. P. 714

48 TAR SEPARATOR PRESS. x .3 14.4 LBS.

36 REACTOR PRESSURE x .3 10.8 LBS.

4.3 TAR BOTTOMS x 484.5 2084 B/D

1.0 TAR BOTTOMS QUENCH x 79.4 79 B/D

NET TAR BOTTOMS 2005 B/D

1.0 FEED PREP BOTTOMS x 345.9 346 B/D

4.2 LTCC GASOLINE x 383.8 1612 B/D 44%

4.0 MTCC GASOLINE X 304.2 1217 B/D 56%

TOTAL 2829 B/D

6.6 STEAM TO HTR OUT x 1286.7= 8492 LBS/HR

7.0 STEAM TO T.O. x 542 = 3794 LBS/HR

VAPOR LOAD 20,162

REMARKS:

Med. TCC to Desulf – 900 B/D

HEATER TRANSFER TEMP 825° °F

7.1 LIQUID FEED x 210 = 1491 B/D

COOLER ROUNDS 1244

5.5 LT. CYCLE OIL x 550.2 = 3026 B/D

1.5 LT. CYCLE OIL BYPASS x 115.3 = 173 B/D

TOTAL = 3199

REACTOR INLET PRESS 12.0 ΔP 1.4 LBS

SYN TOWER PRESS 8.0 ΔP 2.8 LBS

5.5 SYN TOWER x 152.5 = 839 B/D

LT CYCLE OIL TO WEED OIL x 97.6 ⊖ B/D

% PITCH x 495.4= ⊖ B/D

% LCCO x 463.8= ⊖ B/D

TOTAL = ⊖ B/D

RECYCLE TO F. O. X 84.6= B/D

WEEKLY AVG. CAT. USEAGE ____________

HYDROGEN PROBE 250

WET SCRUBBER ΔP 5.8 "

WATER WASH – G/D

HEATER: OIL BURNERS 6

VACUUM UNIT

4.65 CHARGE x 2581.8 = 12,006 B/D

4.2 GAS OIL MAKE x 1381.9 = 5804 B/D

HEAVY GAS OIL TRAY TEMP 620° °F

⊖ LT. GAS OIL TO HYDRO x 379.9 ⊖ B/D

PITCH VIS 120

REMARKS:

HEATER TRANSFER TEMP 765° °F

VACUUM AT FLASH 22.7 "

VACUUM AT OVERHEAD 25 "

7.7 PITCH TO COKER x 855.4 = 6587 B/D

HEATER: OIL BURNERS 6

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 25 3/4 "

SPENT CAUSTIC TANK ____________ "

REVISED 7-5-83

TCC UNIT

Date AUG 3 1983

5.0 CHARGE 8,440 B/D	
LT. COKER NAP ⊖ B/D	
TOTAL CHARGE 8440 B/D	HEATER TRANSFER TEMP 922° °F
SURGE DRUM TEMP 385° °F	7.1 LIQUID FEED x 210 = 1491 B/D
CHARGE GRAVITY 19.1	COOLER ROUNDS 12 1/4
REACTOR OUTLET 941° °F	5.0 LT. CYCLE OIL x 550.2 = 2751 B/D
AVERAGE KILN TEMP 1302° °F	2.7 LT. CYCLE OIL BYPASS x 115.3 = 311 B/D
LT. CYCLE OIL E. P. 680	TOTAL = 3062
49 TAR SEPARATOR PRESS. x .3 14.7 LBS.	REACTOR INLET PRESS 14.0 ΔP 0.7 LBS
36 REACTOR PRESSURE x .3 10.8 LBS.	SYN TOWER PRESS 8.5 ΔP 2.3 LBS
4.5 TAR BOTTOMS x 484.5 2181 B/D	6.5 SYN TOWER x 152.5 = 992 B/D
⊖ TAR BOTTOMS QUENCH x 79.4 ⊖ B/D	LT CYCLE OIL TO WEED OIL x 97.6 ⊖ B/D
NET TAR BOTTOMS 2181 B/D	% PITCH x 495.4= ⊖ B/D
1.6 FEED PREP BOTTOMS x 345.9 553 B/D	% LCCO x 463.8= ⊖ B/D
5.2 LTCC GASOLINE x 383.8 1996 B/D 49%	TOTAL = ⊖ B/D
3.7 MTCC GASOLINE X 304.2 1125 B/D 51%	RECYCLE TO F. O. X 84.6= ⊖ B/D
TOTAL 3131 B/D	WEEKLY AVG. CAT. USEAGE
7.0 STEAM TO HTR OUT x 1286.7= 9007 LBS/HR	HYDROGEN PROBE 240.
7.0 STEAM TO T.O. x 542 = 3794 LBS/HR	WET SCRUBBER ΔP 5.6 "
VAPOR LOAD 20,551	WATER WASH 2699 G/D
REMARKS:	HEATER: OIL BURNERS 6

Med TCC to Desulf 9000 B/D

VACUUM UNIT

4.6 CHARGE x 2581.8 = 11,877 B/D	HEATER TRANSFER TEMP 765° °F
3.2 GAS OIL MAKE x 1381.9 = 4422 B/D	VACUUM AT FLASH 23.0 "
HEAVY GAS OIL TRAY TEMP 610 °F	VACUUM AT OVERHEAD 25.0 "
2.7 LT. GAS OIL TO HYDRO x 379.9 = 1025 B/D	
PITCH VIS 123	7.8 PITCH TO COKER x 855.4= 6672 B/D
REMARKS:	HEATER: OIL BURNERS 6

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 27'- 285° " ~~SPENT CAUSTIC TANK~~ "

REVISED 7-5-83

Date AUG 2 1983

TCC UNIT

5.0 CHARGE 8,415 B/D

LT. COKER NAP Ø B/D

TOTAL CHARGE 8,415 B/D

SURGE DRUM TEMP 392° °F

CHARGE GRAVITY 18.8

REACTOR OUTLET 937° °F

AVERAGE KILN TEMP 1290° °F

LT. CYCLE OIL E. P. 716

4.6 TAR SEPARATOR PRESS. x .3 13.8 LBS.

32 REACTOR PRESSURE x .3 9.6 LBS.

4.7 TAR BOTTOMS x 484.5 2276 B/D

Ø TAR BOTTOMS QUENCH x 79.4 Ø B/D

NET TAR BOTTOMS 2276 B/D

1.6 FEED PREP BOTTOMS x 345.9 553 B/D

3.8 LTCC GASOLINE x 383.8 1458 B/D 42%

3.6 MTCC GASOLINE X 304.2 1095 B/D 58%

TOTAL 2553 B/D

7.0 STEAM TO HTR OUT x 1286.7= 9007 LBS/HR

6.8 STEAM TO T.O. x 542 = 3686 LBS/HR

VAPOR LOAD 20,223

REMARKS:

Med TCC to Desulf – 900 B/D

HEATER TRANSFER TEMP 830° °F

7.1 LIQUID FEED x 210 = 1491 B/D

COOLER ROUNDS 15/14

5.0 LT. CYCLE OIL x 550.2 = 2751 B/D

2.8 LT. CYCLE OIL BYPASS x 115.3 = 322 B/D

TOTAL = 3073

REACTOR INLET PRESS 12.8 ΔP 1.0 LBS

SYN TOWER PRESS 7.0 ΔP 2.6 LBS

4.4 SYN TOWER x 152.5 = 671 B/D

LT CYCLE OIL TO WEED OIL x 97.6 Ø B/D

% PITCH x 495.4= Ø B/D

% LCCO x 463.8= Ø B/D

TOTAL = Ø B/D

RECYCLE TO F. O.X 84.6= Ø B/D

WEEKLY AVG. CAT. USEAGE

HYDROGEN PROBE 240

WET SCRUBBER ΔP 5.4 "

WATER WASH pump out of service B/D

HEATER: OIL BURNERS 6

VACUUM UNIT

4.5 CHARGE x 2581.8 = 11,745 B/D

3.3 GAS OIL MAKE x 1381.9 = 4561 B/D

HEAVY GAS OIL TRAY TEMP 603° °F

LT. GAS OIL TO HYDRO x 379.9 1025 B/D

PITCH VIS 91

REMARKS:

HEATER TRANSFER TEMP 765° °F

VACUUM AT FLASH 22.7 "

VACUUM AT OVERHEAD 25.0 "

7.9 PITCH TO COKER x 855.4= 6758 B/D

HEATER: OIL BURNERS 6

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 24" "

235°

~~SPENT CAUSTIC TANK~~ "

REVISED 7-5-83

AUG 1 1983
Date

TCC UNIT

CHARGE 5415 B/D

LT. COKER NAP B/D

TOTAL CHARGE B/D	HEATER TRANSFER TEMP °F
SURGE DRUM TEMP °F	LIQUID FEED x 210 = B/D
CHARGE GRAVITY 15.2	COOLER ROUNDS
REACTOR OUTLET °F	LT. CYCLE OIL x 550.2 = B/D
AVERAGE KILN TEMP 1257 °F	LT. CYCLE OIL BYPASS x 115.3 = 367 B/D
LT. CYCLE OIL E. P.	TOTAL =
42 TAR SEPARATOR PRESS. x .3 13.2 LBS.	REACTOR INLET PRESS ΔP LBS
REACTOR PRESSURE x .3 9.9 LBS.	SYN TOWER PRESS 8.0 ΔP LBS
TAR BOTTOMS x 484.5 2132 B/D	SYN TOWER x 152.5 = B/D
13 TAR BOTTOMS QUENCH x 79.4 B/D	LT CYCLE OIL TO WEED OIL x 97.6 B/D
NET TAR BOTTOMS B/D	% PITCH x 495.4 = B/D
FEED PREP BOTTOMS x 345.9 346 B/D	% LCCO x 463.8 = B/D
44 LTCC GASOLINE x 383.8 B/D	TOTAL = B/D
MTCC GASOLINE X 304.2 B/D	RECYCLE TO F. 0.X 84.6= B/D
TOTAL B/D	WEEKLY AVG. CAT. USEAGE
STEAM TO HTR OUT x 1286.7= LBS/HR	HYDROGEN PROBE
STEAM TO T.O. x 542 = LBS/HR	WET SCRUBBER ΔP 5 "
VAPOR LOAD	WATER WASH 4816 G/D
REMARKS:	HEATER: OIL BURNERS

VACUUM UNIT

CHARGE x 2581.8 = B/D	HEATER TRANSFER TEMP °F
GAS OIL MAKE x 1381.9 = B/D	VACUUM AT FLASH "
HEAVY GAS OIL TRAY TEMP °F	VACUUM AT OVERHEAD "
LT. GAS OIL TO HYDRO x 379.9 = B/D	
PITCH VIS	PITCH TO COKER x 855.4= B/D
REMARKS:	HEATER: OIL BURNERS

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE "	SPENT CAUSTIC TANK "

REVISED 7-5-83

APPENDIX D

MR-05 FINAL UNIT YIELD REPORT,

"REFINERY OPERATIONAL REPORT"

ESA 26200-455

UTILITIES

	TODAY	MONTH TO DATE
STEAM GENERATED		
	AVG LBS/HR	AVG LBS/HR
CO BOILER	143000.	134500.
NO. 1 BOILER	0.	31.
NO. 5 BOILER	0.	10179.
NO. 6 BOILER	0.	8703.
NO. 7 BOILER	37700.	34793.
NO. 8 BOILER	38000.	24763.
TOTAL	218700.	212969.
FUEL OIL BURNED		
	GALS/D	GALS/D
CO BOILER	0. (1)	0. (1)
FUEL GAS BURNED		
	CF/D	CF/D
CO BOILER	110.	111.

(1) WT PERCENT SULFUR 0.900 TODAY, 0.0 AVERAGE MONTH TO DATE. 0.899

ENVIRONMENTAL

TOSCO CORPORATION BAKERSFIELD REFINERY 24 HRS. BEGINNING 12 AM JULY 31, 1982 UTILITIES REPORT SECT 5.08

UTILITIES

	TODAY	MONTH TO DATE
STEAM GENERATED	AVG LBS/HR	AVG LBS/HR
CO BOILER	129000.	124029.
NO. 1 BOILER	0.	954.
NO. 5 BOILER	0.	5249.
NO. 6 BOILER	0.	5411.
NO. 7 BOILER	33500.	27016.
NO. 8 BOILER	34200.	35568.
TOTAL	196700.	198226.
FUEL OIL BURNED	GALS/D	GALS/D
CO BOILER	0. (1)	0. (1)
FUEL GAS BURNED	CF/D	CF/D
CO BOILER	110.	102.

(1) WT PERCENT SULFUR 1.060 TODAY, 0.0 AVERAGE MONTH TO DATE. 1.03 DMH

TOSCO CORPORATION BAKERSFIELD REFINERY 24 HRS. BEGINNING 12 AM AUG. 31, 1982 UTILITIES REPORT SECT 5.08

UTILITIES

STEAM GENERATED	TODAY AVG LBS/HR	MONTH TO DATE AVG LBS/HR
CO BOILER	140000.	134774.
NO. 1 BOILER	0.	0.
NO. 5 BOILER	0.	3347.
NO. 6 BOILER	0.	3346.
NO. 7 BOILER	38700.	27976.
NO. 8 BOILER	38400.	35658.
TOTAL	217100.	205101.

FUEL OIL BURNED	GALS/D	GALS/D
CO BOILER	0. (1)	0. (1)

FUEL GAS BURNED	CF/D	CF/D
CO BOILER	110.	108.

(1) WT PERCENT SULFUR 0.900 TODAY, 0.0 AVERAGE MONTH TO DATE. 0.974 DMM

Environmental

**** REFINERY OPERATIONAL DATA REPORT ****

STEAM GENERATED

AVG MLBS/HR	TODY	MTD
CO BOILER	139.000	130.717
NO. 1 BOILER	0.0	0.0
NO. 5 BOILER	0.0	0.0
NO. 6 BOILER	0.0	0.122
NO. 7 BOILER	36.300	38.097
NO. 8 BOILER	36.800	38.683
TOTAL	212.100	207.619

..EL OIL BURNED

CO BOILER GALS/DAY	TODY	MTD
	0.0	0.0

FUEL GAS BURNED

CO BOILER CF/DAY	TODY	MTD
	110.000	3240.000

WT PERCENT SULFUR TODAY 0.930 AVERAGE MONTH TO DAY = ~~0.0~~ 0.863 DWK

Environmental

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING 12 AM SUN OCT 31 1982

**** REFINERY OPERATIONAL DATA REPORT ****

STEAM GENERATED

AVG MLBS/HR	TODY	MTD
CO BOILER	147.000	130.746
NO. 1 BOILER	0.0	0.048
NO. 5 BOILER	0.0	2.642
NO. 6 BOILER	0.0	3.238
NO. 7 BOILER	28.900	29.829
NO. 8 BOILER	29.500	30.490
TOTAL	205.400	196.993

F. L OIL BURNED

BOILER GALS/DAY	TODY	MTD
	0.0	0.0

FUEL GAS BURNED

CO BOILER CF/DAY	TODY	MTD
	2986.000	73428.000

WT % SULFUR IN FO TODAY 0.890 AVERAGE MONTH TO DAY = 0.913

SULFUR PLANT

	TODY	MTD
MEA H2S CHARGED,MSCF		
H2O H2S CHARGED,MSCF		
SULFUR PROD,LONG TONS	0.0	38.000

AMMONIA ABSORBER

	TODY	MTD
AMMONIA PROD,LONG TONS		

Environmental

TOSCO - BAKERSFIELD REFINERY

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING 12 AM TUE NOV 30 1982

**** REFINERY OPERATIONAL DATA REPORT ****

STEAM GENERATED

AVG MLBS/HR	TODY	AMTD
CO BOILER	0.0	117.310
NO. 1 BOILER	29.900	3.493
NO. 5 BOILER	37.300	4.262
NO. 6 BOILER	29.500	3.658
NO. 7 BOILER	44.300	33.995
NO. 8 BOILER	51.900	35.417
TOTAL	192.900	198.534

FUEL OIL BURNED

CO BOILER GALS/DAY	TODY	MTD
	0.0	0.0

FUEL GAS BURNED

CO BOILER MCF/DAY	TODY	AMTD
	0.0	2499.700

WT % SULFUR IN FO TODAY 0.930 AVERAGE MONTH TO DAY = ~~1.733~~ 0.922

SULFUR PLANT

	TODY	MTD
MEA H2S CHARGED,MSCF		
H2O H2S CHARGED,MSCF		
SULFUR PROD,LONG TONS	0.0	25.000

AMMONIA ABSORBER

	TODY	MTD
AMMONIA PROD,LONG TONS		

Environmental

MROS - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT FRI DEC 31 1982

**** REFINERY OPERATIONAL DATA REPORT ****

STEAM GENERATED

AVG MLBS/HR	TODY	AMTD
CO BOILER	122.000	111.917
NO. 1 BOILER	19.100	8.962
NO. 5 BOILER	20.700	19.318
NO. 6 BOILER	13.500	15.986
NO. 7 BOILER	0.0	7.427
NO. 8 BOILER	35.400	33.773
TOTAL	210.700	197.382

FUEL OIL BURNED

CO BOILER GALS/DAY	TODY	MTD
	0.0	0.0

FUEL GAS BURNED

CO BOILER MCF/DAY	TODY	AMTD
	2690.000	2341.387

WT % SULFUR IN FO TODAY 0.830 AVERAGE MONTH TO DAY = 0.870

SULFUR PLANT

	TODY	MTD
MEA H2S CHARGED,MSCF		
H2O H2S CHARGED,MSCF		
SULFUR PROD,LONG TONS	3.000	100.000

AMMONIA ABSORBER

	TODY	MTD
AMMONIA PROD,LONG TONS		

RECEIVED
JAN 3 1983
J.L.C.

Environmental

**** REFINERY OPERATIONAL DATA REPORT ****

STEAM GENERATED

AVG MLBS/HR	TODY	AMTD
CO BOILER	105.833	113.680
NO. 1 BOILER	0.0	4.845
NO. 5 BOILER	22.800	24.807
NO. 6 BOILER	23.700	23.857
NO. 7 BOILER	0.0	2.180
NO. 8 BOILER	30.600	33.410
TOTAL	190.933	202.779

FUEL OIL BURNED

CO BOILER GALS/DAY	TODY	MTD
	0.0	0.0

FUEL GAS BURNED

CO BOILER MCF/DAY	TODY	AMTD
	2336.000	2740.500

WT % SULFUR IN FO TODAY 0.930 AVERAGE MONTH TO DAY = 0.932

SULFUR PLANT

	TODY	MTD
MEA H2S CHARGED,MSCF		
H2O H2S CHARGED,MSCF		
SULFUR PROD,LONG TONS	0.0	48.000

AMMONIA ABSORBER

	TODY	MTD
AMMONIA PROD,SHORT TONS		

**** REFINERY OPERATIONAL DATA REPORT ****

STEAM GENERATED
AVG MLBS/HR

	TODY	AMTD
CO BOILER	118.000	46.437
NO. 1 BOILER	0.0	18.958
NO. 5 BOILER	14.800	25.726
NO. 6 BOILER	15.100	24.048
NO. 7 BOILER	0.0	20.813
NO. 8 BOILER	33.500	35.481
TOTAL	181.400	171.463

FUEL OIL BURNED

CO BOILER GALS/DAY	TODY	MTD
	0.0	0.0

FUEL GAS BURNED

CO BOILER MCF/DAY	TODY	AMTD
	2762.000	3727.064

WT % SULFUR IN FO TODAY 0.960 AVERAGE MONTH TO DAY = 0.558

SULFUR PLANT

	TODY	MTD
MEA H2S CHARGED,MSCF		
H2O H2S CHARGED,MSCF		
SULFUR PROD,LONG TONS	0.0	0.0

AMMONIA ABSORBER

	TODY	MTD
AMMONIA PROD,SHORT TONS		

**** REFINERY OPERATIONAL DATA REPORT ****

STEAM GENERATED

AVG MLBS/HR	TODY	AMTD
CO BOILER	108.000	119.357
NO. 1 BOILER	21.200	30.093
NO. 5 BOILER	25.200	29.946
NO. 6 BOILER	22.400	27.846
NO. 7 BOILER	31.700	8.556
NO. 8 BOILER	0.0	32.236
TOTAL	208.500	248.035

FUEL OIL BURNED

CO BOILER GALS/DAY	TODY	MTD
	0.0	0.0

FUEL GAS BURNED

CO BOILER MCF/DAY	TODY	AMTD
	2484.000	2633.321

WT % SULFUR IN FO TODAY 1.360 AVERAGE MONTH TO DAY = 0.979

SULFUR PLANT

	TODY	MTD
MFA H2S CHARGED,MSCF		
H2O H2S CHARGED,MSCF		
SULFUR PROD,LONG TONS	0.0	33.000

AMMONIA ABSORBER

	TODY	MTD
AMMONIA PROD,SHORT TONS		

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT MON JAN 31 1983 PAGE 14

JUL 22 '87 15:28

**** REFINERY OPERATIONAL DATA REPORT ****

STEAM GENERATED AVG MLBS/HR	TODY	AMTD
CO BOILER	123.000	120.542
NO. 1 BOILER	30.800	24.961
NO. 5 BOILER	31.300	25.245
NO. 6 BOILER	28.700	23.790
NO. 7 BOILER	0.0	1.608
NO. 8 BOILER	33.400	34.848
TOTAL	247.200	230.995

FUEL OIL BURNED CO BOILER GALS/DAY	TODY	MTD
	0.0	0.0

FUEL GAS BURNED CO BOILER MCF/DAY	TODY	AMTD
	2746.000	2613.677

WT % SULFUR IN FO TODAY 0.880 AVERAGE MONTH TO DAY = 0.845

SULFUR PLANT	TODY	MTD
MEA H2S CHARGED,MSCF		
H2O H2S CHARGED,MSCF		
SULFUR PROD,LONG TONS	4.000	74.000

AMMONIA ABSORBER	TODY	MTD
AMMONIA PROD,LONG TONS		

P.5

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT SAT DEC 31 1983 RUN DATE 01/04/84 TIME 13:31

**** REFINERY OPERATIONAL DATA REPORT ****

STEAM GENERATED

AVG MLBS/HR	TODY	AMTD
CO BOILER	0.0	0.0
NO. 1 BOILER	0.0	0.0
NO. 5 BOILER	0.0	0.0
NO. 6 BOILER	0.0	0.0
NO. 7 BOILER	0.0	0.0
NO. 8 BOILER	19.000	21.726
TOTAL	19.000	21.726

FUEL OIL BURNED

CO BOILER GALS/DAY	TODY	MTD
	0.0	0.0

FUEL GAS BURNED

CO BOILER MCF/DAY	TODY	AMTD
	0.0	0.0

WT % SULFUR IN FO TODAY 0.000 AVERAGE MONTH TO DAY = 0.000

SULFUR PLANT

	TODY	MTD
MEA H2S CHARGED,MSCF		
H2O H2S CHARGED,MSCF		
SULFUR PROD,LONG TONS	0.0	0.0

AMMONIA ABSORBER

	TODY	MTD
AMMONIA PROD,SHORT TONS		

MR05 - FINAL UNIT YIEL? ?EPORT

FOR 24 HOURS ENDING MIDNIGHT WED NOV 30 1983 RUN DATE 12/06/83 TIME 06.28

**** REFINERY OPERATIONAL DATA REPORT ****

STEAM GENERATED

AVG MLBS/HR	TODY	AMTD
CO BOILER	0.0	21.851
NO. 1 BOILER	0.0	1.623
NO. 5 BOILER	0.0	11.360
NO. 6 BOILER	0.0	15.487
NO. 7 BOILER	0.0	0.0
NO. 8 BOILER	27.600	31.727
TOTAL	27.600	82.047

FUEL OIL BURNED

CO BOILER GALS/DAY	TODY	MTD
	0.0	0.0

FUEL GAS BURNED

CO BOILER MCF/DAY	TODY	AMTD
	0.0	566.333

WT % SULFUR IN FO TODAY 0.800 AVERAGE MONTH TO DAY = 0.800

SULFUR PLANT

	TODY	MTD
MEA H2S CHARGED.MSCF		
H2O H2S CHARGED.MSCF		
SULFUR PROD.LONG TONS	0.0	17.000

AMMONIA ABSORBER

	TODY	MTD
AMMONIA PROD.SHORT TONS		

JUL 21 '87 10:15 P.3

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT MON OCT 31 1983 RUN DATE 11/03/83 TIME 08.35

**** REFINERY OPERATIONAL DATA REPORT ****

STEAM GENERATED AVG MLBS/HR	TODY	AMTD
CO BOILER	129.333	125.587
NO. 1 BOILER	11.250	14.063
NO. 5 BOILER	19.800	20.968
NO. 6 BOILER	19.500	19.568
NO. 7 BOILER	0.0	0.0
NO. 8 BOILER	32.700	32.590
TOTAL	212.583	212.776

FUEL OIL BURNED CO BOILER GALS/DAY	TODY	MTD
	0.0	0.0

FUEL GAS BURNED CO BOILER MCF/DAY	TODY	AMTD
	2794.000	2726.226

WT % SULFUR IN FO TODAY 0.800 AVERAGE MONTH TO DAY = 0.795

SULFUR PLANT	TODY	MTD
MEA H2S CHARGED,MSCF		
H2O H2S CHARGED,MSCF		
SULFUR PROD,LONG TONS	0.0	70.000

AMMONIA ABSORBER	TODY	MTD
AMMONIA PROD,SHORT TONS		

MROS - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT FRI SEP 30 1983 RUN DATE 10/04/83 TIME 17.12

**** REFINERY OPERATIONAL DATA REPORT ****

STEAM GENERATED

AVG MLBS/HR	TODY	AMTD
CO BOILER	122.500	124.453
NO. 1 BOILER	20.200	24.804
NO. 5 BOILER	24.300	24.110
NO. 6 BOILER	17.300	17.570
NO. 7 BOILER	0.0	0.0
NO. 9 BOILER	33.800	32.269
TOTAL	218.100	223.206

FUEL OIL BURNED

CO BOILER GALS/DAY	TODY	MTD
	0.0	0.0

FUEL GAS BURNED

CO BOILER MCF/DAY	TODY	AMTD
	2644.000	2817.833

WT % SULFUR IN FO TODAY 0.680 AVERAGE MONTH TO DAY = 0.811

SULFUR PLANT

	TODY	MTD
MEA H2S CHARGED,MSCF		
H2O H2S CHARGED,MSCF		
SULFUR PROD,LONG TONS	0.0	54.000

AMMONIA ABSORBER

	TODY	MTD
AMMONIA PROD,SHORT TONS		

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT WED AUG 31 1983 RUN DATE 09/06/83 TIME 13.45

**** REFINERY OPERATIONAL DATA REPORT ****

STEAM GENERATED AVG MLBS/HR	TODY	AMTD
CO BOILER	129.417	127.587
NO. 1 BOILER	31.500	30.552
NO. 5 BOILER	30.900	18.839
NO. 6 BOILER	0.0	9.909
NO. 7 BOILER	0.0	0.0
NO. 9 BOILER	34.700	35.444
TOTAL	226.517	222.330

FUEL OIL BURNED CO BOILER GALS/DAY	TODY	MTD
	0.0	0.0

FUEL GAS BURNED CO BOILER MCF/DAY	TODY	AMTD
	3072.000	3017.226

WT % SULFUR IN FO TODAY 0.770 AVERAGE MONTH TO DAY = 0.756

SULFUR PLANT	TODY	MTD
MEA H2S CHARGED,MSCF		
H2O H2S CHARGED,MSCF		
SULFUR PROD,LONG TONS	7.000	133.000

AMMONIA ABSORBER	TODY	MTD
AMMONIA PROD,SHORT TONS		

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT SUN JUL 31 1983 RUN DATE 08/03/83 TIME 17.40

**** REFINERY OPERATIONAL DATA REPORT ****

STEAM GENERATED

AVG MLBS/HR	TODY	AMTD
CO BOILER	118.750	127.341
NO. 1 BOILER	33.400	24.054
NO. 5 BOILER	0.0	24.349
NO. 6 BOILER	31.400	7.245
NO. 7 BOILER	0.0	0.0
NO. 8 BOILER	34.900	35.823
TOTAL	218.450	218.811

FUEL OIL BURNED

CO BOILER GALS/DAY	TODY	MTD
	0.0	0.0

FUEL GAS BURNED

CO BOILER MCF/DAY	TODY	AMTD
	2776.000	2842.226

WT % SULFUR IN FO TODAY 0.760 AVERAGE MONTH TO DAY = 0.772

SULFUR PLANT

	TODY	MTD
MEA H2S CHARGED,MSCF		
MDU H2S CHARGED,MSCF		
SULFUR PROD,LONG TONS	4.000	136.000

AMMONIA ABSORBER

	TODY	MTD
AMMONIA PROD,SHORT TONS		

JUL 21 '87 10:17

P.7

[illegible] REFINERY

[illegible] FIELD REPORT

[illegible] HOURS ENDING [illegible] JUN 30 1983

[illegible]

[illegible]	TODAY	AMTD
[illegible] BOILERS	[illegible]	127.947
NO. [illegible] BOILER	20.[illegible]	20.217
NO. 5 BOILER	[illegible].000	17.887
NO. 6 BOILER	0.0	7.148
NO. 7 BOILER	0.0	0.0
NO. 8 BOILER	35.400	33.800
TOTAL	216.0[illegible]	207.978

FUEL OIL BURNED	TODAY	MTD
[illegible] BBLS/DAY	[illegible]0.0	0.0

FUEL GAS BURNED	TODAY	AMTD
[illegible]	28[illegible].000	2779.467

WT % SULFUR IN FO TODAY [illegible] 0.050 AVERAGE MONTH TO DAY = 0.051

SULFUR PLANT	TODAY	MTD
[illegible] H2S CHARGED,MSCF		
[illegible] H2S CHARGED,MSCF		
SULFUR PROD,LONG TONS	0.0	50.300

[illegible]	TODAY	MTD
[illegible] (LB)		

TOSCO - BAKERSFIELD REFINERY

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT TUE MAY 31 1983

**** REFINERY OPERATIONAL DATA REPORT ****

STEAM GENERATED

AVG MLBS/HR	TODY	AMTD
CO BOILER	124.917	117.253
NO. 1 BOILER	24.300	14.167
NO. 5 BOILER	0.0	12.827
NO. 6 BOILER	24.600	22.252
NO. 7 BOILER	0.0	0.0
NO. 8 BOILER	35.100	27.580
TOTAL	208.917	194.079

FUEL OIL BURNED

CO BOILER GALS/DAY	TODY	MTD
	0.0	0.0

FUEL GAS BURNED

CO BOILER MCF/DAY	TODY	AMTD
	3036.000	2651.161

WT % SULFUR IN FO TODAY 0.880 AVERAGE MONTH TO DAY = 0.944

SULFUR PLANT

	TODY	MTD
MEA H2S CHARGED,MSCF		
H2O H2S CHARGED,MSCF		
SULFUR PROD,LONG TONS	2.000	136.000

AMMONIA ABSORBER

	TODY	MTD
AMMONIA PROD,SHORT TONS		

APPENDIX E

HEATER OIL CONSUMPTION CAPACITY INFORMATION

ESA 26200-455

TOSCO CORPORATION

INTER OFFICE MEMORANDUM

FROM: Process Engineering LOCATION: DATE: June 23, 1983

TO: G. D. Davis LOCATION: FILE NO.:

SUBJECT: Fuel Oil Burned in Heaters and Boilers

In order to get a more realistic accounting of the amount of fuel oil burned daily in the refinery, the following chart and report sheets have been prepared. The chart identifies which heaters and boilers can burn fuel oil and how much fuel oil, in B/D, is burned in each burner. The chart assumes that the fuel oil burner pressure is 50psig, consistent with standard operating procedures. If the fuel oil pressure is not 50psig, the amounts shown can be multiplied by $\sqrt{x/50}$ where x is the actual header pressure, in psig.

Also attached are two Oil Burner Report forms which can be filled out by Operations and sent in to P&I daily along with the existing P&I sheets.

Prepared by: J. S. Wood
J. S. Wood

Submitted by: J. P. McKnight
J. P. McKnight

JSW:bcm
Attachments

cc: M. E. Danitschek
T. L. Douglass
S. I. Fowle
J. A. Kamps
R. W. Traylor
L. D. Walsh
D. C. Winn

92.002 (10-78)

REFINERY BURNERS WITH OIL BURNING CAPABILITY

HEATER/BOILER	# OF GUNS	CENTER BURNER	PERIPHERY BURNERS	OIL FLOW PER GUN, BBL/DAY CENTER BURNER	OIL FLOW PER GUN, BBL/DAY PERIPHERY BURNER
11H11	4	0	4	-	49
11H12	3	0	3	-	18
11H13	6	0	6	-	10
14H11	3	0	3	-	18
17H11	11	1	10	26	18
18H11	11	1	10	26	18
81B11	4	0	4	-	9
81B15	2	0	2	-	32
81B16	2	0	2	-	32
81B17	1	0	1	-	172
81B18	1	0	1	-	172
81B19	2	0	2	-	403

SUBJECT TOSCO BAKERSFIELD REFINERY

Desire a capital estimate for a new TCC charge fired heater to replace existing one.

(A) Process Conditions

1) Rate = 13,000 bpsd of 18 to 21 API Gravity gasoil

2) Vaporize 10,000 to 11,000 bpd

3) ~250#/hr of 150 psig steam injected into each pass (2 passes)

4) Tin = ~475F mean ranges 390 to 510F
Tout = 845F always (TCC)

5) Press. in = ~140 psig
Press out = ~22 psig in outlet transfer pipe

(B) Existing Heater Details

1) Is is a Petrochem heater designed around June 1954 under order 4825

2) Two pass heater with

a) 66 oil tubes plus two tubes for steam superheating (150 psig) - All tubes

CALCULATIONS
Tosco Corporation

SUBJECT

SHEET NO. 2 OF
FILE
DATE
BY

are 5" O.D. X .313 Av. W. composed of 9Cr - 1Mo. - Have horizontal fins at top, length of 9'4" & 9'10" on each tubes. Total length is 57'9" except inlet, outlet of steam tubes

(b) Return bends are 5" 6150 type Series 850

(c) Flanges 9 Cr - 1 Mo

(3) Eleven John Zink combination burners

(a) Center burner 28" MA-22 12 MMBTU/hr

(b) Ten outer burners 24" MA-18 6.6 MMBTU/hr each

(c) Eleven pilots - nominal 54.6 MBTU/hr

(1) one J-3/4

(2) ten J-6-3/4

(d) Fire either 0.75 Sp. G. Fuel gas or 6.25 MMBTU/bbl #6 fuel oil

(4) Radiation cone removed, baffle installed around convection section

(C) Design Requirements

Desire capital estimate of new heater either vertical or horizontal; whichever is more economical. Provide convection section with soot blowers which can be used for oil preheat or 150psig steam production; again whichever is more economical

Maximum duty for design should be the same as existing (~ 78MMBTU/hr). Need an estimate based:

1. Completely new heater with new burners & convection section
2. Same as above but using existing burners

APPENDIX F

FINAL UNIT YIELD REPORT FOR TCC UNIT

AND FLUID COKER

	TODAY			MONTH TO DATE			
	ACTUAL		EXPECTED	ACTUAL			EXPECTED
COKING UNIT	BPCD	PER CENT	PER CENT	AVG BPCD	BARRELS	PER CENT	PER CENT COKER
CHARGE							
PITCH	6770.	98.9		4454.	138066.	95.3	
REDUCE CRUDE	0.	0.0		34.	1061.	0.7	
SLOP	79.	1.1		183.	5674.	3.7	
TOTAL CHG	6849.	100.0		4671.	144802.	100.0	
YIELD							
GAS FOE	1027.	15.0	9.5	690.	21384.	14.8	9.2
CONDENSATE	677.	9.9	17.7	442.	13705.	9.5	17.1
COKER NAPH	1201.	17.5	21.0	1001.	31037.	21.4	20.4
LT GAS OIL	296.	4.3	2.5	192.	5940.	4.1	2.4
HVY GAS OIL	2780.	40.6	38.5	2072.	64238.	44.4	40.1
SLOP	20.	0.3	0.3	14.	420.	0.3	0.3
COKE NET	729.	10.6	13.6	447.	13864.	9.6	13.2
COKE BURNED	354.			237.	7353.		
TOTAL YLD	6730.	98.3	103.1	4858.	150587.	104.0	102.8
DIFFERENCE	-119.	-1.7		187.	5786.	4.0	
WT PCT PROD/CHG		94.3				98.9	
DAYS ON STREAM	14.						
GAS(MCF)	6651.			4429.	137301.		
COKER NAPH RERUN							
NAPH CHARGE	1311.	100.0		1002.	31070.	100.0	
LT NAPH YLD	0.	0.0	47.2	112.	3480.	11.2	47.2
NAPH BTS YLD	1311.	100.0	52.8	890.	27590.	88.8	52.8
TOTAL YLD	1311.	100.0	100.0	1002.	31070.	100.0	100.0
WT PCT PROD/CHG		100.0				100.0	
COMPOSITION OF GAS AND CONDENSATE							
GAS(FOE)	927.	13.5	8.1	617.	19133.	13.2	7.8
PROPANE	146.	2.1	3.0	97.	3018.	2.1	2.9
PROPYLENE	189.	2.8	5.0	126.	3892.	2.7	4.8
I-BUTANE	27.	0.4	0.3	18.	550.	0.4	0.3
N-BUTANE	51.	0.8	0.5	34.	1063.	0.7	0.5
BUTYLENES	153.	2.2	3.7	102.	3157.	2.2	3.6
LTCC CUT	273.	4.0	8.9	181.	5626.	3.9	8.7

TOSCO CORPORATION BAKERSFIELD REFINERY 24 HRS. BEGINNING 12 AM JULY 31, 1982 UNIT YIELD REPORT SECT 5.05

TCC UNIT(DAYS ON= 70)	TODAY			MONTH TO DATE				
	ACTUAL		EXPECTED	ACTUAL			EXPECTED	
TCC CHARGE	BPCD	PER CENT	PER CENT	AVG BPCD	BARRELS	PER CENT	PER CENT	TCC
GAS OIL	6034.	61.7		7329.	227190.	69.3		
T.S. BTS	3749.	38.3		3213.	99606.	30.4		
CYO(SYN TWR)	0.	0.0		36.	1104.	0.0		
TOTAL CHG	9783.	100.0		10578.	327909.	100.0		
YIELD								
GAS FOE	678.	6.9	6.0	649.	20115.	6.1	5.9	
CONDENSATE	3432.	35.1	41.1	3877.	120181.	36.7	38.5	
CO TO RESIDS	756.	7.7	7.7	569.	17653.	5.4	5.4	
LCO TO 96M03	0.	0.0	0.0	802.	24876.	7.6	7.6	
LT CYCLE OIL	2248.	23.0	35.0	2147.	66556.	20.3	32.1	
CARB BLK OIL	599.	6.1	6.1	371.	11505.	3.5	3.5	
RESIDUUM	1480.	15.1	4.6	1600.	49602.	15.1	8.2	
COKE FOE	365.			352.	10909.			
TOTLX COKE	9194.	94.0	100.5	10016.	310487.	94.7	101.3	
DIFFERENCE	-589.	-6.0		-562.	-17421.	-5.3		
WT PCT PROD/CHG		90.6				91.4		
CONVERSION, PCT		56.6	46.6			56.6	130.9	
SYN TWR RECYCLE	347.			64.	1998.			
GAS(MCF)	7041.			7567.	234568.			
RAW TCC GASO	2962.			3154.	97781.			
COMPOSITION OF WET GAS+CONDENSATE								
GAS(FOE)	801.	8.2	4.9	861.	26696.	8.1	4.8	
PROPANE	244.	2.5	2.6	262.	8126.	2.5	2.5	
PROPYLENE	358.	3.7	3.1	384.	11916.	3.6	3.1	
I-BUTANE	191.	2.0	1.0	205.	6352.	1.9	0.8	
N-BUTANE	128.	1.3	0.9	137.	4245.	1.3	0.8	
BUTYLENE	443.	4.5	3.5	475.	14724.	4.5	3.4	
LTCC GASO	3210.	32.8	31.8	3424.	106140.	32.4	29.6	
ALKYLATION UNIT(DAYS ON= 69)								
CHARGE								ALKY
PP STOCK	13.	0.6	0.6	28.	881.	1.4	1.4	
BB STOCK	1026.	44.8	44.8	940.	29125.	46.2	46.2	
I-N BUTANE	1251.	54.6	54.6	1065.	33018.	52.4	52.4	
TOTAL CHG	2290.	100.0	100.0	2033.	63024.	100.0	100.0	
YIELD								
PROPANE	47.	2.1	12.9	52.	1626.	2.6	13.3	
N-BUTANE	497.	21.7	23.4	485.	15048.	23.9	20.3	
LT ALKYLATE	1172.	51.2	52.5	950.	29440.	46.7	54.6	
HVY ALKYLATE	0.	0.0	0.0	0.	0.	0.0	0.0	
TOTAL YLD	1716.	75.0	88.8	1488.	46114.	73.2	88.2	
DIFFERENCE	-573.	-25.0		-546.	-16911.			
WT PCT PROD/CHG		85.9				83.8		
ACID USED LBS/GAL	0.48			1.50				

	TODAY			MONTH TO DATE			
	ACTUAL		EXPECTED	ACTUAL			EXPECTED
COKING UNIT	BPCD	PER CENT	PER CENT	AVG BPCD	BARRELS	PER CENT	PER CENT
							COKER
CHARGE							
PITCH	7135.	96.7		7135.	221194.	94.6	
SLOP	243.	3.3		408.	12655.	5.4	
TOTAL CHG	7377.	100.0		7543.	233848.	100.0	
YIELD							
GAS FOE	1303.	17.7	9.3	1211.	37540.	16.1	9.1
CONDENSATE	651.	8.8	17.3	684.	21208.	9.1	16.9
COKER NAPH	1432.	19.4	20.6	1610.	49900.	21.3	20.1
LT GAS OIL	260.	3.5	2.5	293.	9075.	3.9	2.4
HVY GAS OIL	3014.	40.9	39.8	3129.	97012.	41.5	41.1
SLOP	20.	0.3	0.3	20.	620.	0.3	0.3
COKE NET	846.	11.5	13.3	751.	23280.	10.0	13.0
COKE BURNED	374.			370.	11476.		
TOTAL YLD	7527.	102.0	103.1	7698.	238644.	102.1	103.0
DIFFERENCE	149.	2.0		155.	4796.	2.1	
WT PCT PROD/CHG		98.0				97.6	
DAYS ON STREAM	45.						
GAS(MCF)	7836.			7511.	232846.		
COKER NAPH RERUN							
NAPH CHARGE	1682.	100.0		1617.	50135.	100.0	
LT NAPH YLD	575.	34.2	47.2	518.	16073.	32.1	47.2
NAPH BTB YLD	1107.	65.8	52.8	1099.	34063.	67.9	52.8
TOTAL YLD	1682.	100.0	100.0	1617.	50135.	100.0	100.0
WT PCT PROD/CHG		100.0				100.0	
COMPOSITION OF GAS AND CONDENSATE							
GAS(FOE)	1092.	14.8	7.9	1047.	32447.	13.9	7.7
PROPANE	172.	2.3	3.0	165.	5110.	2.2	2.9
PROPYLENE	222.	3.0	4.9	213.	6600.	2.8	4.8
I-BUTANE	31.	0.4	0.3	30.	933.	0.4	0.3
N-BUTANE	61.	0.8	0.5	58.	1802.	0.8	0.5
BUTYLENES	180.	2.4	3.6	173.	5353.	2.3	3.5
LTCC CUT	321.	4.4	8.8	308.	9542.	4.1	8.6

TCC UNIT(DAYS ON=101)	TODAY ACTUAL BPCD	TODAY ACTUAL PER CENT	TODAY EXPECTED PER CENT	MONTH TO DATE ACTUAL AVG BPCD	MONTH TO DATE ACTUAL BARRELS	MONTH TO DATE ACTUAL PER CENT	MONTH TO DATE EXPECTED PER CENT	TCC
TCC CHARGE								
GAS OIL	8695.	73.2		7610.	235914.	66.7		
T.S. BTS	3186.	26.8		3696.	114582.	32.5		
CYO(SYN TWR)	0.	0.0		71.	2211.	0.0		
TOTAL CHG	11881.	100.0		11378.	352708.	100.0		
YIELD								
GAS FOE	625.	5.3	6.1	643.	19948.	5.7	6.1	
CONDENSATE	5148.	43.3	42.9	4972.	154133.	43.7	42.8	
CO TO RESIDS	0.	0.0	0.0	575.	17823.	5.1	5.1	
LT CYCLE OIL	3041.	25.6	41.1	2744.	85050.	24.1	35.9	
CARB BLK OIL	905.	7.6	7.6	580.	17976.	5.1	5.1	
RESIDUUM	1780.	15.0	2.4	1544.	47857.	13.6	4.8	
COKE FOE	465.			448.	13884.			
TOTLX COKE	11499.	96.8	100.1	11058.	342796.	97.2	99.9	
DIFFERENCE	-382.	-3.2		-320.	-9912.	-2.8		
WT PCT PROD/CHG		94.6				93.9		
CONVERSION, PCT		60.9	48.9			60.3	52.1	
SYN TWR RECYCLE	0.			19.	597.			
GAS(MCF)	9350.			8087.	250709.			
RAW TCC GASO	3509.			3448.	106878.			
COMPOSITION OF WET GAS+CONDENSATE								
GAS(FOE)	1063.	8.9	5.0	921.	28530.	8.1	5.0	
PROPANE	321.	2.7	2.6	281.	8704.	2.5	2.6	
PROPYLENE	471.	4.0	3.1	412.	12762.	3.6	3.1	
I-BUTANE	247.	2.1	1.1	220.	6824.	1.9	0.7	
N-BUTANE	165.	1.4	0.9	147.	4561.	1.3	0.9	
BUTYLENE	569.	4.8	3.6	511.	15844.	4.5	3.6	
LTCC GASO	3879.	32.6	33.3	3729.	115590.	32.0	33.5	

ALKYLATION UNIT(DAYS ON=100)	TODAY ACTUAL BPCD	TODAY ACTUAL PER CENT	TODAY EXPECTED PER CENT	MONTH TO DATE ACTUAL AVG BPCD	MONTH TO DATE ACTUAL BARRELS	MONTH TO DATE ACTUAL PER CENT	MONTH TO DATE EXPECTED PER CENT	ALKS
CHARGE								
PP STOCK	0.	0.0	0.0	57.	1758.	2.2	2.2	
BB STOCK	972.	36.8	36.8	982.	30430.	38.5	38.5	
I-N BUTANE	1667.	63.2	63.2	1510.	46808.	59.3	59.3	
TOTAL CHG	2639.	100.0	100.0	2548.	78996.	100.0	100.0	
YIELD								
PROPANE	3.	0.1	5.3	28.	883.	1.1	6.5	
N-BUTANE	729.	27.6	54.0	638.	19767.	25.0	48.2	
LT ALKYLATE	900.	34.1	33.5	955.	29616.	37.5	37.1	
HVY ALKYLATE	0.	0.0	0.0	0.	0.	0.0	0.0	
TOTAL YLD	1633.	61.9	92.8	1621.	50266.	63.6	91.8	
DIFFERENCE	-1006.	-38.1		-927.	-28730.			
WT PCT PROD/CHG		70.1				72.5		
ACID USED LBS/GAL	1.79			1.81				

COKER

	TODAY			MONTH TO DATE			
	ACTUAL		EXPECTED	ACTUAL			EXPECTED
COKING UNIT	BPCD	PER CENT	PER CENT	AVG BPCD	BARRELS	PER CENT	PER CENT
CHARGE							
PITCH	7007.	92.0		7054.	211616.	94.8	
SLOP	606.	8.0		388.	11628.	5.2	
TOTAL CHG	7614.	100.0		7441.	223244.	100.0	
YIELD							
GAS FOE	1169.	15.4	8.9	1196.	35889.	16.1	9.1
CONDENSATE	708.	9.3	16.5	653.	19592.	8.8	17.0
COKER NAPH	1292.	17.0	19.6	1307.	39221.	17.6	20.1
LT GAS OIL	297.	3.9	2.4	288.	8638.	3.9	2.4
HVY GAS OIL	3231.	42.4	42.7	3118.	93533.	41.9	41.0
SLOP	20.	0.3	0.3	20.	600.	0.3	0.3
COKE NET	868.	11.4	12.7	807.	24207.	10.8	13.0
COKE BURNED	378.			374.	11218.		
TOTAL YLD	7585.	99.6	102.9	7389.	221680.	99.3	103.0
DIFFERENCE	-29.	-0.4		-52.	-1564.	-0.7	
WT PCT PROD/CHG		96.7				96.1	
DAYS ON STREAM	75.						
GAS(MCF)	7388.			7355.	220638.		
COKER NAPH RERUN							
NAPH CHARGE	1171.	100.0		1310.	39302.	100.0	
LT NAPH YLD	564.	48.2	47.2	561.	16825.	42.8	47.2
NAPH BTS YLD	607.	51.8	52.8	749.	22477.	57.2	52.8
TOTAL YLD	1171.	100.0	100.0	1310.	39302.	100.0	100.0
WT PCT PROD/CHG		100.0				100.0	
COMPOSITION OF GAS AND CONDENSATE							
GAS(FOE)	1029.	13.5	7.5	1025.	30746.	13.8	7.7
PROPANE	162.	2.1	2.8	162.	4850.	2.2	2.9
PROPYLENE	209.	2.8	4.7	208.	6254.	2.8	4.8
I-BUTANE	30.	0.4	0.3	29.	884.	0.4	0.3
N-BUTANE	57.	0.8	0.5	57.	1707.	0.8	0.5
BUTYLENES	170.	2.2	3.5	169.	5073.	2.3	3.6
LTCC CUT	303.	4.0	8.3	301.	9041.	4.0	8.6

TOSCO CORPORATION BAKERSFIELD REFINERY 24 HRS. BEGINNING 12 AM SEPT 30, 1982 UNIT YIELD REPORT SECT 5.05

TCC UNIT(DAYS ON=131)	TODAY			MONTH TO DATE				
	-----ACTUAL-----		EXPECTED	ACTUAL			EXPECTED	
TCC CHARGE	BPCD	PER CENT	PER CENT	AVG BPCD	BARRELS	PER CENT	PER CENT	TCC
GAS OIL	10101.	77.7		9577.	287303.	78.3		
T.S. BTS	2891.	22.3		2654.	79611.	21.7		
TOTAL CHG	12993.	100.0		12230.	366915.	100.0		
YIELD								
GAS FOE	379.	2.9	6.0	594.	17833.	4.9	6.0	
CONDENSATE	4625.	35.6	41.2	5001.	150037.	40.9	41.7	
CO TO RESIDS	0.	0.0	0.0	55.	1662.	0.5	0.5	
LT CYCLE OIL	4658.	35.9	42.6	3833.	114993.	31.3	41.7	
CARB BLK OIL	615.	4.7	4.7	819.	24567.	6.7	6.7	
RESIDUUM	2215.	17.1	5.9	1713.	51391.	14.0	3.7	
COKE FOE	485.			460.	13803.			
TOTLX COKE	12493.	96.2	100.5	12016.	360484.	98.2	100.2	
DIFFERENCE	-500.	-3.8		-214.	-6431.	-1.8		
WT PCT PROD/CHG		93.6				96.5		
CONVERSION, PCT		51.1	46.7			55.2	47.4	
SYN TWR RECYCLE	540.			190.	5714.			
GAS(MCF)	8325.			8248.	247443.			
RAW TCC GASO	3560.			3394.	101808.			
COMPOSITION OF WET GAS+CONDENSATE								
GAS(FOE)	948.	7.3	4.9	939.	28157.	7.7	4.9	
PROPANE	289.	2.2	2.6	285.	8561.	2.3	2.6	
PROPYLENE	424.	3.3	3.1	419.	12555.	3.4	3.1	
I-BUTANE	227.	1.7	1.0	223.	6680.	1.8	0.8	
N-BUTANE	152.	1.2	0.9	149.	4465.	1.2	0.9	
BUTYLENE	527.	4.1	3.5	516.	15472.	4.2	3.5	
LTCC GASO	3848.	29.6	31.9	3692.	110752.	30.2	32.4	
ALKYLATION UNIT(DAYS ON=130)								
CHARGE								ALKY
PP STOCK	0.	0.0	0.0	37.	1120.	1.5	1.5	
BB STOCK	1001.	45.4	45.4	917.	27506.	37.1	37.1	
I-N BUTANE	1204.	54.6	54.6	1520.	45586.	61.4	61.4	
TOTAL CHG	2206.	100.0	100.0	2474.	74211.	100.0	100.0	
YIELD								
PROPANE	137.	6.2	9.6	45.	1341.	1.8	9.2	
N-BUTANE	596.	27.0	28.1	729.	21866.	29.5	37.7	
LT ALKYLATE	1101.	49.9	50.8	1030.	30894.	41.6	43.2	
HVY ALKYLATE	0.	0.0	0.0	0.	0.	0.0	0.0	
TOTAL YLD	1833.	83.1	88.5	1803.	54101.	72.9	90.1	
DIFFERENCE	-372.	-16.9		-670.	-20111.			
WT PCT PROD/CHG		94.2				82.9		
ACID USED LBS/GAL	0.23			2.57				

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING 12 AM SUN OCT 31 1982

***** UNIT 12 - COKING UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 31

	TODAY				MONTH TO DATE				STREAM MTD AVG		CALNDR MTD AVG	
	VOLUME		WEIGHT		VOLUME		WEIGHT		VOL	WT	VOL	WT
STREAM	BBLS	PCT	MLBS	PCT	BBLS	PCT	MLBS	PCT	BBLS/SD	MLBS/SD	BBLS/CD	MLBS/CD
CHARGES												
CF12 PITCH TO COKER	6605.	94.2	2383.	94.9	209563.	94.7	75363.	95.3	6760.	2431.	6760.	2431.
SL12 SLOPS	404.	5.8	129.	5.1	11715.	5.3	3741.	4.7	378.	121.	378.	121.
TOTAL CHARGES	7009.	100.0	2512.	100.0	221278.	100.0	79103.	100.0	7138.	2552.	7138.	2552.
YIELDS												
12KW WET GAS	2123.	30.3	650.	25.9	59111.	26.7	18107.	22.9	1907.	584.	1907.	584.
12KN COKER NAPHTHA	1153.	16.5	298.	11.9	35324.	16.0	9129.	11.5	1139.	294.	1139.	294.
12GO FLUSHING OIL	34.	0.5	11.	0.5	1054.	0.5	356.	0.4	34.	11.	34.	11.
12KG HVY COKER G.O.	2914.	41.6	1009.	40.2	94708.	42.8	32676.	41.3	3055.	1054.	3055.	1054.
12SL SLOPS	88.	1.3	38.	1.5	3655.	1.7	1484.	1.9	118.	48.	118.	48.
12CK COKE	782.	11.2	348.	13.9	22774.	10.3	10143.	12.8	735.	327.	735.	327.
TOTAL YIELDS	7094.	101.2	2356.	93.8	216626.	97.9	71895.	90.9	6988.	2319.	6988.	2319.
LOSS(-GAIN)	-85.	-1.2	156.	6.2	4652.	2.1	7209.	9.1	150.	233.	150.	233.
TOTAL	7009.	100.0	2512.	100.0	221278.	100.0	79103.	100.0	7138.	2552.	7138.	2552.

COMPOSITION OF GAS AND CONDENSATE	TODAY					MONTH-TO-DATE					
	GAS MSCF	VOL B/D	VOL PCT	WT MLBS	WT PCT	GAS MSCF	AVG B/D	VOL BBLS	VOL PCT	WT MLBS	WT PCT
GAS(FOE)	5476.	953.	13.4	290.	12.3	152462.	856.	26541.	12.3	8060.	11.2
PROPANE	368.	246.	3.5	44.	1.8	10250.	221.	6837.	3.2	1213.	1.7
PROPYLENE	575.	355.	5.0	65.	2.8	16015.	319.	9889.	4.6	1804.	2.5
ISOBUTANE	31.	25.	0.3	5.	0.2	854.	22.	685.	0.3	135.	0.2
NORM BUTANE	92.	71.	1.0	15.	0.6	2562.	64.	1987.	0.9	406.	0.6
TOTL BUTENES	376.	270.	3.8	57.	2.4	10463.	243.	7519.	3.5	1596.	2.2
1,3 - BUTADINE	31.	21.	0.3	5.	0.2	854.	19.	575.	0.3	126.	0.2
LTCC	721.	714.	10.1	170.	7.2	20072.	641.	19871.	9.2	4730.	6.6

OPERATION DATA REPORT FOR UNIT NO. 12 COKING UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	370.133	5.281	372.206	5.214
COKE BURNED MLBS	164.877	6.564	165.801	6.498
COKER VOL YIELD	7464.133	106.493	7360.129	103.112
COKER WEIGHT YIELD	2520.685	100.359	2484.611	97.370
LOSS(-GAIN) VOL	-455.133	-6.493	-222.131	-3.112
LOSS(-GAIN) WEIGHT	-9.017	-0.359	67.109	2.630

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING 12 AM SUN OCT 31 1982

***** UNIT 17 - TCC UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 29

		TODAY				MONTH TO DATE				STREAM MTD AVG		CALNDR MTD AVG	
		VOLUME		WEIGHT		VOLUME		WEIGHT		VOL	WT	VOL	WT
	STREAM	BBLS	PCT	MLBS	PCT	BBLS	PCT	MLBS	PCT	BBLS/SD	MLBS/SD	BBLS/CD	MLBS/CD
	CHARGES												
GO17	GAS OIL	4823.	100.0	1593.	100.0	250711.	77.6	82439.	77.0	8645.	2843.	8087.	2659.
TA17	T.S. BOTTOMS	0.	0.0	0.	0.0	72459.	22.4	24667.	23.0	2499.	851.	2337.	796.
	TOTAL CHARGES	4823.	100.0	1593.	100.0	323170.	100.0	107106.	100.0	11144.	3693.	10425.	3455.
	YIELDS												
17WG	CAT WET GAS	0.	0.0	0.	0.0	61282.	19.0	17641.	16.5	2113.	608.	1977.	569.
17RG	CAT RAW GASOLINE	496.	10.3	140.	8.8	89495.	27.7	25506.	23.8	3086.	880.	2887.	823.
17LC	LT CYCLE OIL	113.	2.3	84.	5.3	76138.	23.6	23677.	22.1	2625.	816.	2456.	764.
17C1	RECYCLE TO RESID	0.	0.0	0.	0.0	3544.	1.1	1146.	1.1	122.	40.	114.	37.
17C6	LCCO TO WEED OIL	0.	0.0	0.	0.0	10164.	3.1	319.	0.3	350.	11.	328.	10.
17C7	LCCO TO CDO	0.	0.0	0.	0.0	122.	0.0	43.	0.0	4.	1.	4.	1.
17RO	RESID TO SALES	2742.	56.9	959.	60.2	52595.	16.3	18485.	17.3	1814.	637.	1697.	596.
17CB	CARBON BLACK	0.	0.0	0.	0.0	15602.	4.8	5810.	5.4	538.	200.	503.	187.
17CF	TS BTMS TO COKER	0.	0.0	0.	0.0	892.	0.3	307.	0.3	31.	11.	29.	10.
17FO	RESID TO BURN	0.	0.0	0.	0.0	1574.	0.5	552.	0.5	54.	19.	51.	18.
17TS	TS BTMS TO F.O.	0.	0.0	0.	0.0	7679.	2.4	2529.	2.4	265.	87.	248.	82.
	TOTAL YIELDS	3351.	69.5	1184.	74.3	319087.	98.7	96014.	89.6	11003.	3311.	10293.	3097.
	LOSS(-GAIN)	1472.	30.5	409.	25.7	4083.	1.3	11092.	10.4	141.	382.	132.	358.
	TOTAL	4823.	100.0	1593.	100.0	323170.	100.0	107106.	100.0	11144.	3693.	10425.	3455.

COMPOSITION OF GAS AND CONDENSATE	TODAY					MONTH-TO-DATE					
	GAS MSCF	VOL B/D	VOL PCT	WT MLBS	WT PCT	GAS MSCF	AVG B/D	VOL BBLS	VOL PCT	WT MLBS	WT PCT
GAS(FOE)	0.	0.	0.0	0.	0.0	158056.	827.	25640.	8.0	6771.	7.1
PROPANE	3.	3.	0.1	1.	0.1	11294.	250.	7742.	2.4	1373.	1.4
PROPYLENE	4.	4.	0.1	1.	0.1	17738.	362.	11227.	3.5	2048.	2.1
ISOBUTANE	5.	5.	0.1	1.	0.1	6796.	182.	5631.	1.8	1108.	1.2
NORM BUTANE	4.	4.	0.1	1.	0.1	4891.	128.	3973.	1.2	812.	0.8
TOTL BUTENES	14.	14.	0.4	3.	0.3	16440.	405.	12544.	3.9	2662.	2.8
1,3 - BUTADINE	0.	0.	0.0	0.	0.0	0.	0.	0.	0.0	0.	0.0
LTCC	464.	464.	13.9	111.	9.4	101243.	3250.	100749.	31.6	23973.	25.0

OPERATION DATA REPORT FOR UNIT NO. 17 TCC UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	72.694	1.507	421.030	4.057
COKE BURNED MLBS	32.359	2.031	187.417	5.448
TCC VOL YIELD	3423.694	70.987	10707.586	103.165
TCC WEIGHT YIELD	1216.163	76.349	3282.329	95.415
LOSS(-GAIN) VOL	1399.306	29.013	-328.524	-3.165
LOSS(-GAIN) WEIGHT	376.734	23.651	157.744	4.585

CONVERSION PERCENT TODAY 94.570 CONVERSION PERCENT MTD = 60.547

TOSCO - BAKERSFIELD REFINERY

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING 12 AM TUE NOV 30 1982

***** UNIT 12 - COKING UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 30

STREAM	TODAY VOLUME BBLS	TODAY VOLUME PCT	TODAY WEIGHT MLBS	TODAY WEIGHT PCT	MONTH TO DATE VOLUME BBLS	MONTH TO DATE VOLUME PCT	MONTH TO DATE WEIGHT MLBS	MONTH TO DATE WEIGHT PCT	STREAM MTD AVG VOL BBLS/SD	STREAM MTD AVG WT MLBS/SD	CALNDR MTD AVG VOL BBLS/CD	CALNDR MTD AVG WT MLBS/CD
CHARGES												
[illegible] RESID TO COKER	6276.	95.5	2235.	96.0	187793.	93.6	67104.	94.1	6260.	2237.	6260.	2237.
[illegible] REDUCED CRUDE	0.	0.0	0.	0.0	3245.	1.6	1111.	1.6	108.	37.	108.	37.
[illegible] SLOPS	293.	4.5	94.	4.0	9689.	4.8	3094.	4.3	323.	103.	323.	103.
TOTAL CHARGES	6569.	100.0	2329.	100.0	200727.	100.0	71309.	100.0	6691.	2377.	6691.	2377.
YIELDS												
1206 WET GAS	1604.	24.4	491.	21.1	49329.	24.6	15111.	21.2	1644.	504.	1644.	504.
1208 COKER NAPHTHA	1108.	16.9	316.	13.6	33166.	16.5	9461.	13.3	1106.	315.	1106.	315.
1200 FLUSHING OIL	34.	0.5	11.	0.5	1020.	0.5	344.	0.5	34.	11.	34.	11.
1250 HVY COKER G.O.	2735.	41.6	947.	40.6	88068.	43.9	30362.	42.6	2936.	1012.	2936.	1012.
1251 SLOPS	138.	2.1	55.	2.3	3282.	1.6	1360.	1.9	109.	45.	109.	45.
1204 COKE	659.	10.0	293.	12.6	19758.	9.8	8800.	12.3	659.	293.	659.	293.
TOTAL YIELDS	6278.	95.6	2114.	90.8	194623.	97.0	65438.	91.8	6487.	2181.	6487.	2181.
LOSS/GAIN	291.	4.4	215.	9.2	6104.	3.0	5871.	8.2	203.	196.	203.	196.
TOTAL	6569.	100.0	2329.	100.0	200727.	100.0	71309.	100.0	6691.	2377.	6691.	2377.

COMPOSITION OF GAS AND CONDENSATE	TODAY GAS MSCF	TODAY VOL B/D	TODAY VOL PCT	TODAY WT MLBS	TODAY WT PCT	MONTH-TO-DATE GAS MSCF	MONTH-TO-DATE AVG B/D	MONTH-TO-DATE VOL BBLS	MONTH-TO-DATE VOL PCT	MONTH-TO-DATE WT MLBS	MONTH-TO-DATE WT PCT
[illegible]	4138.	720.	11.5	219.	10.3	127231.	738.	22149.	11.4	6726.	10.3
PROPANE	278.	186.	3.0	33.	1.6	8553.	190.	5706.	2.9	1012.	1.5
PROPYLENE	435.	268.	4.3	49.	2.3	13365.	275.	8253.	4.2	1505.	2.3
ISOBUTANE	23.	19.	0.3	4.	0.2	713.	19.	572.	0.3	113.	0.2
NORM BUTANE	70.	54.	0.9	11.	0.5	2138.	55.	1658.	0.9	339.	0.5
TOTL BUTENES	284.	204.	3.3	43.	2.0	8732.	209.	6274.	3.2	1332.	2.0
1,3 - BUTADINE	23.	16.	0.2	3.	0.2	713.	16.	480.	0.2	105.	0.2
C5 AND HEAVIER	545.	539.	8.6	128.	6.1	16750.	553.	16583.	8.5	3947.	6.0

OPERATION DATA REPORT FOR UNIT NO. 12 COKING UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	358.204	5.453	366.329	5.475
COKE BURNED MLBS	159.564	6.852	163.183	6.865
COKER VOL YIELD	6636.203	101.023	6853.762	102.434
COKER WEIGHT YIELD	2273.103	97.612	2344.450	98.632
LOSS/ GAIN VOL	-67.203	-1.023	-162.862	-2.434
LOSS(-GAIN) WEIGHT	55.619	2.388	32.508	1.368

[illegible]

TOSCO - BAKERSFIELD REFINERY

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING 12 AM TUE NOV 30 1982

***** UNIT 17 - TCC UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 29

	TODAY				MONTH TO DATE				STREAM MTD AVG		CALNDR MTD AVG	
	VOLUME		WEIGHT		VOLUME		WEIGHT		VOL	WT	VOL	WT
STREAM	BBLS	PCT	MLBS	PCT	BBLS	PCT	MLBS	PCT	BBLS/SD	MLBS/SD	BBLS/CD	MLBS/CD
[illegible]												
[illegible]	7652.	75.0	2489.	74.1	224919.	74.1	73571.	73.2	7756.	2537.	7497.	2452.
[illegible]	2552.	25.0	872.	25.9	78635.	25.9	26873.	26.0	2712.	927.	2621.	896.
TOTAL [illegible]	10204.	100.0	3360.	100.0	303554.	100.0	100444.	100.0	10467.	3464.	10118.	3348.
[illegible]												
[illegible]	2151.	21.1	619.	18.4	59545.	19.6	17141.	17.1	2053.	591.	1985.	571.
[illegible] GASOLINE	3727.	36.5	1056.	31.4	96510.	31.8	27318.	27.2	3328.	942.	3217.	911.
[illegible] OIL	2448.	24.0	856.	25.5	76903.	25.3	24976.	24.9	2652.	861.	2563.	833.
[illegible] TO RESID	0.	0.0	0.	0.0	4210.	1.4	1361.	1.4	145.	47.	140.	45.
[illegible] TO [illegible]	0.	0.0	0.	0.0	18.	0.0	6.	0.0	1.	0.	1.	0.
[illegible] TO [illegible]	0.	0.0	0.	0.0	2679.	0.9	895.	0.9	92.	31.	89.	30.
[illegible] TO [illegible]	1320.	12.9	463.	13.8	51613.	17.0	18040.	18.0	1780.	622.	1720.	601.
[illegible]	605.	5.9	225.	6.7	17191.	5.7	6071.	6.1	593.	210.	573.	203.
[illegible] TO COKER	205.	2.0	70.	2.1	3650.	1.2	1254.	1.2	126.	43.	122.	42.
[illegible]	117.	1.1	41.	1.2	850.	0.3	297.	0.3	29.	10.	28.	10.
TOTAL [illegible]	10573.	103.6	3331.	99.1	313169.	103.2	97378.	96.9	10799.	3358.	10439.	3246.
[illegible]	-369.	-3.6	29.	0.9	-9615.	-3.2	3066.	3.1	-332.	106.	-320.	102.
[illegible]	10204.	100.0	3360.	100.0	303554.	100.0	100444.	100.0	10467.	3464.	10118.	3348.

[illegible]	TODAY					MONTH-TO-DATE					
[illegible]	GAS	VOL	VOL	WT	WT	GAS	AVG	VOL	VOL	WT	WT
	MSCF	B/D	PCT	MLBS	PCT	MSCF	B/D	BBLS	PCT	MLBS	PCT
[illegible]	[illegible]	900.	8.5	238.	7.1	153586.	831.	24917.	8.0	6580.	6.8
[illegible]	[illegible]	276.	2.6	49.	1.5	11041.	253.	7590.	2.4	1346.	1.4
[illegible]	627.	399.	3.8	73.	2.2	17312.	366.	10985.	3.5	2004.	2.1
[illegible]	244.	204.	1.9	40.	1.2	6699.	186.	5567.	1.8	1096.	1.1
[illegible]	177.	145.	1.4	30.	0.9	4838.	132.	3946.	1.3	806.	0.8
[illegible]	[illegible]	457.	4.3	97.	2.9	16251.	416.	12466.	4.0	2645.	2.7
[illegible]	0.	0.	0.0	0.	0.0	0.	0.	0.	0.0	0.	0.0
[illegible]	[illegible]	4085.	38.6	972.	29.2	107314.	3561.	106833.	34.1	25429.	26.1

OPERATION DATA REPORT FOR UNIT NO. 17 TCC UNIT

956.70 x 10 = 1970) 600

	TODY	PCT	AMTD	PCT
[illegible]	425.216	4.167	~~425.518~~	4.205
[illegible]	189.281	5.633	189.415	5.657
TCC VOL YIELD	10998.215	107.783	10864.480	107.373
TCC [illegible] YIELD	3520.437	104.771	3435.350	102.605
[illegible]	-794.215	-7.783	-746.017	-7.373
[illegible]	-160.317	-4.771	-87.223	-2.605
[illegible]	[illegible]	[illegible]		59.775

[illegible]

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT FRI DEC 31 1982

***** UNIT 12 - COKING UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 31

		TODAY				MONTH TO DATE				STREAM MTD AVG		CALNDR MTD AVG	
		VOLUME		WEIGHT		VOLUME		WEIGHT		VOL	WT	VOL	WT
	STREAM	BBLS	PCT	MLBS	PCT	BBLS	PCT	MLBS	PCT	BBLS/SD	MLBS/SD	BBLS/CD	MLBS/CD
	CHARGES												
CF12	PITCH TO COKER	6891.	94.7	2470.	95.2	207070.	91.9	73883.	92.5	6680.	2383.	6680.	2383.
RC12	REDUCED CRUDE	0.	0.0	0.	0.0	6083.	2.7	2084.	2.6	196.	67.	196.	67.
SL12	SLOPS	388.	5.3	124.	4.8	12175.	5.4	3887.	4.9	393.	125.	393.	125.
PC12	PURCHASED CYCLE	0.	0.0	0.	0.0	67.	0.0	22.	0.0	2.	1.	2.	1.
	TOTAL CHARGES	7279.	100.0	2594.	*100.0	225395.	100.0	79876.	100.0	7271.	2577.	7271.	2577.
	YIELDS												
12KW	WET GAS	1704.	23.4	522.	20.1	50222.	22.3	15384.	19.3	1620.	496.	1620.	496.
12KN	COKER NAPHTHA	1234.	17.0	352.	13.6	38970.	17.3	11117.	13.9	1257.	359.	1257.	359.
12GO	FLUSHING OIL	34.	0.5	11.	0.4	1054.	0.5	356.	0.4	34.	11.	34.	11.
12KG	HVY COKER G.O.	3272.	45.0	1129.	43.5	95661.	42.4	33073.	41.4	3086.	1067.	3086.	1067.
12SL	SLOPS	162.	2.2	62.	2.4	4418.	2.0	1735.	2.2	143.	56.	143.	56.
12CK	COKE	1033.	14.2	460.	17.7	23622.	10.5	10520.	13.2	762.	339.	762.	339.
	TOTAL YIELDS	7439.	102.2	2536.	97.8	213947.	94.9	72185.	90.4	6902.	2329.	6902.	2329.
	LOSS(-GAIN)	-160.	-2.2	58.	2.2	11448.	5.1	7691.	9.6	369.	248.	369.	248.
	TOTAL	7279.	100.0	2594.	100.0	225395.	100.0	79876.	100.0	7271.	2577.	7271.	2577.

COMPOSITION OF	TODAY					MONTH-TO-DATE					
GAS AND CONDENSATE	GAS	VOL	VOL	WT	WT	GAS	AVG	VOL	VOL	WT	WT
	MSCF	B/D	PCT	MLBS	PCT	MSCF	B/D	BBLS	PCT	MLBS	PCT
GAS(FOE)	4395.	765.	10.3	232.	9.2	129544.	727.	22552.	10.5	6848.	9.5
PROPANE	295.	197.	2.6	35.	1.4	8709.	187.	5809.	2.7	1030.	1.4
PROPYLENE	462.	285.	3.8	52.	2.1	13608.	271.	8403.	3.7	1533.	2.1
ISOBUTANE	25.	20.	0.3	4.	0.2	726.	19.	582.	0.3	115.	0.2
NORM BUTANE	74.	57.	0.8	12.	0.5	2177.	54.	1688.	0.8	345.	0.5
TOTL BUTENES	302.	217.	2.9	46.	1.8	8890.	206.	6389.	3.0	1356.	1.9
1,3 - BUTADINE	25.	17.	0.2	4.	0.1	726.	16.	489.	0.2	107.	0.1
C5 AND HEAVIER	579.	573.	7.7	136.	5.4	17055.	545.	16884.	7.9	4019.	5.6

OPERATION DATA REPORT FOR UNIT NO. 12 COKING UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	369.717	5.079	374.220	5.147
COKE BURNED MLBS	164.692	6.350	166.698	6.470
COKER VOL YIELD	7808.715	107.277	7275.734	100.068
COKER WEIGHT YIELD	2700.598	104.128	2495.244	96.841
LOSS(-GAIN) VOL	-529.715	-7.277	-4.929	-0.068
LOSS(-GAIN) WEIGHT	-107.068	-4.128	81.401	3.159

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT FRI DEC 31 1982

***** UNIT 17 - TCC UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 29

	TODAY				MONTH TO DATE				STREAM MTD AVG		CALNDR MTD AVG	
	VOLUME		WEIGHT		VOLUME		WEIGHT		VOL	WT	VOL	WT
STREAM	BBLS	PCT	MLBS	PCT	BBLS	PCT	MLBS	PCT	BBLS/SD	MLBS/SD	BBLS/CD	MLBS/CD
CHARGES												
G017 GAS OIL	8925.	75.4	2917.	74.6	271314.	79.0	87894.	78.1	9356.	3031.	8752.	2835.
TA17 T.S. BOTTOMS	2909.	24.6	992.	25.4	72233.	21.0	24655.	21.9	2491.	850.	2330.	795.
TOTAL CHARGES	11834.	100.0	3909.	100.0	343547.	100.0	112549.	100.0	11846.	3881.	11082.	3631.
YIELDS												
17WG CAT WET GAS	2230.	18.8	642.	16.4	62734.	18.3	18059.	16.0	2163.	623.	2024.	583.
17RG CAT RAW GASOLINE	3813.	32.2	1078.	27.6	120657.	35.1	34100.	30.3	4161.	1176.	3892.	1100.
17LC LT CYCLE OIL	2711.	22.9	834.	21.3	81760.	23.8	27580.	24.5	2819.	951.	2637.	890.
17C1 RECYCLE TO RESID	295.	2.5	95.	2.4	3786.	1.1	1224.	1.1	131.	42.	122.	39.
17C3 LCCO TO RESID	22.	0.2	8.	0.2	1922.	0.6	665.	0.6	66.	23.	62.	21.
17C7 LCCO TO CBO	0.	0.0	0.	0.0	503.	0.1	176.	0.2	17.	6.	16.	6.
17RO RESID TO SALES	2108.	17.8	740.	18.9	43260.	12.6	15192.	13.5	1492.	524.	1395.	490.
17CB CARBON BLACK	279.	2.4	104.	2.7	18795.	5.5	6853.	6.1	648.	236.	606.	221.
17CF TS BTMS TO COKER	0.	0.0	0.	0.0	151.	0.0	52.	0.0	5.	2.	5.	2.
17FO RESID TO BURN	22.	0.2	8.	0.2	567.	0.2	199.	0.2	20.	7.	18.	6.
TOTAL YIELDS	11480.	97.0	3508.	89.7	334135.	97.3	104100.	92.5	11522.	3590.	10779.	3358.
LOSS(-GAIN)	354.	3.0	401.	10.3	9412.	2.7	8449.	7.5	325.	291.	304.	273.
TOTAL	11834.	100.0	3909.	100.0	343547.	100.0	112549.	100.0	11846.	3881.	11082.	3631.

COMPOSITION OF	TODAY					MONTH-TO-DATE					
GAS AND CONDENSATE	GAS MSCF	VOL B/D	VOL PCT	WT MLBS	WT PCT	GAS MSCF	AVG B/D	VOL BBLS	VOL PCT	WT MLBS	WT PCT
GAS(FOE)	5752.	933.	8.1	246.	7.0	161828.	847.	26259.	7.9	6935.	6.7
PROPANE	415.	286.	2.5	51.	1.4	11765.	262.	8129.	2.4	1442.	1.4
PROPYLENE	650.	413.	3.6	75.	2.1	18391.	378.	11725.	3.5	2139.	2.1
ISOBUTANE	253.	210.	1.8	41.	1.2	7247.	195.	6054.	1.8	1192.	1.1
NORM BUTANE	183.	150.	1.3	31.	0.9	5268.	140.	4328.	1.3	884.	0.8
TOTL BUTENES	614.	473.	4.1	100.	2.9	17672.	441.	13684.	4.1	2904.	2.8
1,3 - BUTADINE	0.	0.	0.0	0.	0.0	0.	0.	0.	0.0	0.	0.0
C5 AND HEAVIER	4205.	4187.	36.5	997.	28.4	130824.	4204.	130318.	39.0	31032.	29.8

OPERATION DATA REPORT FOR UNIT NO. 17 TCC UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	438.569	3.706	445.024	4.016
COKE BURNED MLBS	195.225	4.994	198.098	5.456
TCC VOL YIELD	11918.566	100.715	11223.570	101.276
TCC WEIGHT YIELD	3703.318	94.736	3556.159	97.949
LOSS(-GAIN) VOL	-84.566	-0.715	-141.409	-1.276
LOSS(-GAIN) WEIGHT	205.784	5.264	74.464	2.031

CONVERSION PERCENT TODAY 65.998 CONVERSION PERCENT MTD = 64.503

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MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT MON JAN 31 1983

***** UNIT 12 - COKING UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 30

	TODAY				MONTH TO DATE				STREAM MTD AVG		CALNDR MTD AVG	
	VOLUME		WEIGHT		VOLUME		WEIGHT		VOL	WT	VOL	WT
STREAM	BBLS	PCT	MLBS	PCT	BBLS	PCT	MLBS	PCT	BBLS/SD	MLBS/SD	BBLS/CD	MLBS/CD
CHARGES												
CF12 COKER FEED	6805.	95.4	2430.	95.9	190815.	88.5	68361.	89.3	6361.	2279.	6155.	2205.
RC12 REDUCED CRUDE	0.	0.0	0.	0.0	10877.	5.0	3726.	4.9	363.	124.	351.	120.
SL12 SLOPS	328.	4.6	105.	4.1	13983.	6.5	4465.	5.8	466.	149.	451.	144.
TOTAL CHARGES	7133.	100.0	2535.	100.0	215675.	100.0	76552.	100.0	7189.	2552.	6957.	2469.
YIELDS												
12KW WET GAS	1954.	27.4	599.	23.6	51084.	23.7	15648.	20.4	1703.	522.	1648.	505.
12KN COKER NAPHTHA	798.	11.2	228.	9.0	33455.	15.5	9543.	12.5	1115.	318.	1079.	308.
12GO FLUSHING OIL	34.	0.5	11.	0.5	884.	0.4	298.	0.4	29.	10.	29.	10.
12KO HVY COKER G.O.	3226.	45.2	1104.	43.6	97468.	45.2	33355.	43.6	3249.	1112.	3144.	1076.
12SL SLOPS	140.	2.0	54.	2.1	4438.	2.1	1689.	2.2	148.	56.	143.	54.
12CK COKE	740.	10.4	330.	13.0	24157.	11.2	10759.	14.1	805.	359.	779.	347.
TOTAL YIELDS	6892.	96.6	2326.	91.8	211486.	98.1	71294.	93.1	7050.	2376.	6822.	2300.
LOSS(-GAIN)	241.	3.4	209.	8.2	4189.	1.9	5258.	6.9	140.	175.	135.	170.
TOTAL	7133.	100.0	2535.	100.0	215675.	100.0	76552.	100.0	7189.	2552.	6957.	2469.

COMPOSITION OF GAS AND CONDENSATE	TODAY					MONTH-TO-DATE					
	GAS MSCF	VOL B/D	VOL PCT	WT MLBS	WT PCT	GAS MSCF	AVG B/D	VOL BBLS	VOL PCT	WT MLBS	WT PCT
GAS(FOE)	5040.	877.	12.7	266.	11.5	131757.	740.	22937.	10.8	6965.	9.8
PROPANE	339.	226.	3.3	40.	1.7	8858.	191.	5909.	2.8	1048.	1.5
PROPYLENE	529.	327.	4.7	60.	2.6	13840.	276.	8546.	4.0	1559.	2.2
ISOBUTANE	28.	23.	0.3	4.	0.2	738.	19.	592.	0.3	117.	0.2
NORM BUTANE	85.	66.	1.0	13.	0.6	2214.	55.	1717.	0.8	351.	0.5
TOTL BUTENES	346.	249.	3.6	53.	2.3	9042.	210.	6498.	3.1	1379.	1.9
1,3 - BUTADINE	28.	19.	0.3	4.	0.2	738.	16.	497.	0.2	109.	0.2
C5 AND HEAVIER	664.	657.	9.5	156.	6.7	17346.	554.	17173.	8.1	4088.	5.7

OPERATION DATA REPORT FOR UNIT NO. 12 COKING UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	340.848	4.778	355.019	5.103
COKE BURNED MLBS	151.832	5.990	158.145	6.404
COKER VOL. YIELD	7232.848	101.400	7177.145	103.160
COKER WEIGHT YIELD	2477.588	97.745	2457.935	99.536
LOSS(-GAIN) VOL	-99.848	-1.400	-219.889	-3.160
LOSS(-GAIN) WEIGHT	57.163	2.255	11.470	0.464

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT MON-JAN 31-1983

***** UNIT 17 - TCC UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 27

STREAM	TODAY VOLUME BBLS	TODAY VOLUME PCT	TODAY WEIGHT MLBS	TODAY WEIGHT PCT	MONTH TO DATE VOLUME BBLS	MONTH TO DATE VOLUME PCT	MONTH TO DATE WEIGHT MLBS	MONTH TO DATE WEIGHT PCT	STREAM MTD AVG VOL BBLS/SD	STREAM MTD AVG WT MLBS/SD	CALNDR MTD AVG VOL BBLS/CD	CALNDR MTD AVG WT MLBS/CD
CHARGES												
G017 GAS OIL	8300.	73.0	2684.	71.9	228379.	75.2	74100.	74.2	8458.	2744.	7367.	2390.
TA17 T.S. BOTTOMS	3068.	27.0	1048.	28.1	75428.	24.8	25736.	25.8	2794.	953.	2433.	830.
TOTAL CHARGES	11368.	100.0	3732.	100.0	303807.	100.0	99836.	100.0	11252.	3698.	9800.	3221.
YIELDS												
17WG CAT WET GAS	2495.	21.9	718.	19.2	58569.	19.3	16860.	16.9	2169.	624.	1889.	544.
17RG CAT RAW GASOLINE	2761.	24.3	789.	21.1	93210.	30.7	26524.	26.6	3452.	982.	3007.	856.
17LC LT CYCLE OIL	3421.	30.1	1031.	27.6	76808.	25.3	26193.	26.2	2845.	970.	2478.	845.
17C1 RECYCLE TO RESID	0.	0.0	0.	0.0	1212.	0.4	392.	0.4	45.	15.	39.	13.
17C3 LCCO TO RESID	0.	0.0	0.	0.0	65.	0.0	23.	0.0	2.	1.	2.	1.
17C2 LCCO TO F.O.	0.	0.0	0.	0.0	239.	0.1	81.	0.1	9.	3.	8.	3.
17C7 LCCO TO CBO	0.	0.0	0.	0.0	539.	0.2	189.	0.2	20.	7.	17.	6.
17RO RESID TO SALES	2416.	21.3	848.	22.7	41875.	13.8	14759.	14.8	1551.	547.	1351.	476.
17CB CARBON BLACK	0.	0.0	0.	0.0	6248.	2.1	1992.	2.0	231.	74.	202.	64.
17CF COKER FEED	0.	0.0	0.	0.0	15997.	5.3	5636.	5.6	592.	209.	516.	182.
17FO RESID TO BURN	75.	0.7	27.	0.7	1336.	0.4	469.	0.5	49.	17.	43.	15.
TOTAL YIELDS	11168.	98.2	3413.	91.4	296098.	97.5	93118.	93.3	10967.	3449.	9552.	3004.
LOSS(-GAIN)	200.	1.8	319.	8.6	7709.	2.5	6718.	6.7	286.	249.	249.	217.
TOTAL	11368.	100.0	3732.	100.0	303807.	100.0	99836.	100.0	11252.	3698.	9800.	3221.

COMPOSITION OF GAS AND CONDENSATE	TODAY GAS MSCF	TODAY VOL B/D	TODAY VOL PCT	TODAY WT MLBS	TODAY WT PCT	MONTH-TO-DATE GAS MSCF	MONTH-TO-DATE AVG B/D	MONTH-TO-DATE VOL BBLS	MONTH-TO-DATE VOL PCT	MONTH-TO-DATE WT MLBS	MONTH-TO-DATE WT PCT
GAS(FOE)	6433.	1043.	9.3	276.	8.1	151062.	791.	24507.	8.3	6472.	7.0
PROPANE	454.	309.	2.8	55.	1.6	10847.	240.	7453.	2.5	1322.	1.4
PROPYLENE	715.	450.	4.0	82.	2.4	17014.	348.	10791.	3.6	1968.	2.1
ISOBUTANE	268.	220.	2.0	43.	1.3	6572.	176.	5458.	1.8	1074.	1.2
NORM BUTANE	191.	154.	1.4	31.	0.9	4743.	125.	3866.	1.3	790.	0.8
TOTL BUTENES	644.	485.	4.3	103.	3.0	15935.	394.	12211.	4.1	2591.	2.8
1,3 BUTADINE	0.	0.	0.0	0.	0.0	0.	0.	0.	0.0	0.	0.0
C5 AND HEAVIER	3296.	3276.	29.3	779.	22.8	103946.	3338.	103474.	34.9	24628.	26.4

OPERATION DATA REPORT FOR UNIT NO. 17 TCC UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	476.672	4.193	443.920	4.530
COKE BURNED MLBS	212.186	5.685	197.606	6.136
TCC VOL YIELD	11644.672	102.434	9995.465	101.992
TCC WEIGHT YIELD	3625.078	97.129	3201.405	99.407
LOSS(-GAIN) VOL	-276.672	-2.434	-195.242	-1.992

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MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT MON FEB 28 1983

***** UNIT 12 - COKING UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 28

	TODAY				MONTH TO DATE				STREAM MTD AVG		CALNDR MTD AVG	
	VOLUME		WEIGHT		VOLUME		WEIGHT		VOL	WT	VOL	WT
STREAM	BBLS	PCT	MLBS	PCT	BBLS	PCT	MLBS	PCT	BBLS/SD	MLBS/SD	BBLS/CD	MLBS/CD
CHARGES												
CF12 COKER FEED	4336.	62.5	1545.	63.5	179089.	92.2	64004.	92.9	6396.	2286.	6396.	2286.
RC12 REDUCED CRUDE	2454.	35.3	841.	34.5	2454.	1.3	841.	1.2	88.	30.	88. (484	30.
SL12 SLOPS	153.	2.2	49.	2.0	12649.	6.5	4039.	5.9	452.	144.	452.	144.
TOTAL CHARGES	6943.	100.0	2434.	100.0	194192.	100.0	68884.	100.0	6935.	2460.	6935.	2460.
YIELDS												
12KW WET GAS	1693.	24.4	592.	24.3	52621.	27.1	16418.	23.8	1879.	586.	1879.	586.
12KN COKER NAPHTHA	1172.	16.9	334.	13.7	32844.	16.9	9369.	13.6	1173.	335.	1173.	335.
12GO FLUSHING OIL	0.	0.0	0.	0.0	748.	0.4	252.	0.4	27.	9.	27.	9.
12KG HVY COKER G.O.	2807.	40.4	966.	39.7	85218.	43.9	29421.	42.7	3044.	1051.	3044.	1051.
12SL SLOPS	0.	0.0	0.	0.0	3541.	1.8	1362.	2.0	126.	49.	126.	49.
12CK COKE	550.	7.9	245.	10.1	19253.	9.9	8575.	12.4	688.	306.	688.	306.
TOTAL YIELDS	6222.	89.6	2138.	87.8	194225.	100.0	65397.	94.9	6937.	2336.	6937.	2336.
LOSS(-GAIN)	721.	10.4	297.	12.2	-33.	-0.0	3487.	5.1	-1.	125.	-1.	125.
TOTAL	6943.	100.0	2434.	100.0	194192.	100.0	68884.	100.0	6935.	2460.	6935.	2460.

COMPOSITION OF	TODAY					MONTH-TO-DATE					
GAS AND CONDENSATE	GAS MSCF	VOL B/D	VOL PCT	WT MLBS	WT PCT	GAS MSCF	AVG B/D	VOL BBLS	VOL PCT	WT MLBS	WT PCT
GAS(FOE)	0.	0.	0.0	0.	0.0	117979.	734.	20538.	10.6	6237.	9.5
PROPANE	0.	0.	0.0	0.	0.0	7931.	189.	5291.	2.7	938.	1.4
PROPYLENE	0.	0.	0.0	0.	0.0	12393.	273.	7652.	3.9	1396.	2.1
ISOBUTANE	0.	0.	0.0	0.	0.0	661.	19.	530.	0.3	104.	0.2
NORM BUTANE	0.	0.	0.0	0.	0.0	1983.	55.	1537.	0.8	314.	0.5
TOTL BUTENES	0.	0.	0.0	0.	0.0	8097.	208.	5818.	3.0	1235.	1.9
1,3 - BUTADINE	0.	0.	0.0	0.	0.0	661.	16.	445.	0.2	98.	0.1
C5 AND HEAVIER	0.	0.	0.0	0.	0.0	15532.	549.	15377.	7.9	3660.	5.6

OPERATION DATA REPORT FOR UNIT NO. 12 COKING UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	369.235	5.318	336.359	4.850
COKE BURNED MLBS	164.478	6.756	149.833	6.090
COKER VOL YIELD	6591.234	94.934	7272.965	104.867
COKER WEIGHT YIELD	2302.036	94.563	2485.435	101.029
LOSS(-GAIN) VOL	351.766	5.066	-337.538	-4.867
LOSS(-GAIN) WEIGHT	132.354	5.437	-25.304	-1.029

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT MON FEB 28 1983 PAGE 6

***** UNIT 17 - TCC UNIT ***** HOURS ON STREAM THIS PERIOD 0 DAYS ON STREAM THIS MONTH 21

STREAM		TODAY VOLUME BBLS	TODAY VOLUME PCT	TODAY WEIGHT MLBS	TODAY WEIGHT PCT	MONTH TO DATE VOLUME BBLS	MONTH TO DATE VOLUME PCT	MONTH TO DATE WEIGHT MLBS	MONTH TO DATE WEIGHT PCT	STREAM MTD AVG VOL BBLS/SD	STREAM MTD AVG WT MLBS/SD	CALNDR MTD AVG VOL BBLS/CD	CALNDR MTD AVG WT MLBS/CD
CHARGES													
G017	GAS OIL	0.	0.0	0.	0.0	148716.	71.1	48667.	70.3	7082.	2317.	5311.	1738.
TA17	T.S. BOTTOMS	0.	0.0	0.	0.0	60331.	28.9	20601.	29.7	2873.	981.	2155.	736.
TOTAL CHARGES		0.	0.0	0.	0.0	209047.	100.0	69268.	100.0	9955.	3298.	7466.	2474.
YIELDS													
17WG	CAT WET GAS	0.	0.0	0.	0.0	49632.	23.7	14287.	20.6	2363.	680.	1773.	510.
17RG	CAT RAW GASOLINE	0.	0.0	0.	0.0	48661.	23.3	14155.	20.4	2317.	674.	1738.	506.
17LC	LT CYCLE OIL	0.	0.0	0.	0.0	32809.	15.7	9943.	14.4	1562.	473.	1172.	355.
17C3	LCCO TO RESID	0.	0.0	0.	0.0	1015.	0.5	337.	0.5	48.	16.	36.	12.
17RO	RESID TO SALES	0.	0.0	0.	0.0	48467.	23.2	17012.	24.6	2308.	810.	1731.	608.
17CF	COKER FEED	0.	0.0	0.	0.0	5329.	2.5	1874.	2.7	254.	89.	190.	67.
17FO	RESID TO BURN	0.	0.0	0.	0.0	2935.	1.4	1031.	1.5	140.	49.	105.	37.
TOTAL YIELDS		0.	0.0	0.	0.0	188848.	90.3	58638.	84.7	8993.	2792.	6745.	2094.
LOSS(-GAIN)		0.	0.0	0.	0.0	20199.	9.7	10630.	15.3	962.	506.	721.	380.
TOTAL		0.	0.0	0.	0.0	209047.	100.0	69268.	100.0	9955.	3298.	7466.	2474.

COMPOSITION OF GAS AND CONDENSATE	TODAY GAS MSCF	TODAY VOL B/D	TODAY VOL PCT	TODAY WT MLBS	TODAY WT PCT	MONTH-TO-DATE GAS MSCF	MONTH-TO-DATE AVG B/D	MONTH-TO-DATE VOL BBLS	MONTH-TO-DATE VOL PCT	MONTH-TO-DATE WT MLBS	MONTH-TO-DATE WT PCT
GAS(FOE)	0.	0.	0.0	0.	0.0	127987.	741.	20756.	11.0	5482.	9.3
PROPANE	0.	0.	0.0	0.	0.0	8980.	218.	6104.	3.2	1083.	1.8
PROPYLENE	0.	0.	0.0	0.	0.0	14176.	318.	8902.	4.7	1624.	2.8
ISOBUTANE	0.	0.	0.0	0.	0.0	5266.	154.	4322.	2.3	851.	1.5
NORM BUTANE	0.	0.	0.0	0.	0.0	3747.	107.	3003.	1.6	614.	1.0
TOTL BUTENES	0.	0.	0.0	0.	0.0	12624.	338.	9469.	5.0	2009.	3.4
1,3 - BUTADINE	0.	0.	0.0	0.	0.0	0.	0.	0.	0.0	0.	0.0
C5 AND HEAVIER	0.	0.	0.0	0.	0.0	59701.	2118.	59300.	31.4	14092.	24.0

OPERATION DATA REPORT FOR UNIT NO. 17 TCC UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	253.687	0.0	397.249	5.321
COKE BURNED MLBS	112.926	0.0	176.832	7.148
TCC VOL YIELD	253.687	0.0	7141.816	95.658
TCC WEIGHT YIELD	112.926	0.0	2271.058	91.802
LOSS(-GAIN) VOL	-253.687	100.000	324.145	4.342
LOSS(-GAIN) WEIGHT	-112.926	100.000	202.812	8.198

CONVERSION PERCENT TODAY 100.000 CONVERSION PERCENT MTD = 77.794
SYN TOWER RECYCLE TODAY 0.0 SYN TOWER RECYCLE AMTD = 0.0
TC30 FFU SIDECUT TODAY 0.0 TC30 FFU SIDECUT AMTD = 797.893

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TOSCO - BAKERSFIELD REFINERY

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT THU MAR 31 1983 PAGE 4

***** UNIT 12 - COKING UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 31

STREAM	TODAY VOLUME BBLS	PCT	TODAY WEIGHT MLBS	PCT	MONTH TO DATE VOLUME BBLS	PCT	MONTH TO DATE WEIGHT MLBS	PCT	STREAM MTD AVG VOL BBLS/SD	WT MLBS/SD	CALNDR MTD AVG VOL BBLS/CD	WT MLBS/CD
CHARGES												
CF12 COKER FEED	6190.	91.4	2246.	92.4	195366. 196005	94.7	69915.	95.2	6302.	2255.	6302. 6323	2255.
RC12 REDUCED CRUDE	0.	0.0	0.	0.0	639.	0.3	219.	0.3	21.	7.	21.	7.
SL12 SLOPS	579.	8.6	185.	7.6	10399.	5.0	3320.	4.5	335.	107.	335.	107.
TOTAL CHARGES	6769.	100.0	2431.	100.0	206404.	100.0	73454.	100.0	6658.	2369.	6658.	2369.
YIELDS												
12KW WET GAS	1611.	23.8	493.	20.3	54687.	26.5	18490.	25.2	1764.	596.	1764.	596.
12KN COKER NAPHTHA	1308.	19.3	373.	15.3	35047.	17.0	9998.	13.6	1131.	323.	1131.	323.
12GO FLUSHING OIL	34.	0.5	11.	0.5	272.	0.1	92.	0.1	9.	3.	9.	3.
12KG HVY COKER G.O.	2701.	39.9	932.	38.3	81455.	39.5	28146.	38.3	2628.	908.	2628.	908.
12SL SLOPS	162.	2.4	62.	2.6	1186.	0.6	465.	0.6	38.	15.	38.	15.
12CK COKE	671.	9.9	299.	12.3	21023.	10.2	9363.	12.7	678.	302.	678.	302.
TOTAL YIELDS	6487.	95.8	2171.	89.3	193670.	93.8	66554.	90.6	6247.	2147.	6247.	2147.
LOSS(-GAIN)	282.	4.2	260.	10.7	12734.	6.2	6900.	9.4	411.	223.	411.	223.
TOTAL	6769.	100.0	2431.	100.0	206404.	100.0	73454.	100.0	6658.	2369.	6658.	2369.

COMPOSITION OF GAS AND CONDENSATE	TODAY GAS MSCF	VOL B/D	VOL PCT	WT MLBS	WT PCT	MONTH-TO-DATE GAS MSCF	AVG B/D	VOL BBLS	VOL PCT	WT MLBS	WT PCT
GAS(FOE)	4155.	723.	11.1	220.	10.1	37861.	213.	6591.	3.4	2002.	3.0
PROPANE	279.	186.	2.9	33.	1.5	2545.	55.	1698.	0.9	301.	0.5
PROPYLENE	436.	269.	4.2	49.	2.3	3977.	79.	2456.	1.3	448.	0.7
ISOBUTANE	23.	19.	0.3	4.	0.2	212.	5.	170.	0.1	34.	0.1
NORM BUTANE	70.	54.	0.8	11.	0.5	636.	16.	493.	0.3	101.	0.2
TOTL BUTENES	285.	205.	3.2	43.	2.0	2598.	60.	1867.	1.0	396.	0.6
1,3 - BUTADINE	23.	16.	0.2	3.	0.2	212.	5.	143.	0.1	31.	0.0
C5 AND HEAVIER	547.	542.	8.3	129.	5.9	4985.	159.	4935.	2.5	1175.	1.8

OPERATION DATA REPORT FOR UNIT NO. 12 COKING UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	353.083	5.216	352.568 10930	5.295
COKE BURNED MLBS	157.282	6.470	157.053	6.628
COKER VOL YIELD	6840.082	101.050	6599.984	99.126
COKER WEIGHT YIELD	2328.243	95.775	2303.951	97.234
LOSS(-GAIN) VOL	-71.082	-1.050	58.208	0.874
LOSS(-GAIN) WEIGHT	102.696	4.225	65.540	2.766

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MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT THU MAR 31 1983

***** UNIT 17 - TCC UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 9

STREAM	TODAY VOLUME BBLS	TODAY VOLUME PCT	TODAY WEIGHT MLBS	TODAY WEIGHT PCT	MONTH TO DATE VOLUME BBLS	MONTH TO DATE VOLUME PCT	MONTH TO DATE WEIGHT MLBS	MONTH TO DATE WEIGHT PCT	STREAM MTD AVG VOL BBLS/SD	STREAM MTD AVG WT MLBS/SD	CALNDR MTD AVG VOL BBLS/CD	CALNDR MTD AVG WT MLBS/CD
CHARGES												
GO17 GAS OIL	8064.	70.0	2664.	69.3	51722.	69.1	17117.	68.4	5747.	1902.	1668.	552.
TA17 T.B. BOTTOMS	3454.	30.0	1179.	30.7	23181.	30.9	7920.	31.6	2576.	880.	748.	255.
TOTAL CHARGES	11518.	100.0	3843.	100.0	74903.	100.0	25037.	100.0	8323.	2782.	2416.	808.
YIELDS												
17WG CAT WET GAS	1899.	16.5	547.	14.2	12110.	16.2	3486.	13.9	1346.	387.	391.	112.
17RG CAT RAW GASOLINE	3466.	30.1	982.	25.6	24081.	32.1	6833.	27.3	2676.	759.	777.	220.
17LC LT CYCLE OIL	2332.	20.2	716.	18.6	18213.	24.3	5396.	21.6	2024.	600.	588.	174.
17C3 LCCO TO RESID	173.	1.5	61.	1.6	220.	0.3	77.	0.3	24.	9.	7.	2.
17C2 LCCO TO F.O.	0.	0.0	0.	0.0	156.	0.2	53.	0.2	17.	6.	5.	2.
17C7 LCCO TO CBO	109.	0.9	38.	1.0	569.	0.8	199.	0.8	63.	22.	18.	6.
17RO RESID TO SALES	2658.	23.1	928.	24.2	16195.	21.6	5692.	22.7	1799.	632.	522.	184.
17CB CARBON BLACK	569.	4.9	152.	3.9	2763.	3.7	818.	3.3	307.	91.	89.	26.
TOTAL YIELDS	11206.	97.3	3423.	89.1	74307.	99.2	22554.	90.1	8256.	2506.	2397.	728.
LOSS(-GAIN)	312.	2.7	420.	10.9	596.	0.8	2483.	9.9	66.	276.	19.	80.
TOTAL	11518.	100.0	3843.	100.0	74903.	100.0	25037.	100.0	8323.	2782.	2416.	808.

COMPOSITION OF GAS AND CONDENSATE	TODAY GAS MSCF	TODAY VOL B/D	TODAY VOL PCT	TODAY WT MLBS	TODAY WT PCT	MTD GAS MSCF	MTD AVG B/D	MTD VOL BBLS	MTD VOL PCT	MTD WT MLBS	MTD WT PCT
GAS(FOE)	4898.	795.	7.1	210.	6.1	31240.	164.	5069.	6.8	1339.	5.9
PROPANE	355.	245.	2.2	43.	1.3	2277.	51.	1575.	2.1	279.	1.2
PROPYLENE	555.	353.	3.2	64.	1.9	3556.	73.	2270.	3.1	414.	1.8
ISOBUTANE	217.	181.	1.6	36.	1.0	1407.	38.	1177.	1.6	232.	1.0
NORM BUTANE	158.	129.	1.2	26.	0.8	1024.	27.	843.	1.1	172.	0.8
TOTL BUTENES	529.	409.	3.6	87.	2.5	3434.	86.	2664.	3.6	565.	2.5
1,3 - BUTADINE	0.	0.	0.0	0.	0.0	0.	0.	0.	0.0	0.	0.0
C5 AND HEAVIER	3786.	3770.	33.6	898.	26.2	25993.	835.	25896.	34.8	6167.	27.3

OPERATION DATA REPORT FOR UNIT NO. 17 TCC UNIT

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	TODY	PCT	AMTD	PCT
COKE BURNED FOE	476.851	4.140	176.316	7.297
COKE BURNED MLBS	212.265	5.523	78.485	9.718
TCC VOL YIELD	11682.848	101.431	2573.314	106.501
TCC WEIGHT YIELD	3635.686	94.605	806.034	99.800
LOSS(-GAIN) VOL	-164.848	-1.431	-157.089	-6.501
LOSS(-GAIN) WEIGHT	207.316	5.395	1.616	0.200

CONVERSION PERCENT TODAY 62.847 CONVERSION PERCENT MTD = 62.800
SYN TOWER RECYCLE TODAY 0.0 SYN TOWER RECYCLE AMTD = 12.387
TC30 FPU SIDECUT TODAY 1364.000 TC30 FPU SIDECUT AMTD = 193.839

TOSCO - BAKERSFIELD REFINERY

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT SAT APR 30 1983

***** UNIT 12 - COKING UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 29

	TODAY				MONTH TO DATE				STREAM MTD AVG		CALNDR MTD AVG	
	VOLUME		WEIGHT		VOLUME		WEIGHT		VOL	WT	VOL	WT
STREAM	BBLS	PCT	MLBS	PCT	BBLS	PCT	MLBS	PCT	BBLS/SD	MLBS/SD	BBLS/CD	MLBS/CD
CHARGES												
CF12 COKER FEED	7036.	93.4	2520.	94.0	165332.	85.0	59401.	86.0	5701.	2048.	5511.	1980.
RC12 REDUCED CRUDE	0.	0.0	0.	0.0	16892.	8.7	5786.	8.4	582.	200.	563. 6074	193.
SL12 SLOPS	500.	6.6	160.	6.0	12182.	6.3	3890.	5.6	420.	134.	406.	130.
TOTAL CHARGES	7536.	100.0	2679.	100.0	194406.	100.0	69076.	100.0	6704.	2382.	6480.	2303.
YIELDS												
12KW WET GAS	1771.	23.5	543.	20.2	47617.	24.5	14841.	21.5	1642.	512.	1587.	495.
12KN COKER NAPHTHA	1478.	19.6	422.	15.7	31915.	16.4	9104.	13.2	1101.	314.	1064.	303.
12GO FLUSHING OIL	34.	0.5	11.	0.4	1020.	0.5	344.	0.5	35.	12.	34.	11.
12KG HVY COKER G.O.	3035.	40.3	1041.	38.9	79347.	40.8	27251.	39.5	2736.	940.	2645.	908.
12SL SLOPS	173.	2.3	66.	2.4	4600.	2.4	1786.	2.6	159.	62.	153.	60.
12CK COKE	968.	12.8	431.	16.1	22018.	11.3	9806.	14.2	759.	338.	734.	327.
TOTAL YIELDS	7459.	99.0	2513.	93.8	186517.	95.9	63133.	91.4	6432.	2177.	6217.	2104.
LOSS(-GAIN)	77.	1.0	166.	6.2	7889.	4.1	5943.	8.6	272.	205.	263.	198.
TOTAL	7536.	100.0	2679.	100.0	194406.	100.0	69076.	100.0	6704.	2382.	6480.	2303.

COMPOSITION OF GAS AND CONDENSATE	TODAY					MONTH-TO-DATE					
	GAS MSCF	VOL B/D	VOL PCT	WT MLBS	WT PCT	GAS MSCF	AVG B/D	VOL BBLS	VOL PCT	WT MLBS	WT PCT
GAS(FOE)	4567.	795.	10.7	241.	9.6	107683.	625.	18746.	10.1	5693.	9.0
PROPANE	307.	205.	2.7	36.	1.4	7239.	161.	4829.	2.6	857.	1.4
PROPYLENE	480.	296.	4.0	54.	2.1	11311.	233.	6985.	3.7	1274.	2.0
ISOBUTANE	26.	21.	0.3	4.	0.2	603.	16.	484.	0.3	95.	0.2
NORM BUTANE	77.	60.	0.8	12.	0.5	1810.	47.	1403.	0.8	287.	0.5
TOTL BUTENES	313.	225.	3.0	48.	1.9	7390.	177.	5310.	2.8	1127.	1.8
1,3 - BUTADINE	26.	17.	0.2	4.	0.2	603.	14.	406.	0.2	89.	0.1
C5 AND HEAVIER	601.	595.	8.0	142.	5.6	14177.	468.	14035.	7.5	3341.	5.3

OPERATION DATA REPORT FOR UNIT NO. 12 COKING UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	381.952	5.068	346.721	5.350
COKE BURNED MLBS	170.142	6.350	154.449	6.708
COKER VOL YIELD	7840.949	104.047	6563.953	101.292
COKER WEIGHT YIELD	2683.364	100.147	2258.887	98.104
LOSS(-GAIN) VOL	-304.949	-4.047	-83.754	-1.292
LOSS(-GAIN) WEIGHT	-3.929	-0.147	43.648	1.896

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TOSCO - BAKERSFIELD REFINERY

MROS - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT SAT APR 30 1983 PAGE 6

***** UNIT 17 - TCC UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 25

	STREAM	TODAY VOLUME BBLS	TODAY VOLUME PCT	TODAY WEIGHT MLBS	TODAY WEIGHT PCT	MONTH TO DATE VOLUME BBLS	MONTH TO DATE VOLUME PCT	MONTH TO DATE WEIGHT MLBS	MONTH TO DATE WEIGHT PCT	STREAM MTD AVG VOL BBLS/SD	STREAM MTD AVG WT MLBS/SD	CALNDR MTD AVG VOL BBLS/CD	CALNDR MTD AVG WT MLBS/CD
	CHARGES												
GO17	GAS OIL	8998.	70.0	2955.	69.2	214563.	71.3	70267.	70.4	8583.	2811.	7152.	2342.
TA17	T.S. BOTTOMS	3849.	30.0	1316.	30.8	86339.	28.7	29486.	29.6	3454.	1179.	2878.	983.
	TOTAL CHARGES	12847.	100.0	4270.	100.0	300902.	100.0	99752.	100.0	12036.	3990.	10030.	3325.
	YIELDS												
17WG	CAT WET GAS	2155.	16.8	620.	14.5	53120.	17.7	15291.	15.3	2125.	612.	1771.	510.
17RG	CAT RAW GASOLINE	4126.	32.1	1145.	26.8	90454.	30.1	25538.	25.6	3618.	1022.	3015.	851.
17LC	LT CYCLE OIL	3940.	30.7	1237.	29.0	67626.	22.5	21181.	21.2	2705.	847.	2254.	706.
17C1	RECYCLE TO RESID	282.	2.2	91.	2.1	2436.	0.8	787.	0.8	97.	31.	81.	26.
17C3	LCCO TO RESID	0.	0.0	0.	0.0	1891.	0.6	646.	0.6	76.	26.	63.	22.
17C2	LCCO TO F.O.	0.	0.0	0.	0.0	662.	0.2	224.	0.2	26.	9.	22.	7.
17C7	LCCO TO CBO	87.	0.7	30.	0.7	2275.	0.8	796.	0.8	91.	32.	76.	27.
17RO	RESID TO SALES	2594.	20.2	902.	21.1	68444.	22.7	24038.	24.1	2738.	962.	2281.	801.
17CB	CARBON BLACK	989.	7.7	195.	4.6	13619.	4.5	4824.	4.8	545.	193.	454.	161.
17FO	RESID TO BURN	0.	0.0	0.	0.0	974.	0.3	341.	0.3	39.	14.	32.	11.
	TOTAL YIELDS	14173.	110.3	4221.	98.8	301501.	100.2	93666.	93.9	12060.	3747.	10050.	3122.
	LOSS(-GAIN)	-1326.	-10.3	50.	1.2	-599.	-0.2	6086.	6.1	-24.	243.	-20.	203.
	TOTAL	12847.	100.0	4270.	100.0	300902.	100.0	99752.	100.0	12036.	3990.	10030.	3325.

COMPOSITION OF GAS AND CONDENSATE	TODAY GAS MSCF	TODAY VOL B/D	TODAY VOL PCT	TODAY WT MLBS	TODAY WT PCT	MONTH-TO-DATE GAS MSCF	MONTH-TO-DATE AVG B/D	MONTH-TO-DATE VOL BBLS	MONTH-TO-DATE VOL PCT	MONTH-TO-DATE WT MLBS	MONTH-TO-DATE WT PCT
GAS(FOE)	5558.	902.	6.4	238.	5.6	137015.	741.	22230.	7.4	5871.	6.3
PROPANE	404.	279.	2.0	50.	1.2	9880.	227.	6801.	2.3	1206.	1.3
PROPYLENE	632.	403.	2.8	73.	1.7	15478.	328.	9835.	3.3	1794.	1.9
ISOBUTANE	249.	208.	1.5	41.	1.0	6020.	167.	5009.	1.7	986.	1.1
NORM BUTANE	181.	148.	1.0	30.	0.7	4355.	119.	3560.	1.2	727.	0.8
TOTL BUTENES	606.	469.	3.3	100.	2.4	14624.	375.	11247.	3.7	2387.	2.5
1,3 - BUTADINE	0.	0.	0.0	0.	0.0	0.	0.	0.	0.0	0.	0.0
C5 AND HEAVIER	4476.	4459.	31.5	1062.	25.2	99813.	3313.	99384.	33.0	23659.	25.3

OPERATION DATA REPORT FOR UNIT NO. 17 TCC UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	535.512	4.168	399.290	3.981
COKE BURNED MLBS	238.378	5.582	177.740	5.345
TCC VOL YIELD	14708.512	114.490	10449.320	104.180
TCC WEIGHT YIELD	4459.168	104.420	3299.927	99.244
LOSS(-GAIN) VOL	-1861.512	-14.490	-419.256	-4.180
LOSS(-GAIN) WEIGHT	-188.758	-4.420	25.137	0.756

CONVERSION PERCENT TODAY 48.327 CONVERSION PERCENT MTD = 61.882

[redacted] TOW [redacted] ECYC [redacted] TOD [redacted] TOWE [redacted] CYCL [redacted] TD [redacted] O [redacted]

TOSCO - BAKERSFIELD REFINERY

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT TUE MAY 31 1983

***** UNIT 12 - COKING UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 31

		TODAY				MONTH TO DATE				STREAM MTD AVG		CALNDR MTD AVG	
		VOLUME		WEIGHT		VOLUME		WEIGHT		VOL	WT	VOL	WT
	STREAM	BBLS	PCT	MLBS	PCT	BBLS	PCT	MLBS	PCT	BBLS/SD	MLBS/SD	BBLS/CD	MLBS/CD
	CHARGES												
CF12	COKER FEED	7113.	98.7	2533.	98.9	206892.	94.2	73772.	94.7	6674.	2380.	6674. L70V	2380.
RC12	REDUCED CRUDE	0.	0.0	0.	0.0	853.	0.4	292.	0.4	28.	9.	28.	9.
SL12	SLOPS	91.	1.3	29.	1.1	12002.	5.5	3832.	4.9	387.	124.	387.	124.
	TOTAL CHARGES	7204.	100.0	2562.	100.0	219747.	100.0	77897.	100.0	7089.	2513.	7089.	2513.
	YIELDS												
12KW	WET GAS	1757.	24.4	538.	21.0	54007.	24.6	16544.	21.2	1742.	534.	1742.	534.
12KN	COKER NAPHTHA	817.	11.3	233.	9.1	35267.	16.0	10060.	12.9	1138.	325.	1138.	325.
12GO	FLUSHING OIL	34.	0.5	11.	0.4	1054.	0.5	356.	0.5	34.	11.	34.	11.
12KG	HVY COKER G.O.	3069.	42.6	1051.	41.0	91203.	41.5	31440.	40.4	2942.	1014.	2942.	1014.
12SL	SLOPS	216.	3.0	79.	3.1	6301.	2.9	2320.	3.0	203.	75.	203.	75.
12CK	COKE	691.	9.6	308.	12.0	25981.	11.8	11571.	14.9	838.	373.	838.	373.
	TOTAL YIELDS	6584.	91.4	2220.	86.7	213813.	97.3	72290.	92.8	6897.	2332.	6897.	2332.
	LOSS(-GAIN)	620.	8.6	341.	13.3	5934.	2.7	5606.	7.2	191.	181.	191.	181.
	TOTAL	7204.	100.0	2562.	100.0	219747.	100.0	77897.	100.0	7089.	2513.	7089.	2513.

COMPOSITION OF GAS AND CONDENSATE	TODAY					MONTH-TO-DATE					
	GAS MSCF	VOL B/D	VOL PCT	WT MLBS	WT PCT	GAS MSCF	AVG B/D	VOL BBLS	VOL PCT	WT MLBS	WT PCT
GAS(FOE)	4532.	789.	12.0	240.	10.8	139306.	782.	24251.	11.3	7364.	10.2
PROPANE	305.	203.	3.1	36.	1.6	9365.	202.	6247.	2.9	1108.	1.5
PROPYLENE	476.	294.	4.5	54.	2.4	14633.	291.	9036.	4.2	1648.	2.3
ISOBUTANE	25.	20.	0.3	4.	0.2	780.	20.	626.	0.3	123.	0.2
NORM BUTANE	76.	59.	0.9	12.	0.5	2341.	59.	1815.	0.8	371.	0.5
TOTL BUTENES	311.	224.	3.4	47.	2.1	9560.	222.	6870.	3.2	1458.	2.0
1.3 - BUTADINE	25.	17.	0.3	4.	0.2	780.	17.	526.	0.2	115.	0.2
C5 AND HEAVIER	597.	591.	9.0	141.	6.3	18340.	586.	18157.	8.5	4322.	6.0

OPERATION DATA REPORT FOR UNIT NO. 12 COKING UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	371.205	5.153	368.883	5.204
COKE BURNED MLBS	165.355	6.455	164.321	6.539
COKER VOL YIELD	6955.203	96.546	7266.070	102.503
COKER WEIGHT YIELD	2385.677	93.127	2495.897	99.327
LOSS(-GAIN) VOL	248.797	3.454	-177.450	-2.503
LOSS(-GAIN) WEIGHT	176.077	6.873	16.899	0.673

0370

TOSCO - BAKERSFIELD REFINERY

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT TUE MAY 31 1983 PAGE 6

***** UNIT 17 - TCC UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 31

		TODAY				MONTH TO DATE				STREAM MTD AVG		CALNDR MTD AVG	
		VOLUME		WEIGHT		VOLUME		WEIGHT		VOL	WT	VOL	WT
	STREAM	BBLS	PCT	MLBS	PCT	BBLS	PCT	MLBS	PCT	BBLS/SD	MLBS/SD	BBLS/CD	MLBS/CD
	CHARGES												
GO17	GAS OIL	7688.	71.8	2507.	70.9	261787.	68.9	85351.	67.9	8445.	2753.	8445.	2753.
TA17	T.S. BOTTOMS	3018.	28.2	1031.	29.1	118393.	31.1	40438.	32.1	3819.	1304.	3819.	1304.
	TOTAL CHARGES	10706.	100.0	3538.	100.0	380180.	100.0	125789.	100.0	12264.	4058.	12264.	4058.
	YIELDS												
17WG	CAT WET GAS	2036.	19.0	586.	16.6	65509.	17.2	18858.	15.0	2113.	608.	2113.	608.
17RG	CAT RAW GASOLINE	3488.	32.6	984.	27.8	117000.	30.8	32861.	26.1	3774.	1060.	3774.	1060.
17LC	LT CYCLE OIL	2845.	26.6	962.	27.2	73748.	19.4	23667.	18.8	2379.	763.	2379.	763.
17C1	RECYCLE TO RESID	0.	0.0	0.	0.0	4326.	1.1	1352.	1.1	140.	44.	140.	44.
17C3	LCCO TO RESID	0.	0.0	0.	0.0	13412.	3.5	4519.	3.6	433.	146.	433.	146.
17C7	LCCO TO CBO	0.	0.0	0.	0.0	4381.	1.2	1532.	1.2	141.	49.	141.	49.
17RO	RESID TO SALES	2489.	23.2	869.	24.6	87751.	23.1	30669.	24.4	2831.	989.	2831.	989.
17CB	CARBON BLACK	0.	0.0	0.	0.0	13820.	3.6	5160.	4.1	446.	166.	446.	166.
17FO	RESID TO BURN	69.	0.6	24.	0.7	2272.	0.6	792.	0.6	73.	26.	73.	26.
	TOTAL YIELDS	10927.	102.1	3425.	96.8	382219.	100.5	119410.	94.9	12330.	3852.	12330.	3852.
	LOSS(-GAIN)	-221.	-2.1	112.	3.2	-2039.	-0.5	6379.	5.1	-66.	206.	-66.	206.
	TOTAL	10706.	100.0	3538.	100.0	380180.	100.0	125789.	100.0	12264.	4058.	12264.	4058.

COMPOSITION OF GAS AND CONDENSATE	TODAY					MONTH-TO-DATE					
	GAS MSCF	VOL B/D	VOL PCT	WT MLBS	WT PCT	GAS MSCF	AVG B/D	VOL BBLS	VOL PCT	WT MLBS	WT PCT
GAS(FOE)	5252.	852.	7.8	225.	6.6	168981.	884.	27417.	7.2	7241.	6.1
PROPANE	379.	261.	2.4	46.	1.4	12222.	272.	8426.	2.2	1495.	1.3
PROPYLENE	593.	377.	3.5	69.	2.0	19133.	393.	12172.	3.2	2220.	1.9
ISOBUTANE	231.	192.	1.8	38.	1.1	7478.	201.	6232.	1.6	1227.	1.0
NORM BUTANE	167.	137.	1.3	28.	0.8	5420.	143.	4439.	1.2	907.	0.8
TOTL BUTENES	561.	432.	4.0	92.	2.7	18193.	453.	14028.	3.7	2977.	2.5
1,3 - BUTADINE	0.	0.	0.0	0.	0.0	0.	0.	0.	0.0	0.	0.0
C5 AND HEAVIER	3845.	3829.	35.0	912.	26.6	128193.	4118.	127665.	33.4	30395.	25.5

OPERATION DATA REPORT FOR UNIT NO. 17 TCC UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	561.553	5.245	543.032	4.428
COKE BURNED MLBS	249.970	7.066	241.725	5.957
TCC VOL YIELD	11488.551	107.309	12872.656	104.964
TCC WEIGHT YIELD	3675.350	103.888	4093.667	100.886
LOSS(-GAIN) VOL	-782.551	-7.309	-608.788	-4.964
LOSS(-GAIN) WEIGHT	-137.564	-3.888	-35.966	-0.886

CONVERSION PERCENT TODAY 65.083 CONVERSION PERCENT MTD = 62.293

SYN TOWER RECYCLE TODAY 0.0 SYN TOWER RECYCLE AMTD = 0.0

[redacted]

[illegible] [illegible] REFINERY

[illegible] - [illegible] UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT THU JUN 30 1983

***** UNIT 12 - COKING UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 30

	TODAY				MONTH TO DATE				STREAM MTD AVG		CALNDR MTD AVG	
	VOLUME		WEIGHT		VOLUME		WEIGHT		VOL	WT	VOL	WT
STREAM	BBLS	PCT	MLBS	PCT	BBLS	PCT	MLBS	PCT	BBLS/SD	MLBS/SD	BBLS/CD	MLBS/CD
CHARGES												
[illegible] COKER FEED	6993.	94.8	2477.	95.2	211812.	95.7	75332.	96.1	7060.	2511.	7060.	2511.
[illegible]	387.	5.2	124.	4.8	9579.	4.3	3059.	3.9	319.	102.	319.	102.
TOTAL CHARGES	7380.	100.0	2601.	100.0	221391.	100.0	78390.	100.0	7380.	2613.	7380.	2613.
YIELDS												
[illegible]	1731.	24.5	530.	20.4	52971.	23.9	16226.	20.7	1766.	541.	1766.	541.
[illegible]	1339.	18.1	382.	14.7	38265.	17.3	10915.	13.9	1276.	364.	1276.	364.
[illegible]	34.	0.5	11.	0.4	1020.	0.5	344.	0.4	34.	11.	34.	11.
[illegible]	[illegible]	44.6	1133.	43.6	91859.	41.5	31603.	40.3	3062.	1053.	3062.	1053.
[illegible]	188.	2.5	70.	2.7	6071.	2.7	2243.	2.9	202.	75.	202.	75.
[illegible] COKE	686.	9.3	306.	11.7	22275.	10.1	9921.	12.7	743.	331.	743.	331.
TOTAL YIELDS	7266.	98.5	2433.	93.5	212461.	96.0	71253.	90.9	7082.	2375.	7082.	2375.
[illegible]	114.	1.5	168.	6.5	8930.	4.0	7137.	9.1	298.	238.	298.	238.
TOTAL	7380.	100.0	2601.	100.0	221391.	100.0	78390.	100.0	7380.	2613.	7380.	2613.

[illegible] OF GAS AND CONDENSATE	TODAY GAS MSCF	VOL B/D	VOL PCT	WT MLBS	WT PCT	MONTH-TO-DATE GAS MSCF	AVG B/D	VOL BBLS	VOL PCT	WT MLBS	WT PCT
[illegible]	4464.	777.	10.7	236.	9.7	136655.	793.	23784.	11.2	7223.	10.1
PROPANE	300.	200.	2.8	36.	1.5	9185.	204.	6127.	2.9	1087.	1.5
PROPYLENE	467.	290.	4.0	53.	2.2	14351.	295.	8862.	4.2	1617.	2.3
[illegible]	25.	20.	0.3	4.	0.2	765.	20.	614.	0.3	121.	0.2
[illegible]	75.	58.	0.8	12.	0.5	2296.	59.	1780.	0.8	364.	0.5
[illegible]	306.	220.	3.0	47.	1.9	9376.	225.	6730.	3.2	1430.	2.0
[illegible]	25.	17.	0.2	4.	0.2	765.	17.	516.	0.2	113.	0.2
C5 AND HEAVIER	588.	582.	8.0	138.	5.7	17987.	594.	17807.	8.4	4239.	5.9

OPERATION DATA REPORT FOR UNIT NO. 12 COKING UNIT

	TODAY	PCT	MTD	PCT
COKE BURNED [illegible]	365.477	4.952	350.611	4.059
COKE BURNED MLBS	162.721	6.259	159.745	6.113
COKER VOL YIELD	7631.435	103.407	7440.641	100.826
COKER WEIGHT YIELD	2525.356	97.781	2534.850	97.009
[illegible] VOL	-251.445	-3.407	-60.944	-0.826
[illegible] WEIGHT	5.795	0.219	78.167	2.991

[illegible]

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT THU JUN 30 1983 PAGE 6

UNIT 17 - TCC UNIT [illegible] HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 30

STREAM	TODAY VOLUME BBLS	TODAY VOLUME PCT	TODAY WEIGHT MLBS	TODAY WEIGHT PCT	MONTH TO DATE VOLUME BBLS	MONTH TO DATE VOLUME PCT	MONTH TO DATE WEIGHT MLBS	MONTH TO DATE WEIGHT PCT	STREAM MTD AVG VOL BBLS/SD	STREAM MTD AVG WT MLBS/SD	CALNDR MTD AVG VOL BBLS/CD	CALNDR MTD AVG WT MLBS/CD
CHARGES												
6017 GAS OIL	6766.	77.1	2138.	75.0	205406.	75.0	66322.	73.9	6847.	2211.	6847.	2211.
6017 C.S. BOTTOMS	2010.	22.9	714.	25.0	68394.	25.0	23482.	26.1	2280.	783.	2280.	783.
TOTAL CHARGE	8776.	100.0	2852.	100.0	273800.	100.0	89805.	100.0	9127.	2993.	9127.	2993.
YIELDS												
1700 CAT OUT GAS	1757.	20.2	509.	17.9	57293.	20.9	16493.	18.4	1910.	550.	1910.	550.
1705 CAT RAW GASOLINE	3442.	39.2	970.	34.0	98720.	36.1	27883.	31.0	3291.	929.	3291.	929.
[illegible] LT CYCLE OIL	2160.	24.6	723.	25.3	68097.	24.9	22851.	25.4	2270.	762.	2270.	762.
[illegible] LCCO TO [illegible]	0.	0.0	0.	0.0	179.	0.1	63.	0.1	6.	2.	6.	2.
[illegible] LCCO TO CBO	75.	0.9	26.	0.9	2195.	0.8	768.	0.9	73.	26.	73.	26.
1708 RESID TO SALES	491.	5.6	174.	6.1	18369.	6.7	6571.	7.3	612.	219.	612.	219.
[illegible]	153.	1.7	59.	2.1	13715.	5.0	5141.	5.7	457.	171.	457.	171.
[illegible] COKER FEED	550.	6.3	195.	6.8	12069.	4.4	4255.	4.7	402.	142.	402.	142.
[illegible] RESID TO [illegible]	0.	0.0	0.	0.0	3388.	1.2	1219.	1.4	113.	41.	113.	41.
TOTAL YIELDS	[illegible]	[illegible]	2657.	93.2	274025.	100.1	85243.	94.9	9134.	2841.	9134.	2841.
[illegible]	[illegible]	[illegible]	195.	6.8	-225.	-0.1	4561.	5.1	-7.	152.	-7.	152.
TOTAL	9776.	100.0	2852.	100.0	273800.	100.0	89805.	100.0	9127.	2993.	9127.	2993.

COMPOSITION OF GAS AND CONDENSATE	TODAY GAS MSCF	TODAY VOL B/D	TODAY VOL PCT	TODAY WT MLBS	TODAY WT PCT	MONTH-TO-DATE GAS MSCF	MONTH-TO-DATE AVG B/D	MONTH-TO-DATE VOL BBLS	MONTH-TO-DATE VOL PCT	MONTH-TO-DATE WT MLBS	MONTH-TO-DATE WT PCT
[illegible]	4562.	740.	8.6	196.	7.4	147782.	799.	23977.	8.7	6332.	7.4
PROPANE	332.	229.	2.7	41.	1.5	10664.	245.	7344.	2.7	1303.	1.5
PROPYLENE	517.	341.	3.8	60.	2.3	16704.	334.	10617.	3.9	1937.	2.3
ISOBUTANE	[illegible]	171.	2.0	34.	1.3	6504.	180.	5415.	2.0	1066.	1.3
NORM BUTANE	149.	122.	1.4	25.	0.9	4708.	128.	3850.	1.4	787.	0.9
TOTAL BUTYLENES	499.	387.	4.5	82.	3.1	15806.	405.	12164.	4.4	2581.	3.0
1,3 BUTADIENE	0.	0.	0.0	0.	0.0	0.	0.	0.	0.0	0.	0.0
C5 AND HEAVIER	3726.	3712.	43.0	884.	33.3	108730.	3609.	109278.	39.5	35777.	30.2

OPERATION DATA REPORT FOR UNIT NO. 17 TCC UNIT

	TODAY	PCT	AMTD	PCT
COKE [illegible]	470.670	5.36[illegible]	495.421	5.420
COKE BURNED MLBS	209.514	7.346	220.531	7.367
TCC VOL YIELD	9110.668	103.813	9629.586	105.510
TCC WEIGHT YIELD	2866.330	100.498	3061.977	102.288
LOSS-GAIN VOL	-334.668	-3.813	-502.921	-5.510
LOSS-GAIN WEIGHT	-14.193	-0.498	-68.498	-2.288

CONVERSION PERCENT TODAY 69.177 CONVERSION PERCENT MTD = 64.945

[illegible]

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT SUN JUL 31 1983 RUN DATE 08/03/83 TIME 17.48

***** UNIT 12 - COKING UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 31

STREAM	TODAY VOLUME BBLS	TODAY VOLUME PCT	TODAY WEIGHT MLBS	TODAY WEIGHT PCT	MONTH TO DATE VOLUME BBLS	MONTH TO DATE VOLUME PCT	MONTH TO DATE WEIGHT MLBS	MONTH TO DATE WEIGHT PCT	STREAM MTD AVG VOL BBLS/SD	STREAM MTD AVG WT MLBS/SD	CALNDR MTD AVG VOL BBLS/CD	CALNDR MTD AVG WT MLBS/CD
CHARGES												
CF12 COKER FEED	6723.	92.5	2397.	93.2	204987.	95.2	72508.	95.7	6612.	2339.	6612.	2339.
SL12 SLOPS	547.	7.5	174.	6.8	10325.	4.8	3297.	4.3	333.	106.	333.	106.
TOTAL CHARGES	7269.	100.0	2572.	100.0	215312.	100.0	75805.	100.0	6946.	2445.	6946.	2445.
YIELDS												
12BW WET GAS	1901.	26.2	582.	22.6	54567.	25.3	16715.	22.1	1760.	539.	1760.	539.
12KN COKER NAPHTHA	1372.	18.9	391.	15.2	39338.	18.3	11222.	14.8	1269.	362.	1269.	362.
12GO FLUSHING OIL	34.	0.5	11.	0.4	1054.	0.5	356.	0.5	34.	11.	34.	11.
12KG HVY COKER G.O.	2764.	38.0	946.	36.8	88635.	41.2	30471.	40.2	2859.	983.	2859.	983.
12SL SLOPS	187.	2.6	69.	2.7	6921.	3.2	2513.	3.3	223.	81.	223.	81.
12CK COKE	952.	13.1	424.	16.5	23839.	11.1	10617.	14.0	769.	342.	769.	342.
TOTAL YIELDS	7210.	99.2	2424.	94.3	214354.	99.6	71893.	94.8	6915.	2319.	6915.	2319.
LOSS(-GAIN)	59.	0.8	147.	5.7	958.	0.4	3912.	5.2	31.	126.	31.	126.
TOTAL	7269.	100.0	2572.	100.0	215312.	100.0	75805.	100.0	6946.	2445.	6946.	2445.

COMPOSITION OF GAS AND CONDENSATE	TODAY GAS MSCF	TODAY VOL B/D	TODAY VOL PCT	TODAY WT MLBS	TODAY WT PCT	MONTH-TO-DATE GAS MSCF	MONTH-TO-DATE AVG B/D	MONTH-TO-DATE VOL BBLS	MONTH-TO-DATE VOL PCT	MONTH-TO-DATE WT MLBS	MONTH-TO-DATE WT PCT
GAS(FOE)	4909.	853.	11.8	259.	10.7	140740.	790.	24501.	11.4	7440.	10.3
PROPANE	330.	220.	3.0	39.	1.6	9462.	204.	6311.	2.9	1120.	1.6
PROPYLENE	515.	318.	4.4	58.	2.4	14784.	294.	9129.	4.3	1665.	2.3
ISOBUTANE	27.	22.	0.3	4.	0.2	788.	20.	633.	0.3	125.	0.2
NORM BUTANE	82.	64.	0.9	13.	0.5	2365.	59.	1834.	0.9	375.	0.5
TOTL BUTENES	336.	242.	3.4	51.	2.1	9659.	224.	6941.	3.2	1473.	2.0
1,3 - BUTADINE	27.	19.	0.3	4.	0.2	788.	17.	531.	0.2	116.	0.2
C5 AND HEAVIER	645.	639.	8.9	152.	6.3	18529.	592.	18344.	8.6	4366.	6.1

OPERATION DATA REPORT FOR UNIT NO. 12 COKING UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	345.400	4.752	353.060	5.083
COKE BURNED MLBS	153.860	5.983	157.276	6.432
COKER VOL YIELD	7555.398	103.940	7267.699	104.638
COKER WEIGHT YIELD	2578.172	100.255	2476.030	101.256
LOSS(-GAIN) VOL	-286.398	-3.940	-322.153	-4.638
LOSS(-GAIN) WEIGHT	-6.554	-0.255	-30.708	-1.256

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT SUN JUL 31 1983 RUN DATE 08/03/83 TIME 17.48

***** UNIT 17 - TCC UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 31

	TODAY - VOLUME		TODAY - WEIGHT		MONTH TO DATE - VOLUME		MONTH TO DATE - WEIGHT		STREAM MTD AVG - VOL	STREAM MTD AVG - WT	CALNDR MTD AVG - VOL	CALNDR MTD AVG - WT
STREAM	BBLS	PCT	MLBS	PCT	BBLS	PCT	MLBS	PCT	BBLS/SD	MLBS/SD	BBLS/CD	MLBS/CD
CHARGES												
6017 GAS OIL	6431.	75.1	2056.	73.1	213007.	76.4	67886.	74.4	6871.	2190.	6871.	2190.
FA17 T.S. BOTTOMS	2133.	24.9	757.	26.9	64227.	23.0	22808.	25.0	2072.	736.	2072.	736.
PC17 PCYO TO SYN TWR	0.	0.0	0.	0.0	1702.	0.6	572.	0.6	55.	18.	55.	18.
TOTAL CHARGES	8564.	100.0	2813.	100.0	278936?	100.0	91266.	100.0	8998.	2944.	8998.	2944.
YIELDS												
17WG CAT WET GAS	1850.	21.6	533.	18.9	57470.	20.6	16543.	18.1	1854.	534.	1854.	534.
17RG CAT RAW GASOLINE	2514.	29.4	705.	25.1	90356.	32.4	25495.	27.9	2915.	822.	2915.	822.
17LG LT CYCLE OIL	2984.	34.8	992.	35.3	84996.	30.5	28270.	31.0	2742.	912.	2742.	912.
1703 LCCO TO RESID	0.	0.0	0.	0.0	277.	0.1	97.	0.1	9.	3.	9.	3.
1707 LCCO TO CBO	43.	0.5	15.	0.5	3834.	1.4	1341.	1.5	124.	43.	124.	43.
17RD RESID TO SALES	170.	2.0	8.	0.3	9112.	3.3	3234.	3.5	294.	104.	294.	104.
17CB CARBON BLACK	361.	4.2	84.	3.0	9689.	3.5	3311.	3.6	313.	107.	313.	107.
17CF COKER FEED	635.	7.4	234.	8.3	17560.	6.3	6336.	6.9	566.	204.	566.	204.
17FU RESID TO BURN	115.	1.3	42.	1.5	2464.	0.9	889.	1.0	79.	29.	79.	29.
TOTAL YIELDS	8672.	101.3	2613.	92.9	275758.	98.9	85517.	93.7	8895.	2759.	8895.	2759.
LOSS(-GAIN)	-108.	-1.3	200.	7.1	3178.	1.1	5749.	6.3	103.	185.	103.	185.
TOTAL	8564.	100.0	2813.	100.0	278936.	100.0	91266.	100.0	8998.	2944.	8998.	2944.

COMPOSITION OF GAS AND CONDENSATE	TODAY - GAS MSCF	TODAY - VOL B/D	TODAY - VOL PCT	TODAY - WT MLBS	TODAY - WT PCT	MONTH-TO-DATE - GAS MSCF	MONTH-TO-DATE - AVG B/D	MONTH-TO-DATE - VOL BBLS	MONTH-TO-DATE - VOL PCT	MONTH-TO-DATE - WT MLBS	MONTH-TO-DATE - WT PCT
GAS(FOE)	4772.	774.	8.9	204.	7.8	148230.	776.	24048.	8.7	6351.	7.4
PROPANE	340.	232.	2.7	41.	1.6	10636.	236.	7306.	2.6	1296.	1.5
PROPYLENE	534.	337.	3.9	62.	2.4	16686.	341.	10580.	3.8	1930.	2.3
ISOBUTANE	203.	168.	1.9	33.	1.3	6438.	172.	5345.	1.9	1052.	1.2
NORM BUTANE	144.	118.	1.4	24.	0.9	4644.	122.	3784.	1.4	773.	0.9
TOTL BUTENES	491.	373.	4.3	79.	3.0	15604.	385.	11950.	4.3	2536.	3.0
1,3 - BUTADIENE	0.	0.	0.0	0.	0.0	0.	0.	0.	0.0	0.	0.0
C5 AND HEAVIER	2881.	2866.	33.0	682.	26.1	100962.	3242.	100498.	36.4	23919.	28.0

OPERATION DATA REPORT FOR UNIT NO. 17 TCC UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	459.501	5.365	434.754	4.832
COKE BURNED MLBS	204.542	7.272	193.526	6.573
TCC VOL YIELD	9131.500	106.627	9343.875	103.845
TCC WEIGHT YIELD	2817.099	100.159	2956.742	100.430
LOSS(-GAIN) VOL	-567.500	-6.627	-345.939	-3.845
LOSS(-GAIN) WEIGHT	-4.464	-0.159	-12.671	-0.430

[redacted]

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT WED AUG 31 1983 RUN DATE 09/06/83 TIME 13.45

***** UNIT 12 - COKING UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 31

	TODAY				MONTH TO DATE				STREAM MTD AVG		CALNDR MTD AVG	
	VOLUME		WEIGHT		VOLUME		WEIGHT		VOL	WT	VOL	WT
STREAM	BBLS	PCT	MLBS	PCT	BBLS	PCT	MLBS	PCT	BBLS/SD	MLBS/SD	BBLS/CD	MLBS/CD
CHARGES												
CF12 COKER FEED	6280.	96.3	2246.	96.7	192008.	92.9	68802.	93.6	6194.	2219.	6194.	2219.
SL12 SLOPS	243.	3.7	78.	3.3	14640.	7.1	4675.	6.4	472.	151.	472.	151.
TOTAL CHARGES	6523.	100.0	2323.	100.0	206648.	100.0	73477.	100.0	6666.	2370.	6666.	2370.
YIELDS												
12WG WET GAS	1038.	20.2	563.	24.2	56658.	27.4	17356.	23.6	1828.	560.	1828.	560.
12CN COKER NAPHTHA	1241.	19.0	354.	15.2	41102.	19.9	11725.	16.0	1326.	378.	1326.	378.
12FO FLUSHING OIL	34.	0.5	11.	0.5	1054.	0.5	356.	0.5	34.	11.	34.	11.
12GO HVY COKER G.O.	2727.	41.8	932.	40.1	81999.	39.7	28136.	38.3	2645.	908.	2645.	908.
12ST SLOPS	171.	2.6	64.	2.8	5538.	2.7	2070.	2.8	179.	67.	179.	67.
12CK COKE	697.	10.7	310.	13.4	22543.	10.9	10040.	13.7	727.	324.	727.	324.
TOTAL YIELDS	6708.	102.8	2235.	96.2	208894.	101.1	69681.	94.8	6739.	2248.	6739.	2248.
LOSS/(GAIN)	-185.	-2.8	88.	3.8	-2246.	-1.1	3796.	5.2	-72.	122.	-72.	122.
TOTAL	6523.	100.0	2323.	100.0	206648.	100.0	73477.	100.0	6666.	2370.	6666.	2370.

COMPOSITION OF	TODAY					MONTH-TO-DATE					
GAS AND CONDENSATE	GAS	VOL	VOL	WT	WT	GAS	AVG	VOL	VOL	WT	WT
	MSCF	B/D	PCT	MLBS	PCT	MSCF	B/D	BBLS	PCT	MLBS	PCT
GAS(FUEL)	4740.	825.	12.3	251.	11.2	146140.	821.	25441.	12.2	7726.	11.1
PROPANE	319.	213.	3.2	38.	1.7	9825.	211.	6554.	3.1	1162.	1.7
PROPYLENE	498.	307.	4.6	56.	2.5	15351.	306.	9479.	4.5	1729.	2.5
ISOBUTANE	27.	21.	0.3	4.	0.2	819.	21.	657.	0.3	129.	0.2
NORM BUTANE	80.	62.	0.9	13.	0.6	2456.	61.	1904.	0.9	389.	0.6
TOTL BUTENES	325.	234.	3.5	50.	2.2	10029.	232.	7207.	3.5	1529.	2.2
1.3 - BUTADIENE	27.	18.	0.3	4.	0.2	819.	18.	552.	0.3	121.	0.2
C5 AND HEAVIER	624.	618.	9.2	147.	6.6	19240.	614.	19047.	9.1	4534.	6.5

OPERATION DATA REPORT FOR UNIT NO. 12 COKING UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	348.080	5.348	345.133	5.177
COKE BURNED MLBS	155.410	6.689	153.741	6.486
COKER VOL YIELD	7056.879	108.185	7083.633	106.264
COKER WEIGHT YIELD	2390.367	102.883	2401.153	101.305
LOSS(GAIN) VOL	-533.879	-8.185	-417.568	-6.264
LOSS(GAIN) WEIGHT	-66.991	-2.883	-30.925	-1.305

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT WED AUG 31 1983 RUN DATE 09/06/83 TIME 13.45

***** UNIT 17 - TCC UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 31

	TODAY				MONTH TO DATE				STREAM MTD AVG		CALNDR MTD AVG	
	VOLUME		WEIGHT		VOLUME		WEIGHT		VOL	WT	VOL	WT
STREAM	BBLS	PCT	MLBS	PCT	BBLS	PCT	MLBS	PCT	BBLS/SD	MLBS/SD	BBLS/CD	MLBS/CD
CHARGES												
[illegible] GAS OIL	7597.	74.2	2431.	72.2	218356.	75.3	69729.	73.2	7044.	2249.	7044.	2249.
[illegible] BOTTOMS	2637.	25.8	937.	27.8	71714.	24.7	25473.	26.8	2313.	822.	2313.	822.
TOTAL CHARGES	10234.	100.0	3368.	100.0	290070.	100.0	95201.	100.0	9357.	3071.	9357.	3071.
YIELDS												
17WG CAT WET GAS	2329.	22.8	670.	19.9	65570.	22.6	18875.	19.8	2115.	609.	2115.	609.
17RG CAT RAW GASOLINE	3097.	30.3	879.	26.1	87175.	30.1	24464.	25.7	2812.	789.	2812.	789.
17LC LT CYCLE OIL	1912.	18.7	637.	18.9	80790.	27.9	26828.	28.2	2606.	865.	2606.	865.
17C1 RECYCLE TO RESID	0.	0.0	0.	0.0	1751.	0.6	566.	0.6	56.	18.	56.	18.
[illegible] TO RESID	77.	0.8	26.	0.8	7412.	2.6	2471.	2.6	239.	80.	239.	80.
[illegible] TO CHD	0.	0.0	0.	0.0	244.	0.1	85.	0.1	8.	3.	8.	3.
17RO RESID TO SALES	2621.	25.6	932.	27.7	29045.	10.0	9568.	10.0	937.	309.	937.	309.
17CB CARBON BLACK	0.	0.0	0.	0.0	12395.	4.3	4540.	4.8	400.	146.	400.	146.
17CF COKER FEED	0.	0.0	0.	0.0	4347.	1.5	1601.	1.7	140.	52.	140.	52.
[illegible] RESID TO BURN	0.	0.0	0.	0.0	4093.	1.4	1480.	1.6	132.	48.	132.	48.
TOTAL YIELDS	10036.	98.1	3144.	93.4	292822.	100.9	90478.	95.0	9446.	2919.	9446.	2919.
LOSS(-GAIN)	198.	1.9	224.	6.6	-2752.	-0.9	4723.	5.0	-89.	152.	-89.	152.
TOTAL	10234.	100.0	3368.	100.0	290070.	100.0	95201.	100.0	9357.	3071.	9357.	3071.

COMPOSITION OF	TODAY					MONTH-TO-DATE					
GAS AND CONDENSATE	GAS MSCF	VOL B/D	VOL PCT	WT MLBS	WT PCT	GAS MSCF	AVG B/D	VOL BBLS	VOL PCT	WT MLBS	WT PCT
[illegible]	6005.	974.	9.7	257.	8.2	169114.	885.	27432.	9.4	7245.	8.0
PROPANE	427.	292.	2.9	52.	1.6	12024.	265.	8224.	2.8	1459.	1.6
PROPYLENE	672.	424.	4.2	77.	2.5	18911.	385.	11945.	4.1	2179.	2.4
ISOBUTANE	255.	211.	2.1	42.	1.3	7186.	192.	5939.	2.0	1169.	1.3
NORM BUTANE	183.	148.	1.5	30.	1.0	5156.	135.	4174.	1.4	853.	0.9
TOTL BUTLNES	616.	468.	4.7	99.	3.2	17342.	425.	13173.	4.5	2796.	3.1
1-3 - BUTADIENE	0.	0.	0.0	0.	0.0	0.	0.	0.	0.0	0.	0.0
C5 AND HEAVIER	3563.	3544.	35.3	843.	26.8	100295.	3218.	99766.	34.1	23733.	26.2

OPERATION DATA REPORT FOR UNIT NO. 17 TCC UNIT

	TODY	PCT	AMTD	PCT
[illegible] BURNED FOE	493.159	4.819	458.599	4.901
COKE BURNED MLBS	219.516	6.518	204.141	6.647
TCC VOL YIELD	10529.137	102.884	9904.477	105.850
TCC WEIGHT YIELD	3363.660	99.878	3122.790	101.686
LOSS-GAIN % VOL	-295.137	-2.884	-547.383	[illegible]
LOSS-GAIN % WEIGHT	4.134	0.122	-51.784	[illegible]
CONVERSION [illegible] TODAY	[illegible]	CONVERSION [illegible] MTD		[illegible]

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT FRI SEP 30 1983 RUN DATE 10/04/83 TIME 17.12

***** UNIT 12 - COKING UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 30

	TODAY				MONTH TO DATE				STREAM MTD AVG		CALNDR MTD AVG	
	VOLUME		WEIGHT		VOLUME		WEIGHT		VOL	WT	VOL	WT
STREAM	BBLS	PCT	MLBS	PCT	BBLS	PCT	MLBS	PCT	BBLS/SD	MLBS/SD	BBLS/CD	MLBS/CD
CHARGES												
CF12 COKER FEED	6826.	93.5	2436.	94.1	170544.	76.3	60908.	77.3	5685.	2030.	5685.	2030.
RC12 REDUCED CRUDE	0.	0.0	0.	0.0	41340.	18.5	14160.	18.0	1378.	472.	1378.	472.
SL12 SLOPS	474.	6.5	151.	5.9	11758.	5.3	3754.	4.8	392.	125.	392.	125.
TOTAL CHARGES	7300.	100.0	2587.	100.0	223642.	100.0	78822.	100.0	7455.	2627.	7455.	2627.
YIELDS												
12KW WET GAS	2026.	27.8	621.	24.0	55741.	24.9	17075.	21.7	1858.	569.	1858.	569.
12KN COKER NAPHTHA	1497.	20.5	427.	16.5	43986.	19.7	12547.	15.9	1466.	418.	1466.	418.
12OO FLUSHING OIL	34.	0.5	11.	0.4	1020.	0.5	344.	0.4	34.	11.	34.	11.
12KG HVY COKER G.O.	2886.	39.5	995.	38.4	96206.	43.0	33012.	41.9	3207.	1100.	3207.	1100.
12SL SLOPS	0.	0.0	11.	0.4	3271.	1.5	1374.	1.7	109.	46.	109.	46.
12CK COKE	931.	12.8	415.	16.0	25076.	11.2	11168.	14.2	836.	372.	836.	372.
TOTAL YIELDS	7374.	101.0	2479.	95.8	225300.	100.7	75520.	95.8	7510.	2517.	7510.	2517.
LOSS(-GAIN)	-74.	-1.0	108.	4.2	-1658.	-0.7	3302.	4.2	-55.	110.	-55.	110.
TOTAL	7300.	100.0	2587.	100.0	223642.	100.0	78822.	100.0	7455.	2627.	7455.	2627.

COMPOSITION OF GAS AND CONDENSATE	TODAY					MONTH-TO-DATE					
	GAS MSCF	VOL B/D	VOL PCT	WT MLBS	WT PCT	GAS MSCF	AVG B/D	VOL BBLS	VOL PCT	WT MLBS	WT PCT
GAS(FOE)	5224.	909.	12.3	276.	11.1	143763.	834.	25027.	11.1	7600.	10.1
PROPANE	351.	234.	3.2	42.	1.7	9665.	215.	6447.	2.9	1144.	1.5
PROPYLENE	549.	339.	4.6	62.	2.5	15101.	311.	9325.	4.1	1701.	2.3
ISOBUTANE	29.	23.	0.3	5.	0.2	805.	22.	646.	0.3	127.	0.2
NORM BUTANE	88.	68.	0.9	14.	0.6	2416.	62.	1873.	0.8	383.	0.5
TOTL BUTENES	359.	258.	3.5	55.	2.2	9866.	236.	7090.	3.1	1505.	2.0
1,3 - BUTADINE	29.	20.	0.3	4.	0.2	805.	18.	543.	0.2	119.	0.2
C5 AND HEAVIER	688.	681.	9.2	162.	6.5	18927.	625.	18738.	8.3	4460.	5.9

OPERATION DATA REPORT FOR UNIT NO. 12 COKING UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	354.046	4.850	347.288	4.659
COKE BURNED MLBS	157.711	6.096	154.701	5.888
COKER VOL YIELD	7728.043	105.864	7857.285	105.400
COKER WEIGHT YIELD	2636.834	101.922	2672.025	101.699
LOSS(-GAIN) VOL	-428.043	-5.864	-402.554	-5.400
LOSS(-GAIN) WEIGHT	-49.720	-1.922	-44.640	-1.699

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT FRI SEP 30 1983 RUN DATE 10/04/83 TIME 17.12

***** UNIT 17 - TCC UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 30

STREAM	TODAY VOLUME BBLS	TODAY VOLUME PCT	TODAY WEIGHT MLBS	TODAY WEIGHT PCT	MONTH TO DATE VOLUME BBLS	MONTH TO DATE VOLUME PCT	MONTH TO DATE WEIGHT MLBS	MONTH TO DATE WEIGHT PCT	STREAM MTD AVG VOL BBLS/SD	STREAM MTD AVG WT MLBS/SD	CALNDR MTD AVG VOL BBLS/CD	CALNDR MTD AVG WT MLBS/CD
CHARGES												
0017 GAS OIL	8331.	76.0	2689.	74.1	204843.	77.2	65613.	75.4	6828.	2107.	6828.	2107.
TA17 T.S. BOTTOMS	2637.	24.0	939.	25.9	60424.	22.8	21460.	24.6	2014.	715.	2014.	715.
TOTAL CHARGES	10968.	100.0	3627.	100.0	265267.	100.0	87073.	100.0	8842.	2902.	8842.	2902.
YIELDS												
17WG CAT WET GAS	2567.	23.4	739.	20.4	62508.	23.6	17994.	20.7	2084.	600.	2084.	600.
17RG CAT RAW GASOLINE	2800.	25.5	786.	21.7	81331.	30.7	22854.	26.2	2711.	762.	2711.	762.
17LC LT CYCLE OIL	1355.	12.4	452.	12.5	41006.	15.5	13659.	15.7	1367.	455.	1367.	455.
17C3 LCCO TO RESID	1321.	12.0	436.	12.0	28592.	10.8	9479.	10.9	953.	316.	953.	316.
17C6 LCCO TO WEED OIL	769.	7.0	250.	6.9	5347.	2.0	1747.	2.0	178.	58.	178.	58.
17RO RESID TO SALES	1434.	13.1	503.	13.9	38529.	14.5	13589.	15.6	1284.	453.	1284.	453.
17CB CARBON BLACK	704.	6.4	261.	7.2	7515.	2.8	2784.	3.2	251.	93.	251.	93.
17FO RESID TO BURN	0.	0.0	0.	0.0	937.	0.4	331.	0.4	31.	11.	31.	11.
17TS TS BTMS TO F.O.	0.	0.0	0.	0.0	850.	0.3	280.	0.3	28.	9.	28.	9.
TOTAL YIELDS	10950.	99.8	3427.	94.5	266615.	100.5	82717.	95.0	8887.	2757.	8887.	2757.
LOSS(-GAIN)	18.	0.2	200.	5.5	-1348.	-0.5	4356.	5.0	-45.	145.	-45.	145.
TOTAL	10968.	100.0	3627.	100.0	265267.	100.0	87073.	100.0	8842.	2902.	8842.	2902.

COMPOSITION OF GAS AND CONDENSATE	TODAY GAS MSCF	TODAY VOL B/D	TODAY VOL PCT	TODAY WT MLBS	TODAY WT PCT	MONTH-TO-DATE GAS MSCF	MONTH-TO-DATE AVG B/D	MONTH-TO-DATE VOL BBLS	MONTH-TO-DATE VOL PCT	MONTH-TO-DATE WT MLBS	MONTH-TO-DATE WT PCT
GAS(FOE)	6620.	1074.	9.8	284.	8.3	161207.	872.	26149.	9.8	6906.	8.3
PROPANE	466.	318.	2.9	56.	1.6	11450.	261.	7827.	2.9	1388.	1.7
PROPYLENE	735.	463.	4.2	84.	2.5	18013.	379.	11372.	4.3	2074.	2.5
ISOBUTANE	275.	226.	2.1	45.	1.3	6832.	188.	5644.	2.1	1111.	1.3
NORM BUTANE	196.	158.	1.4	32.	0.9	4899.	132.	3963.	1.5	810.	1.0
TOTL BUTENES	661.	498.	4.5	106.	3.1	16480.	417.	12506.	4.7	2654.	3.2
1,3 - BUTADINE	0.	0.	0.0	0.	0.0	0.	0.	0.	0.0	0.	0.0
C5 AND HEAVIER	3353.	3332.	30.4	792.	23.1	93951.	3115.	93447.	35.0	22228.	26.9

OPERATION DATA REPORT FOR UNIT NO. 17 TCC UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	480.527	4.454	447.492	5.061
COKE BURNED MLBS	217.463	5.996	199.197	6.863
TCC VOL YIELD	11438.523	104.290	9334.656	105.569
TCC WEIGHT YIELD	3644.391	100.478	2956.427	101.860
LOSS(-GAIN) VOL	-470.523	-4.290	-492.425	-5.569
LOSS(-GAIN) WEIGHT	-17.323	-0.478	-53.998	-1.860

[redacted]

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT MON OCT 31 1983 RUN DATE 11/03/83 TIME 08.35

***** UNIT 12 - COKING UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 31

	TODAY				MONTH TO DATE				STREAM MTD AVG		CALNDR MTD AVG	
	VOLUME		WEIGHT		VOLUME		WEIGHT		VOL	WT	VOL	WT
STREAM	BBLS	PCT	MLBS	PCT	BBLS	PCT	MLBS	PCT	BBLS/SD	MLBS/SD	BBLS/CD	MLBS/CD
CHARGES												
CF12 COKER FEED	6694.	98.6	2403.	98.8	221091.	94.4	79009.	95.0	7132.	2549.	7132.	2549.
SL12 SLOPS	95.	1.4	30.	1.2	13081.	5.6	4177.	5.0	422.	135.	422.	135.
TOTAL CHARGES	6789.	100.0	2433.	100.0	234172.	100.0	83186.	100.0	7554.	2683.	7554.	2683.
YIELDS												
12KW WET GAS	1723.	25.4	528.	21.7	62465.	26.7	19135.	23.0	2015.	617.	2015.	617.
12KN COKER NAPHTHA	1114.	16.4	318.	13.1	42361.	18.1	12084.	14.5	1366.	390.	1366.	390.
12GO FLUSHING OIL	34.	0.5	11.	0.5	1054.	0.5	356.	0.4	34.	11.	34.	11.
12KG HVY COKER G.O.	3056.	45.0	1034.	42.5	103264.	44.1	35111.	42.2	3331.	1133.	3331.	1133.
12SL SLOPS	227.	3.3	82.	3.4	3485.	1.5	1428.	1.7	112.	46.	112.	46.
12CK COKE	712.	10.5	317.	13.0	23840.	10.2	10618.	12.8	769.	343.	769.	343.
TOTAL YIELDS	6866.	101.1	2290.	94.1	236469.	101.0	78730.	94.6	7628.	2540.	7628.	2540.
LOSS(-GAIN)	-77.	-1.1	143.	5.9	-2297.	-1.0	4456.	5.4	-74.	144.	-74.	144.
TOTAL	6789.	100.0	2433.	100.0	234172.	100.0	83186.	100.0	7554.	2683.	7554.	2683.

COMPOSITION OF GAS AND CONDENSATE	TODAY					MONTH-TO-DATE					
	GAS MSCF	VOL B/D	VOL PCT	WT MLBS	WT PCT	GAS MSCF	AVG B/D	VOL BBLS	VOL PCT	WT MLBS	WT PCT
GAS(FOE)	4444.	774.	11.3	235.	10.3	161112.	905.	28047.	11.9	8517.	10.8
PROPANE	299.	199.	2.9	35.	1.5	10831.	233.	7225.	3.1	1282.	1.6
PROPYLENE	467.	288.	4.2	53.	2.3	16924.	337.	10450.	4.4	1906.	2.4
ISOBUTANE	25.	20.	0.3	4.	0.2	903.	23.	724.	0.3	143.	0.2
NORM BUTANE	75.	58.	0.8	12.	0.5	2708.	68.	2099.	0.9	429.	0.5
TOTL BUTENES	305.	219.	3.2	47.	2.0	11057.	256.	7945.	3.4	1686.	2.1
1.3 - BUTADINE	25.	17.	0.2	4.	0.2	903.	20.	608.	0.3	133.	0.2
C5 AND HEAVIER	585.	579.	8.4	138.	6.0	21211.	677.	20999.	8.9	4998.	6.3

OPERATION DATA REPORT FOR UNIT NO. 12 COKING UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	294.819	4.343	339.340	4.492
COKE BURNED MLBS	131.329	5.398	151.161	5.633
COKER VOL YIELD	7160.816	105.477	7967.367	105.473
COKER WEIGHT YIELD	2421.442	99.531	2690.853	100.277
LOSS(-GAIN) VOL	-371.816	-5.477	-413.435	-5.473
LOSS(-GAIN) WEIGHT	11.409	0.469	-7.433	-0.277

MR05 - FINAL UNIT YIELD REPORT

FOR 24 HOURS ENDING MIDNIGHT MON OCT 31 1983 RUN DATE 11/03/83 TIME 08.35

***** UNIT 17 - TCC UNIT ***** HOURS ON STREAM THIS PERIOD 24 DAYS ON STREAM THIS MONTH 31

STREAM	TODAY VOLUME BBLS	TODAY VOLUME PCT	TODAY WEIGHT MLBS	TODAY WEIGHT PCT	MONTH TO DATE VOLUME BBLS	MONTH TO DATE VOLUME PCT	MONTH TO DATE WEIGHT MLBS	MONTH TO DATE WEIGHT PCT	STREAM MTD AVG VOL BBLS/SD	STREAM MTD AVG WT MLBS/SD	CALNDR MTD AVG VOL BBLS/CD	CALNDR MTD AVG WT MLBS/CD
CHARGES												
GO17 GAS OIL	6115.	69.9	1949.	67.4	221444.	74.5	70744.	72.4	7143.	2282.	7143.	2282.
TA17 T.S. BOTTOMS	2638.	30.1	942.	32.6	75766.	25.5	26992.	27.6	2444.	871.	2444.	871.
TOTAL CHARGES	8753.	100.0	2890.	100.0	297210.	100.0	97737.	100.0	9587.	3153.	9587.	3153.
YIELDS												
17WG CAT WET GAS	1825.	20.8	525.	18.2	70319.	23.7	20242.	20.7	2268.	653.	2268.	653.
17RG CAT RAW GASOLINE	2852.	32.6	796.	27.5	78300.	26.3	21901.	22.4	2526.	706.	2526.	706.
17LC LT CYCLE OIL	905.	10.3	301.	10.4	34683.	11.7	11548.	11.8	1119.	373.	1119.	373.
17C1 RECYCLE TO RESID	549.	6.3	177.	6.1	11918.	4.0	3853.	3.9	384.	124.	384.	124.
17C3 LCCO TO RESID	1790.	20.5	596.	20.6	32676.	11.0	10821.	11.1	1054.	349.	1054.	349.
17C2 LCCO TO F.O.	0.	0.0	0.	0.0	2007.	0.7	680.	0.7	65.	22.	65.	22.
17C6 LCCO TO WEED OIL	0.	0.0	0.	0.0	14410.	4.8	4686.	4.8	465.	151.	465.	151.
17RO RESID TO SALES	850.	9.7	295.	10.2	37135.	12.5	12976.	13.3	1198.	419.	1198.	419.
17CB CARBON BLACK	0.	0.0	0.	0.0	12706.	4.3	4690.	4.8	410.	151.	410.	151.
17FD RESID TO BURN	62.	0.7	22.	0.7	2846.	1.0	996.	1.0	92.	32.	92.	32.
TOTAL YIELDS	8833.	100.9	2713.	93.9	297000.	99.9	92392.	94.5	9581.	2980.	9581.	2980.
LOSS(-GAIN)	-80.	-0.9	178.	6.1	210.	0.1	5345.	5.5	7.	172.	7.	172.
TOTAL	8753.	100.0	2890.	100.0	297210.	100.0	97737.	100.0	9587.	3153.	9587.	3153.

COMPOSITION OF GAS AND CONDENSATE	TODAY GAS MSCF	TODAY VOL B/D	TODAY VOL PCT	TODAY WT MLBS	TODAY WT PCT	MONTH-TO-DATE GAS MSCF	MONTH-TO-DATE AVG B/D	MONTH-TO-DATE VOL BBLS	MONTH-TO-DATE VOL PCT	MONTH-TO-DATE WT MLBS	MONTH-TO-DATE WT PCT
GAS(FOE)	4707.	764.	8.6	202.	7.4	181336.	949.	29411.	9.9	7767.	8.4
PROPANE	338.	232.	2.6	41.	1.5	12788.	281.	8713.	2.9	1545.	1.7
PROPYLENE	530.	336.	3.8	61.	2.3	20159.	409.	12687.	4.3	2314.	2.5
ISOBUTANE	204.	170.	1.9	33.	1.2	7554.	201.	6217.	2.1	1224.	1.3
NORM BUTANE	147.	120.	1.4	25.	0.9	5392.	140.	4339.	1.5	887.	1.0
TOTL BUTENES	495.	379.	4.3	80.	3.0	18157.	441.	13686.	4.6	2904.	3.1
1,3 - BUTADINE	0.	0.	0.0	0.	0.0	0.	0.	0.	0.0	0.	0.0
C5 AND HEAVIER	3190.	3175.	35.9	756.	27.9	93341.	2993.	92774.	31.2	22057.	23.9

OPERATION DATA REPORT FOR UNIT NO. 17 TCC UNIT

	TODY	PCT	AMTD	PCT
COKE BURNED FOE	434.870	4.968	465.854	4.859
COKE BURNED MLBS	193.578	6.697	207.370	6.577
TCC VOL YIELD	9267.867	105.882	10046.496	104.788
TCC WEIGHT YIELD	2906.250	100.550	3187.744	101.109
LOSS(-GAIN) VOL	-514.867	-5.882	-459.079	-4.788
LOSS(-GAIN) WEIGHT	-15.888	-0.550	-34.958	-1.109

CONVERSION PERCENT TODAY 58.628 CONVERSION PERCENT MTD = 57.859

TOTAL RECYCLE TODAY 0.0 TOTAL RECYCLE AMTD = 10.935

[redacted]

NOV 5 1983

Date

TCC UNIT

CHARGE 9078 B/D

LT. COKER NAP ______ B/D

TOTAL CHARGE 9078 B/D

SURGE DRUM TEMP 102 °F

CHARGE GRAVITY 19.3

REACTOR OUTLET 955 °F

AVERAGE KILN TEMP 1231 °F

LT. CYCLE OIL E. P. 725

TAR SEPARATOR PRESS. x .3 11.5 LBS.

REACTOR PRESSURE x .3 11.4 LBS.

TAR BOTTOMS x 484.5 1938 B/D

TAR BOTTOMS QUENCH x 79.4 0 B/D

NET TAR BOTTOMS 1938 B/D

FEED PREP BOTTOMS x 345.9 1902 B/D

LTCC GASOLINE x 383.8 2149 B/D

MTCC GASOLINE X 304.2 1612 B/D

TOTAL 3761 B/D

STEAM TO HTR OUT x 1286.7= 7849 LBS/HR

STEAM TO T.O. x 542 = 3306 LBS/HR

VAPOR LOAD 18640

REMARKS:

HEATER TRANSFER TEMP 819 °F

LIQUID FEED x 210 = 345 B/D

COOLER ROUNDS 12 1/2

LT. CYCLE OIL x 550.2 = 1761 B/D

LT. CYCLE OIL BYPASS x 115.3 = 0 B/D

TOTAL = 1761

REACTOR INLET PRESS 14.3 ΔP 2.2 LBS

SYN TOWER PRESS 9.0 ΔP 2.4 LBS

SYN TOWER x 152.5 = 459 B/D

LT CYCLE OIL TO WEED OIL x 97.6 0 B/D

% PITCH x 495.4= 0 B/D

% LCCO x 463.8= 0 B/D

TOTAL = 0 B/D

RECYCLE TO F. O. X 84.6= 0 B/D

WEEKLY AVG. CAT. USEAGE ______

HYDROGEN PROBE Ø

WET SCRUBBER ΔP ______ "

WATER WASH Ø G/D

HEATER: OIL BURNERS ______

VACUUM UNIT

CHARGE x 2581.8 = ______ B/D

GAS OIL MAKE x 1381.9 = ______ B/D

HEAVY GAS OIL TRAY TEMP ______ °F

LT. GAS OIL TO HYDRO x 379.9 = 0 B/D

PITCH VIS ______

REMARKS:

HEATER TRANSFER TEMP 0 °F

VACUUM AT FLASH 0 "

VACUUM AT OVERHEAD 0 "

PITCH TO COKER x 867.7 0 B/D

HEATER: OIL BURNERS 0

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE Ø "

SPENT CAUSTIC TANK Ø "

20574

REVISED 10-6-83

Date NOV 4 1983

TCC UNIT

5 CHARGE 8570 B/D
LT. COKER NAP ← B/D
TOTAL CHARGE 8570 B/D
SURGE DRUM TEMP 284 °F
CHARGE GRAVITY 19.1
REACTOR OUTLET 929 °F
AVERAGE KILN TEMP 1223 °F
LT. CYCLE OIL E. P. 720
53 TAR SEPARATOR PRESS. x .3 15.9 LBS.
58 REACTOR PRESSURE x .3 11.4 LBS.
4.4 TAR BOTTOMS x 484.5 2131 B/D
.5 TAR BOTTOMS QUENCH x 79.4 40 B/D
NET TAR BOTTOMS 2091 B/D
1.5 FEED PREP BOTTOMS x 345.9 519 B/D
5.7 LTCC GASOLINE x 383.8 2188 B/D
5.3 MTCC GASOLINE X 304.2 1612 B/D
TOTAL 3800 B/D
6.3 STEAM TO HTR OUT x 1286.7= 8049 LBS/HR
6.0 STEAM TO T.O. x 542 = 3252 LBS/HR
VAPOR LOAD 20,052
REMARKS:

HEATER TRANSFER TEMP 812 °F
6.2 LIQUID FEED x 210 = 1302 B/D
COOLER ROUNDS 14
4.6 LT. CYCLE OIL x 550.2 = 2531 B/D
LT. CYCLE OIL BYPASS x 115.3 = ← B/D
TOTAL = 2531
REACTOR INLET PRESS 13.8 ΔP 2.1 LBS
SYN TOWER PRESS 13 ΔP 3.1 LBS
3.8 SYN TOWER x 152.5 = 579 B/D
LT CYCLE OIL TO WEED OIL x 97.6 B/D
% PITCH x 495.4= ← B/D
% LCCO x 463.8= ← B/D
TOTAL = B/D
RECYCLE TO F. O. X 84.6= ← B/D
WEEKLY AVG. CAT. USEAGE
HYDROGEN PROBE
WET SCRUBBER ΔP 4.6 "
WATER WASH G/D
HEATER: OIL BURNERS 2

VACUUM UNIT

DOWN

CHARGE x 2581.8 = B/D
GAS OIL MAKE x 1381.9 = B/D
HEAVY GAS OIL TRAY TEMP °F
LT. GAS OIL TO HYDRO x 379.9 = B/D
PITCH VIS
REMARKS:

HEATER TRANSFER TEMP °F
VACUUM AT FLASH "
VACUUM AT OVERHEAD "
PITCH TO COKER x 867.7 B/D
HEATER: OIL BURNERS

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE "
SPENT CAUSTIC TANK "

REVISED 10-6-83

TCC UNIT

Date NOV 3 1983

CHARGE 8399 B/D

LT. COKER NAP 550 B/D

TOTAL CHARGE 8399 B/D

SURGE DRUM TEMP 413 °F

CHARGE GRAVITY 19.3

REACTOR OUTLET 757 °F

AVERAGE KILN TEMP 1272 °F

LT. CYCLE OIL E. P. 748

TAR SEPARATOR PRESS. x .3 14.4 LBS.

REACTOR PRESSURE x .3 10.5 LBS.

TAR BOTTOMS x 484.5 2326 B/D

TAR BOTTOMS QUENCH x 79.4 198 B/D

NET TAR BOTTOMS 2128 B/D

FEED PREP BOTTOMS x 345.9 1038 B/D

LTCC GASOLINE x 383.8 1919 B/D

MTCC GASOLINE X 304.2 1612 B/D

TOTAL 3531 B/D

STEAM TO HTR OUT x 1286.7= 7720 LBS/HR

STEAM TO T.O. x 542 = 3523 LBS/HR

VAPOR LOAD 18,604

REMARKS:
Yes, Vapor Load is low

HEATER TRANSFER TEMP 924 °F

LIQUID FEED x 210 = 1302 B/D

COOLER ROUNDS 14 ½

LT. CYCLE OIL x 550.2 = 2476 B/D

LT. CYCLE OIL BYPASS x 115.3 = 980 B/D

TOTAL = 3456

REACTOR INLET PRESS 5.8 ΔP .6 LBS

SYN TOWER PRESS 2 ΔP 2.3 LBS

SYN TOWER x 152.5 = 640 B/D

LT CYCLE OIL TO WEED OIL x 97.6 82 B/D

5.5 % PITCH x 495.4= 2725 B/D

3.2 % LCCO x 463.8= 1484 B/D

TOTAL = 4209 B/D

RECYCLE TO F. O. X 84.6= — B/D

WEEKLY AVG. CAT. USEAGE

HYDROGEN PROBE 300.

WET SCRUBBER ΔP 4.4 "

WATER WASH G/D

HEATER: OIL BURNERS 2

VACUUM UNIT

CHARGE x 2581.8 = 16,007 B/D

GAS OIL MAKE x 1381.9 = 7186 B/D

HEAVY GAS OIL TRAY TEMP 528 °F

LT. GAS OIL TO HYDRO x 379.9 = — B/D

PITCH VIS 88

REMARKS:

HEATER TRANSFER TEMP 766 °F

VACUUM AT FLASH 22.5 "

VACUUM AT OVERHEAD 23.0 "

PITCH TO COKER x 867.7 5900 B/D

HEATER: OIL BURNERS 2

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE "

~~SPENT CAUSTIC TANK~~ "

REVISED 10-6-83

TCC UNIT

Date Nov 2, 1985

CHARGE 8402 B/D

Coker Distillate ~~LT.~~ COKER NAP 1191 B/D

TOTAL CHARGE 8402 B/D	HEATER TRANSFER TEMP 926 °F
SURGE DRUM TEMP 327 °F	LIQUID FEED x 210 = 1239 B/D
CHARGE GRAVITY 18.2	COOLER ROUNDS 6.4
REACTOR OUTLET 931 °F	LT. CYCLE OIL x 550.2 = 2586 B/D
AVERAGE KILN TEMP 1266 °F	LT. CYCLE OIL BYPASS x 115.3 = 980 B/D
LT. CYCLE OIL E. P. 730	TOTAL = 3526
TAR SEPARATOR PRESS. x .3 14.4 LBS.	REACTOR INLET PRESS 13.2 ΔP 1.5 LBS
REACTOR PRESSURE x .3 10.2 LBS.	SYN TOWER PRESS 10 ΔP 2.2 LBS
TAR BOTTOMS x 484.5 2519 B/D	SYN TOWER x 152.5 = 488 B/D
TAR BOTTOMS QUENCH x 79.4 238 B/D	LT CYCLE OIL TO WEED OIL x 97.6 800 B/D
NET TAR BOTTOMS 2281 B/D	% PITCH x 495.4= — B/D
FEED PREP BOTTOMS x 345.9 968 B/D	% LCCO x 463.8= — B/D
LTCC GASOLINE x 383.8 2111 B/D	TOTAL = — B/D
MTCC GASOLINE X 304.2 1582 B/D	RECYCLE TO F. O. X 84.6= 178 B/D
TOTAL 3693 B/D	WEEKLY AVG. CAT. USEAGE
STEAM TO HTR OUT x 1286.7= 8621 LBS/HR	HYDROGEN PROBE 300+
STEAM TO T.O. x 542 = 35544 LBS/HR	WET SCRUBBER ΔP 4.4 "
VAPOR LOAD 19,632	WATER WASH G/D
REMARKS:	HEATER: OIL BURNERS 2

VACUUM UNIT

CHARGE x 2581.8 = 10,585 B/D	HEATER TRANSFER TEMP 415 °F
GAS OIL MAKE x 1381.9 = 3731 B/D	VACUUM AT FLASH 23.0 "
HEAVY GAS OIL TRAY TEMP 414 °F	VACUUM AT OVERHEAD 16 "
LT. GAS OIL TO HYDRO x 379.9 = 1520 B/D	
PITCH VIS 102	PITCH TO COKER x 867.7 4946 B/D
REMARKS:	HEATER: OIL BURNERS 2

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 42" 285° "	SPENT CAUSTIC TANK "

REVISED 10-6-83

Date Nov 4 1983

TCC UNIT

CHARGE 8,204 B/D

LT. COKER NAP — B/D

TOTAL CHARGE 8204 B/D

SURGE DRUM TEMP 356 °F

CHARGE GRAVITY 19.8

REACTOR OUTLET [illegible] °F

AVERAGE KILN TEMP [illegible] °F

LT. CYCLE OIL E. P. [illegible]

TAR SEPARATOR PRESS. x .3 138 LBS.

REACTOR PRESSURE x .3 99 LBS.

TAR BOTTOMS x 484.5 3118 B/D

TAR BOTTOMS QUENCH x 79.4 516 B/D

NET TAR BOTTOMS 2602 B/D

FEED PREP BOTTOMS x 345.9 1037 B/D

LTCC GASOLINE x 383.8 1919 B/D

MTCC GASOLINE X 304.2 1612 B/D

TOTAL 3531 B/D

STEAM TO HTR OUT x 1286.7= [illegible] LBS/HR

STEAM TO T.O. x 542 = 3252 LBS/HR

VAPOR LOAD 18,338

REMARKS:

HEATER TRANSFER TEMP [illegible] °F

LIQUID FEED x 210 = 1638 B/D

COOLER ROUNDS [illegible]

LT. CYCLE OIL x 550.2 = 2585 B/D

LT. CYCLE OIL BYPASS x 115.3 = 922 B/D

TOTAL = 3507

REACTOR INLET PRESS 125 ΔP 13 LBS

SYN TOWER PRESS [illegible] ΔP 24 LBS

SYN TOWER x 152.5 = 839 B/D

LT CYCLE OIL TO WEED OIL x 97.6 ____ B/D

% PITCH x 495.4= — B/D

% LCCO x 463.8= — B/D

TOTAL = — B/D

RECYCLE TO F. O. X 84.6= 294 B/D

WEEKLY AVG. CAT. USEAGE ____

HYDROGEN PROBE [illegible]

WET SCRUBBER ΔP 42 "

WATER WASH 18000.± G/D

HEATER: OIL BURNERS 2

VACUUM UNIT

CHARGE x 2581.8 = 12651 B/D

GAS OIL MAKE x 1381.9 = 5387 B/D

HEAVY GAS OIL TRAY TEMP [illegible] °F

LT. GAS OIL TO HYDRO x 379.9 = 1272 B/D

PITCH VIS 95

REMARKS:

HEATER TRANSFER TEMP [illegible] °F

VACUUM AT FLASH [illegible] "

VACUUM AT OVERHEAD [illegible] "

PITCH TO COKER x 867.7 4002 B/D

HEATER: OIL BURNERS 2

SULFUR AND CITRATE PLANTS

SULFUR TANK GAUGE 38 "

[illegible]

~~SPENT CAUSTIC TANK~~ ____ "

REVISED 10-6-83

TOSCO CORPORATION
AREA OPERATING SUMMARY

DATE 11-6-83

FLUID COKER			
COMB. NET		PITCH	
NAPHTHA			
LT. COKER NAP B/D			
HVY. GAS OIL B/D			
RX VS QUENCH TOWER D/P			
CYCLONE DIP LEG D/P			
HORN INLET D/P			
DILUTE VS DENSE BED Δ/T			
WET GAS 3 FT/BBL			
CIRCULATION T/M			
RX BED LEVEL		PRESS	
BURNER BED LEVEL			
RECYCLE/FRESH FEED			
WATER IN FINAL			
WATER RATES			
FRACT. TOP PRESS.		FRAC TOP/BTM Δ P	
ACCUM PRESSURE		FRAC TOP/ACC Δ P	
QUENCH TWR PRESS		QT/FRAC/BTM Δ P.	

REMARKS:

ALKY UNIT			
OLEFIN CHG B/D	BB 1000	PP	TOTAL 1000
ACID CONSUMPTION B/D	149		
ACID SETTLER TEMP	45		
ISO TO NORMAL B/D			

REMARKS:

DIENE UNIT	
CHG B/D	
HEATER TRANSFER	
RX Δ/T	

REMARKS:

GAS CON UNIT			
HEATER		OIL BURNERS	
SPS			
GAS TO 50# HEADER			
COOLING WATER TEMP			

REMARKS:

CRUDE UNIT			
REDUCED CRUDE B/D			
SALES DIESEL B/D (CCR)			
DIESEL TO HYDRO B/D			
STOVE B/D			
REF. NAPTHA B/D			
HEATERS 11H11	N	S	CHG
HEATERS 11H12			CHG
HEATERS 11H13	W	E	CHG
FR 113		TOTAL	
OIL BURNERS	H11	H12	H13
DESALTER WATER TO			% OIL
ACCUM. TEMP.	HI		LOW
OVHD.	REFLUX		TOTAL
CRUDE SWITCH		API	
COL PRESS			

REMARKS.

TREATER		
LT TCC	SWT	SOUR
MED TCC	SWT	SOUR
SPENT 40 BE AVAIL.		MAKE

REMARKS:

BOILERS						
C3 OR C4 BURN B/D						
FUEL OIL BURN B/D						
PITCH BURN B/D						
OIL BURNERS	#1	#5	#6	#7	#8	#9

REMARKS:

COKER INTERSTAGE WATER WASH			
12-D-19	12-D-20	12-D-21	12-D-26

81.068 (3-79)

OSCO CORPORATION
REA OPERATING SUMMARY

DATE 11-5-83

FLUID COKER

OMB. NET 2301	PITCH 2338
APHTHA	518
LT. COKER NAP B/D	~~0~~
VY. GAS OIL B/D	1528
RX VS QUENCH TOWER D/P	4.2
CYCLONE DIP LEG D/P	~~0~~
ORN INLET D/P	~~0~~
DILUTE VS DENSE BED ∆/T	38°
ET GAS 3 FT/BBL	590
RCULATION T/M	12.6
X BED LEVEL +.4	PRESS 17.8
URNER BED LEVEL	2.7
CYCLE/FRESH FEED	25.2
WATER IN FINAL	
ATER RATES	258
ACT. TOP PRESS. 8.5	FRAC TOP/BTM ∆P 1.5
ACCUM PRESSURE 5.4	FRAC TOP/ACC ∆P 3.1
UENCH TWR PRESS 13.0	QT/FRAC/BTM ∆P 3.0

EMARKS:

ALKY UNIT

OLEFIN CHG B/D	BB 1000	PP	TOTAL 1000
CID CONSUMPTION B/D	94		
ACID SETTLER TEMP	45		
O TO NORMAL B/D			

EMARKS:

DIENE UNIT

CHG B/D	803
EATER TRANSFER	445
X ∆/T	20

REMARKS:

GAS CON UNIT

EATER 407	OIL BURNERS
SPS 18	
GAS TO 50# HEADER	
OOLING WATER TEMP	70

RKS:

1.066 (3-79)

CRUDE UNIT

REDUCED CRUDE B/D			
SALES DIESEL B/D (LCR)			
DIESEL TO HYDRO B/D			
STOVE B/D			
REF. NAPTHA B/D			
HEATERS 11H11	N	S	CHG
HEATERS 11H12			CHG
HEATERS 11H13	W	E	CHG
FR 113		Total	
OIL BURNERS	H11	H12	H13
DESALTER WATER TO			% OIL
ACCUM. TEMP.	HI	LOW	
OVHD.	REFLUX	TOTAL	
CRUDE SWITCH		API	
COL PRESS			

REMARKS:

TREATER

LT TCC	SWT	SOUR
MED TCC	SWT	SOUR
SPENT 40 BE AVAIL.	MAKE	

REMARKS:

BOILERS

C3 OR C4 BURN B/D	
FUEL OIL BURN B/D	
PITCH BURN B/D	
OIL BURNERS	#1 #5 #6 #7 #8 #9

REMARKS:

COKER INTERSTAGE WATER WASH

12-D-19	12-D-20	12-D-21	12-D-26
7602	6468	9534	3234

NOV 4 1983

TOSCO CORPORATION
A AREA OPERATING SUMMARY

DATE.

FLUID COKER			
COMB. NET 6722		PITCH	5975
NAPHTHA			1173
LT. COKER NAP B/D			0
HVY. GAS OIL B/D			3230
RX VS QUENCH TOWER D/P			4.2
CYCLONE DIP LEG D/P			0
HORN INLET D/P			0
DILUTE VS DENSE BED ΔT			39.5
WET GAS 3 FT/BBL			843
CIRCULATION T/M			14.8
RX BED LEVEL	-.9	PRESS	17.5
BURNER BED LEVEL			+2.4
RECYCLE/FRESH FEED			14.9
WATER IN FINAL			0
WATER RATES ZEOLITE			468
FRACT. TOP PRESS.	8.0	FRAC TOP/BTM ΔP	1.5
ACCUM PRESSURE	5.4	FRAC TOP/ACC ΔP	2.6
QUENCH TWR PRESS	14.0	QT/FRAC BTM ΔP	4.5

REMARKS:

CRUDE UNIT			
REDUCED CRUDE B/D			
SALES DIESEL B/D (LCR)			
DIESEL TO HYDRO B/D			
STOVE B/D			
REF. NAPTHA B/D			
HEATERS 11H11	N	S	CHG
11H12			CHG
11H13	W	E	CHG
FR 13		TOTAL	
OIL BURNERS	H11	H12	H13
DESALTER WATER TO			% OIL
ACCUM. TEMP.	HI	LOW	
OVHD.	REFLUX	TOTAL	
CRUDE SWITCH		API	
COL PRESS			

REMARKS:

ALKY UNIT			
OLEFIN CHG B/D	BB	PP	TOTAL
ACID CONSUMPTION B/D	90		
ACID SETTLER TEMP			
ISO TO NORMAL B/D	11.4/1		

REMARKS:

TREATER		
LT TCC	SWT	SOUR
MED TCC	SWT	SOUR
SPENT 40 BE AVAIL.	MAKE	

REMARKS:

DIENE UNIT	
CHG B/D	890
HEATER TRANSFER	645°
RX ΔT	28°

REMARKS:

BOILERS						
C3 OR C4 BURN B/D	1,088.8					
FUEL OIL BURN B/D						
PITCH BURN B/D	0					
~~OIL BURNERS~~ ON	1	5	6	#7	8	9

REMARKS: Steam Make 230,600

GAS CON UNIT			
HEATER	11	OIL BURNERS	9
SPS	18		
GAS TO 50# HEADER			
COOLING WATER TEMP			

REMARKS:

COKER INTERSTAGE WATER WASH			
12-D-19	12-D-20	12-D-21	12-D-26
14616	16548	19026	17770

81.068 (3-79)

OSCO CORPORATION
REA OPERATING SUMMARY

DATE. NOV 03 1987

FLUID COKER

OMB. NET	6483	PITCH	5679
NAPHTHA			1135
T. COKER NAP B/D			-0-
VY. GAS OIL B/D			2820
RX VS QUENCH TOWER D/P			3.9
YCLONE DIP LEG D/P			1.6
ORN INLET D/P			.3
DILUTE VS DENSE BED Δ/T			32.0
ET GAS 3 FT/BBL			1093
CIRCULATION T/M			13.6
X BED LEVEL	-14	PRESS	19.1
URNER BED LEVEL			+2.4
RECYCLE/FRESH FEED			21.8
ATER IN FINAL			-0-
ATER RATES ZEOLITE	457.7		
FRACT. TOP PRESS.	10.0	FRAC TOP/BTM Δ P	1.5
CCUM PRESSURE	6.8	FRAC TOP/ACC. Δ P	3.2
QUENCH TWR PRESS	14.5	QT/FRAC/BTM Δ P	3.0

REMARKS:

ALKY UNIT

OLEFIN CHG B/D	BB 600	PP	TOTAL 600
ACID CONSUMPTION B/D	75		
ACID SETTLER TEMP			
SO TO NORMAL B/D	11/1		

REMARKS:

DIENE UNIT

CHG B/D	627
HEATER TRANSFER	445°
RX Δ/T	30°

REMARKS:

GAS CON UNIT

HEATER		OIL BURNERS	
SPS			
GAS TO 50# HEADER			
COOLING WATER TEMP			

REMARKS:

81.068 (3-79)

CRUDE UNIT

REDUCED CRUDE B/D	12,700		
SALES DIESEL B/D (LCR)	2,586		
DIESEL TO HYDRO B/D	3,583		
STOVE B/D	1,498		
REF. NAPTHA B/D	4745		
HEATERS 11H11	N 639	S	CHG 16,571
HEATERS 11H12			CHG
HEATERS 11H13	W 658	E 648	CHG 11,086
FR 113	26,550	TOTAL	25,600
OIL BURNERS	H11 2	H12 Ø	H13 Ø
DESALTER WATER TO	OWS	Ø	% OIL
ACCUM. TEMP.	HI 142	LOW 138	
OVHD. 5670	REFLUX 5195	TOTAL 10,865	
CRUDE SWITCH 02		API 27.8	
COL PRESS 16.5			

REMARKS:

GPM

TREATER

LT TCC	SWT	SOUR
MED TCC	SWT	SOUR
SPENT 40 BE AVAIL.	MAKE	

REMARKS:

BOILERS

C3 OR C4 BURN B/D	1,414.1
FUEL OIL BURN B/D	
PITCH BURN B/D	-0-
~~OIL BURNERS~~ ON	1 -5 6 -7 -8 -9

REMARKS: Steam make 231,400

COKER INTERSTAGE WATER WASH

12-D-19	12-D-20	12-D-21	12-D-26
14616	2270	19362	8022

TO[illegible]O CORPORATION
A[illegible]EA OPERATING SUMMARY

DATE 11-2-83

FLUID COKER			
COMB. NET	5948	PITCH	5048
NAPHTHA			1111
LT. COKER NAP B/D			0
HVY. GAS OIL B/D			2304
RX VS QUENCH TOWER D/P			4.1
CYCLONE DIP LEG D/P			.1
HORN INLET D/P			0
DILUTE VS DENSE BED ΔT			25.0
WET GAS 3 FT/BBL			1095
CIRCULATION T/M			16.9
RX BED LEVEL	+.3	PRESS	19.0
BURNER BED LEVEL			+2.5
RECYCLE/FRESH FEED			31.0
WATER IN FINAL			0
WATER RATES ZEOLITE			427
FRACT. TOP PRESS.	10.0	FRAC TOP/BTM ΔP	1.5
ACCUM PRESSURE	7.6	FRAC TOP/ACC ΔP	2.4
QUENCH TWR PRESS	14.6	QT/FRAC/BTM ΔP	2.5

REMARKS:

CRUDE UNIT					
REDUCED CRUDE B/D	13,016				
SALES DIESEL B/D (LCR)	3,586				
DIESEL TO HYDRO B/D	3,320				
STOVE B/D	1,498				
REF. NAPTHA B/D	4,563				
HEATERS 11H11	N 640	S		CHG 14,571	
HEATERS 11H12				CHG	
HEATERS 11H13	W 659	E 650		CHG 11,086	
FR 113 24,450		TOTAL		25,657	
OIL BURNERS	H11 2	H12 4		H13 0	
DESALTER WATER TO	OWS			0 % OIL	
ACCUM. TEMP.	HI 143			LOW 136	
OVHD. 5077	REFLUX 5378			TOTAL 11,045	
CRUDE SWITCH 02		API 27.8			
COL PRESS 17.2					

REMARKS:

ALKY UNIT				
OLEFIN CHG B/D	BB 800	PP	TOTAL 800	
ACID CONSUMPTION B/D	80			
ACID SETTLER TEMP				
ISO TO NORMAL B/D	11/1			

REMARKS:

TREATER		
LT TCC	SWT	SOUR
MED TCC	SWT	SOUR
SPENT 40 BE AVAIL.	MAKE	

REMARKS:

DIENE UNIT	
CHG B/D	880
HEATER TRANSFER	445°
RX ΔT	29

REMARKS:

BOILERS						
C3 OR C4 BURN B/D	1649.8					
FUEL OIL BURN B/D						
PITCH BURN B/D	0					
OIL BURNERS	#1	#5	#6	#7	#8	#9

REMARKS: Steam makes 217,000
Boiler on Stream 1+5+6+8+9

GAS CON UNIT			
HEATER	1	OIL BURNERS	0
SPS	18		
GAS TO 50# HEADER			
COOLING WATER TEMP			

REMARKS:

COKER INTERSTAGE WATER WASH

12-D-19	12-D-20	12-D-21	12-D-26
14196	15666	18814	7140

81.068 (3-79)

OSCO CORPORATION
AREA OPERATING SUMMARY

DATE. 11-1-83

FLUID COKER

OMB. NET	6845	PITCH	5877
APHTHA			1114
LT. COKER NAP B/D			Ø
VY. GAS OIL B/D			2993
X VS QUENCH TOWER D/P			4.2
CYCLONE DIP LEG D/P			.4
ORN INLET D/P			Ø
DILUTE VS DENSE BED Δ/T			24.0
ET GAS 3 FT/BBL			1000
RCULATION T/M			15.6
RX BED LEVEL	+.4	PRESS	19.4
URNER BED LEVEL			+2.4
ECYCLE/FRESH FEED			19.2
WATER IN FINAL			Ø
ATER RATES ZEOLITE			
RACT. TOP PRESS.	10.0	FRAC TOP/BTM ΔP	1.5
ACCUM PRESSURE	7.2	FRAC TOP/ACC ΔP	2.8
UENCH TWR PRESS	15.0	QT/FRAC/BTM ΔP	3.5

EMARKS:

CRUDE UNIT

REDUCED CRUDE B/D	12,044		
SALES DIESEL B/D (LCR)	2,490		
DIESEL TO HYDRO B/D	4,981		
STOVE B/D	1,497		
REF. NAPTHA B/D	4,928		
HEATERS 11H11	N 647	S	CHG 12,571
HEATERS 11H12			CHG
HEATERS 11H13	W 658	E 647	CHG 11,271
FR 113 24,995		TOTAL	23,800
OIL BURNERS	H11 2	H12 Ø	H13 Ø
DESALTER WATER TO	OWS	Ø	% OIL
ACCUM. TEMP.	HI 145	LOW	136
OVHD. 6449	REFLUX 5834	TOTAL	12283
CRUDE SWITCH 02		API	27.8
COL PRESS 15.0			

REMARKS:

TREATER

LT TCC	SWT	SOUR
MED TCC	SWT	SOUR
SPENT 40 BE AVAIL.	MAKE	

REMARKS:

ALKY UNIT

OLEFIN CHG B/D	BB 1050	PP	TOTAL 1050
CID CONSUMPTION B/D	90		
ACID SETTLER TEMP			
O TO NORMAL B/D	11/1		

EMARKS:

DIENE UNIT

CHG B/D	1190
EATER TRANSFER	110°
X Δ/T	22°

REMARKS:

BOILERS

C3 OR C4 BURN B/D	1548.8
FUEL OIL BURN B/D	
PITCH BURN B/D	Ø
~~OIL BURNERS~~ ON	#1 #5 #6 #7 #8 #9

REMARKS: Steam make 199,900

GAS CON UNIT

EATER	11	OIL BURNERS	
S	18		
GAS TO 50# HEADER			
OOLING WATER TEMP			

EMARKS:

COKER INTERSTAGE WATER WASH

12-D-19	12-D-20	12-D-21	12-D-26

.068 (3-79)

APPENDIX G

VALVE AND FLANGE COUNT; EPA TABULATIONS

OF REPRESENTATIVE LIQUID VALVE DISTRIBUTION;

I & M PROGRAM EFFICIENCY DATA

"A" Reformer

	Valves	Flanges
Liquid	43	89
Exempt	239	468
Gas	121	256
"B" Reformer		
L	56	99
E	85	121
G	204	259
Fluid Coker		
L	107	254
E	985	~~17~~ 1133
G	161	372
Crude		
L	175	394
E	344	873
G	118	218
Gas Plant		
L	115	354
E	33	88
G	221	551
Hydrocracker		
L	191	355
E	691	870
G	220	353
Hydrogen Unit		
L	0	0
E	217	328
G	41	81
T. C. C.		
L	87	157
E	628	1082
G	125	161

Vacuum Unit

	Valves	Flanges
Liquid	Ø	Ø
Exempt	378	726
Gas	11	33

Total TOSCO

Liquid	774	1702
Exempt	3600	5689
Gas	1222	2284
	5596	9675

Alky Unit

	Valves	Flanges
L	86	246
E	3	1
G	619	611

Total Tosco

	Valves	Flanges
L	860	1948
E	3603	5690
G	1841	2895

DJ 4/2/02

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/2-80-075a	2.	3. RECIPIENT'S ACCESSION NO. PB80 225253
4. TITLE AND SUBTITLE Assessment of Atmospheric Emissions from Petroleum Refining: Volume 1. Technical Report		5. REPORT DATE April 1980 6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) R. G. Wetherold and D. D. Rosebrook		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Radian Corporation P.O. Box 9948 Austin, Texas 78766		10. PROGRAM ELEMENT NO. 1AB604 11. CONTRACT/GRANT NO. 68-02-2147, Exhibit B
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development Industrial Environmental Research Laboratory Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED Final; 3/76-6/79 14. SPONSORING AGENCY CODE EPA/600/13

15. SUPPLEMENTARY NOTES IERL-RTP project officer is Bruce A. Tichenor, Mail Drop 62, 919/541-2547.

16. ABSTRACT The report gives results of a 3-year program to assess the environmental impact of petroleum refining atmospheric emissions. Fugitive and process emissions were extensively sampled at 13 refineries in the U.S. Nonmethane hydrocarbon emission rates were measured from valves, flanges, pump and compressor seals, process drains, relief valves, cooling towers, and wastewater treating units. Flue gases were sampled from fluid catalytic cracking units, sulfur recovery processes, process heaters, and other process units. Their compositions were determined. Organic species in liquid streams and emitted vapor were identified and quantified. Sampling and analytical methods are described. Emission factors for major fugitive emission sources were calculated. Nomographs were developed showing the relationship of hydrocarbon concentrations at leaking sources (screening values) with the leak rates from the sources. Existing and available emission control technologies for refinery emissions sources are evaluated. Control methodologies are recommended for individual emission sources. The impact of refineries on the surrounding atmosphere and population is estimated.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Pollution	Analyzing	Pollution Control	13B
Petroleum Refining		Stationary Sources	13H
Assessments		Nonmethane Hydrocarbons	14B
Hydrocarbons			07C
Organic Compounds			
Sampling			

18. DISTRIBUTION STATEMENT Release to Public	19. SECURITY CLASS (This Report) Unclassified	21. NO. OF PAGES
	20. SECURITY CLASS (This page) Unclassified	22. PRICE

EPA Form 2220-1 (9-73)

TABLE 7-15. ESTIMATED FUGITIVE NONMETHANE HYDROCARBON EMISSIONS FROM A TYPICAL FLUID COKING UNIT

Emissions Source Type	Process Stream Service Classification	Number of Sources in Process Unit	Source Emission Factor, lb/hr	Estimated Total Emissions, lb/hr
Valves	Gas/Vapor	30	0.059	1.77
	Light Liquid (VP > 0.1 psia @ 100°F)	58	0.024	1.39
	Heavy Liquid (VP ≤ 0.1 psia @ 100°F)	216	0.0005	0.108
	Hydrogen Service	0	0.018	0.0
	Total	304[a]		3.27
Open-End (Sample) Valves	All	-	0.005	-
Pumps (Pump Seals)	Light Liquid (VP > 0.1 psia @ 100°F)	2(3)	0.25	0.75
	Heavy Liquid (VP ≤ 0.1 psia @ 100°F)	7(10)	0.046	0.46
	Total	9(13)[a]		1.21
Drains	All	28[a]	0.070	1.96
Flanges & Fittings	All	1047[a]	0.00056	0.586
Relief Valves	All	6[b]	0.19	1.14
Compressors (Compressor Seals)	Hydrocarbon	4(8)	1.4	11.2
	Hydrogen	0(0)	0.11	0.0
	Total	4(8)[a]		11.2
				19.4

[a]Physically Counted

[b]Estimated

$$\text{Light Liquid Fraction} = \frac{58}{58+216} = 0.21$$

TABLE 7-19. ESTIMATED FUGITIVE NONMETHANE HYDROCARBON EMISSIONS FROM A TYPICAL CATALYTIC CRACKING UNIT

Emissions Source Type	Process Stream Service Classification	Number of Sources in Process Unit: Counts or Estimates From Radian Study	Number of Sources in Process Unit: Counts or Estimates From PES Study[d]	Source Emission Factor, lb/hr	Estimated Total Emissions, lb/hr
Valves	Gas/Vapor	384	849	0.059	22.7 - 50.1
	Light Liquid (VP > 0.1 psia @ 100°F)	409	889	0.024	9.82 - 21.3
	Heavy Liquid (VP ≤ 0.1 psia @ 100°F)	521	1167	0.0005	0.261 - 0.584
	Hydrogen Service	0	0	0.018	0.0
	Total	1314[a]	2905[c]		32.8 - 72.0
Open-End (Sample) Valves	All	-	67[b]	0.005	0.335
Pumps (Pump Seals)	Light Liquid (VP > 0.1 psia @ 100°F)	13(18)	16(22)	0.25	4.5 - 5.50
	Heavy Liquid (VP ≤ 0.1 psia @ 100°F)	17(24)	21(29)	0.046	1.10 - 1.33
	Total	30(42)[a]	37(52)[b]		5.60 - 6.83
Drains	All	65[a]	-	0.070	4.55
Flanges & Fittings	All	4214[a]	9635[c]	0.00056	2.36 - 5.40
Relief Valves	All	6[c]	-	0.19	1.14
Compressors (Compressor Seals)	Hydrocarbon	4(8)	4(8)	1.4	11.2
	Hydrogen	0	0	0.11	0.0
	Total	4(8)[a]	4(8)[b]		11.2
					58.0 - 101

[a]Physically Counted

[b]Counted From Flow Diagrams

[c]Estimated

[d]Reference 49.

$$\text{Light Liquid Fraction} = \frac{409}{409 + 521} = 0.44$$

United States
Environmental Protection
Agency

Industrial Environmental Research
Laboratory
Research Triangle Park, NC 27711

Research and Development

EPA-600/S2-80-075 Jan. 1981

EPA

Project Summary

Assessment of Atmospheric Emissions from Petroleum Refining

R. G. Wetherold, D. D. Rosebrook, and B. A. Tichenor

This study was conducted to define the atmospheric emissions from petroleum refineries and to assess their impact on the atmosphere. The sources of hydrocarbon and other pollutants were identified. Fugitive hydrocarbon emissions were found to be significant; therefore, a field sampling program was carried out to measure these and other emissions. Sampling programs were conducted at thirteen petroleum refineries throughout the United States. The rates of nonmethane hydrocarbon emissions were determined from valves, flanges, pump seals, compressor seals, pressure relief valves, drains, and cooling towers. Of these sources, valves were found to be the largest emission contributor. Emission rates of hydrocarbons and other pollutants were measured from FCCU regenerator stacks, heater stacks, sulfur recovery unit stacks, and other process sources.

As part of the field sampling program in refineries, the effect of valve maintenance procedures in reducing valve emissions was evaluated. Emission factors for the various fugitive sources were determined; individual organic species in selected refinery streams and emissions were identified; and a model refinery was developed. The results of this field sampling program were used to estimate the losses of hydrocarbon species and other pollutants from the refinery. Atmospheric dispersion modeling was then used to estimate the impact of the model refinery on the surrounding atmosphere.

This publication is a summary of the complete project report entitled "Assessment of Atmospheric Emissions from Petroleum Refining." The complete report can be purchased from the National Technical Information Service. The report was prepared in five volumes: ***(See Page 2)***

Introduction

This assessment study of the atmospheric emissions from petroleum refineries was conducted under EPA Contract Numbers 68-02-2665 and 68-02-2147, Exhibit B. The program addressed important environmental questions regarding the effects of refineries on air quality. The three primary objectives of the program were:

1. quantification of fugitive hydrocarbon emissions from petroleum refineries,
2. evaluation of existing and developing refinery control technologies, and
3. assessment of the potential impact of atmospheric refinery emissions on the surrounding environment.

During the three-year study period, the program evolved to focus on these three objectives. The program was originally planned only to address objectives

Volume No.	Subtitle	EPA Report No.	No. of Pages
1	Final Report	600/2-80-075a	456
2	Appendix A - Methodology	600/2-80-075b	193
3	Appendix B - Detailed Results	600/2-80-075c	516
4	Appendix C - Quality Assurance Procedures and Statistical Analysis of Emission Data	600/2-80-075d	501
	Appendix D - Detailed Environmental Assessment		
	Appendix E - Control Technology Review and Evaluation		
5	Appendix F - Refinery Technology Characterization	600/2-80-075e	404

2 and 3. Objective 1, however, was added after work was initiated. Several factors contributed to this.

As work began, it became evident that fugitive emissions were a large, if not the largest, source of hydrocarbon emissions from refineries. Moreover, quantitative information concerning fugitive emissions from refineries was scarce. Because of these developments, the program was modified to incorporate objective 1.

This objective was given further emphasis by the Clean Air Act and its emissions off-set regulations. Compliance with these rules necessitated emission factors for use in off-set calculations.

The fugitive hydrocarbon emissions were quantified through field testing at thirteen petroleum refineries located throughout the United States. Refinery process technology was characterized to estimate process and fugitive emissions to the atmosphere from individual types of process units. Data from the field sampling program were used in the evaluation of some existing and developing control technologies. Information was also obtained from vendors, equipment manufacturers, and literature sources.

During the field sampling program, selected refinery streams and atmospheric emissions were analyzed to identify and quantify individual stream components. This knowledge was combined with the emission factors for fugitive and process emissions to develop estimates of the losses of hydrocarbon species and other compounds from a model refinery. Atmospheric dispersion models were used to estimate the concentrations of emitted materials in the surrounding environment.

Conclusions

Fugitive emission sources are categorized as either "baggable" or "nonbaggable" sources. Baggable sources are those that can be enclosed in some type of enclosure or "bag" to measure their emission rates. Baggable source types include valves, open-ended lines, flanges, pump seals, compressor seals, drains, and relief valves.

Nonbaggable sources of fugitive emissions are too large or diffuse to enclose. Emissions estimates must be made by indirect means. Nonbaggable sources include cooling towers, wastewater treating units, spills, turnarounds, blind changing, coking, air blowing, vacuum jets, barometric condensers, and sampling operations. Of the nonbaggable sources, only cooling towers, oil-water separators, and dissolved air flotation (DAF) units were actually sampled in this study. Data from cooling tower sampling were used to develop emission factors; data from oil-water separators and DAF units were inconclusive and emission factors were not developed for these sources.

Five major conclusions may be drawn about fugitive emissions in refineries.

1. Substantial nonmethane hydrocarbon emissions occur from fugitive emission sources in refineries. The estimated nonmethane hydrocarbon emissions from eight sources (valves, flanges, pump seals, compressor seals, drains, pressure relief valves, covered API separators, and cooling towers) in the major process units of a hypothetical 330,000 BPD refinery are 630 pounds per hour (approximately 2,600 tons per year).
2. The only equipment or process variable found to correlate with fugitive emission rates was the volatility and/or the phase of the process stream.
3. Valves were found to be the largest contributors of fugitive emissions from baggable sources types. Valves are responsible for about 50-60 percent of the nonmethane hydrocarbons emitted from baggable sources in the major process units of a hypothetical 330,000 BPD refinery.
4. The major portion of fugitive nonmethane hydrocarbon emissions from any baggable source type comes from a small fraction of the sources. For example, only one percent of valves in gas-vapor service account for 70 percent of the fugitive emissions from this source.
5. It is possible to estimate fugitive hydrocarbon emission rates using portable hydrocarbon detectors as monitoring devices. It was found that the measured hydrocarbon leak rate from baggable sources could be correlated with the hydrocarbon concentration very near the site of the leak. The correlations are useful in estimating the mean leak rate when a large number (> 100) of sources are monitored.

Pollution control technology for refinery emission sources was also reviewed and evaluated during this study. It was determined that effective control methods are available for the majority of hydrocarbon emission sources in refineries. However, these methods, currently used in some refineries, cannot be universally applied. Safety and economic factors may deter their use in some refineries.

Atmospheric modeling of the emissions from a model refinery were carried out as part of an environmental assessment. The dispersion modeling results indicate that hydrocarbon emissions are potentially significant atmospheric pollutants. Ambient levels of particulate matter, sulfur oxides, nitrogen oxides, and carbon monoxide were all predicted to be well below the National Ambient Air Quality Standards (NAAQS). Assessment of the impact of the model refinery on Prevention of Significant Deterioration (PSD) increments, however, was not conducted.

Results

The major results of the fugitive emissions sampling and maintenance evaluation are briefly summarized.

Fugitive Emissions and Emission Factors

The emissions data obtained during the sampling of baggable sources was found to be most conveniently grouped for analyses into twelve categories for presentation of results and emission factor development. These twelve categories are:

1. valves - gas/vapor stream,
2. valves - light liquid/two-phase streams,
3. valves - heavy liquid streams,
4. valves - streams containing > 50% hydrogen,
5. open-ended lines (all streams),
6. pump seals - light liquid streams,
7. pump seals - heavy liquid streams,
8. compressor seals - hydrocarbon streams,
9. compressor seals - streams containing > 50% hydrogen,
10. flanges - all streams,
11. drains - all streams, and
12. relief valves (gas/vapor streams venting directly to atmosphere).

"Gas-vapor" streams consist of those hydrocarbon streams which are in the gas phase at the process conditions. Two-phase streams and hydrocarbon liquids with boiling points below kerosene are included as "light liquid/two-phase" streams. Hydrocarbon streams consisting primarily of kerosene and/or heavier liquids are considered to be in the "heavy liquid" category.

The estimated emission factors for nonmethane hydrocarbon emissions for the seven types of baggable sources are summarized in Table 1. Confidence intervals are given in each case for the estimated emission factor. This confidence interval represents the range of values expected with 95 percent confidence which, includes the average emission rate for all sources of the particular type in all U.S. refineries. The confidence intervals also include consideration of both potential biases and random variation.

Baggable sources in refineries were screened to locate those sources that were emitting hydrocarbons. One of the important results of this study has been the establishment of relationships between baggable source "screening values" and corresponding hydrocarbon leak rate. "Screening values" are the maximum hydrocarbon concentrations detected at the emission source using sensitive hydrocarbon detectors. Nomographs were developed which relate the predicted average leak rate to the screening values for the various source and stream types. The nomograph for valves in gas-vapor service is given in Figure 1. This is presented as an example; nomographs for all source and stream types are presented in the full report (Volume 1).

Table 1. Estimated Vapor Emission Factors for Nonmethane Hydrocarbons from Baggable Sources

Source Category	Emission Factor Estimate		95% Confidence Interval for Emission Factor	
	(lb/hr/source)[a]	(kgk/hr/source)[a]	(lb/hr/source)[b]	(kg/hr/source)[b]
Valves				
Gas-Vapor Streams	0.059	0.0268	(0.030, 0.110)	(0.014, 0.049)
Light Liquid/Two-Phase	0.024	0.0109	(0.017, 0.036)	(0.0077, 0.016)
Heavy Liquid	0.0005	0.00023	(0.0002, 0.0015)	(0.0001, 0.00068)
Hydrogen	0.018	0.00816	(0.007, 0.045)	(0.0032, 0.020)
Open-Ended Lines	0.005	0.0023	(0.0016, 0.016)	(0.00073, 0.0073)
Pump Seals				
Light Liquid Streams	0.25	0.113	(0.16, 0.37)	(0.073, 0.17)
Heavy Liquid Streams	0.046	0.0209	(0.019, 0.11)	(0.0086, 0.050)
Drains	0.070	0.0318	(0.023, 0.20)	(0.010, 0.091)
Flanges	0.00056	0.00025	(0.0002, 0.0025)	(0.0001, 0.0011)
Relief Valves (Gas/Vapor Streams)	0.19	0.0862	(0.070, 0.49)	(0.032, 0.22)
Compressor Seals				
Hydrocarbon Service	1.4	0.635	(0.66, 2.9)	(0.30, 1.3)
Hydrogen Service	0.11	0.0499	(0.05, 0.23)	(0.02, 0.10)

[a]The estimated mean level of emissions from all sources of this type in U.S. refineries. This factor is an average and incorporates the fact that a significant number of sources have no emissions while others have emissions ranging from 10^{-5} to 10 lbs/hr.

[b]The statistical procedures used to construct these intervals account for both systematic and random errors in experimental design, sampling, chemical analysis, and statistical analysis. The procedures used are such that at least 95% of the intervals will include the mean emission factor for a particular source category.

Maintenance Evaluation

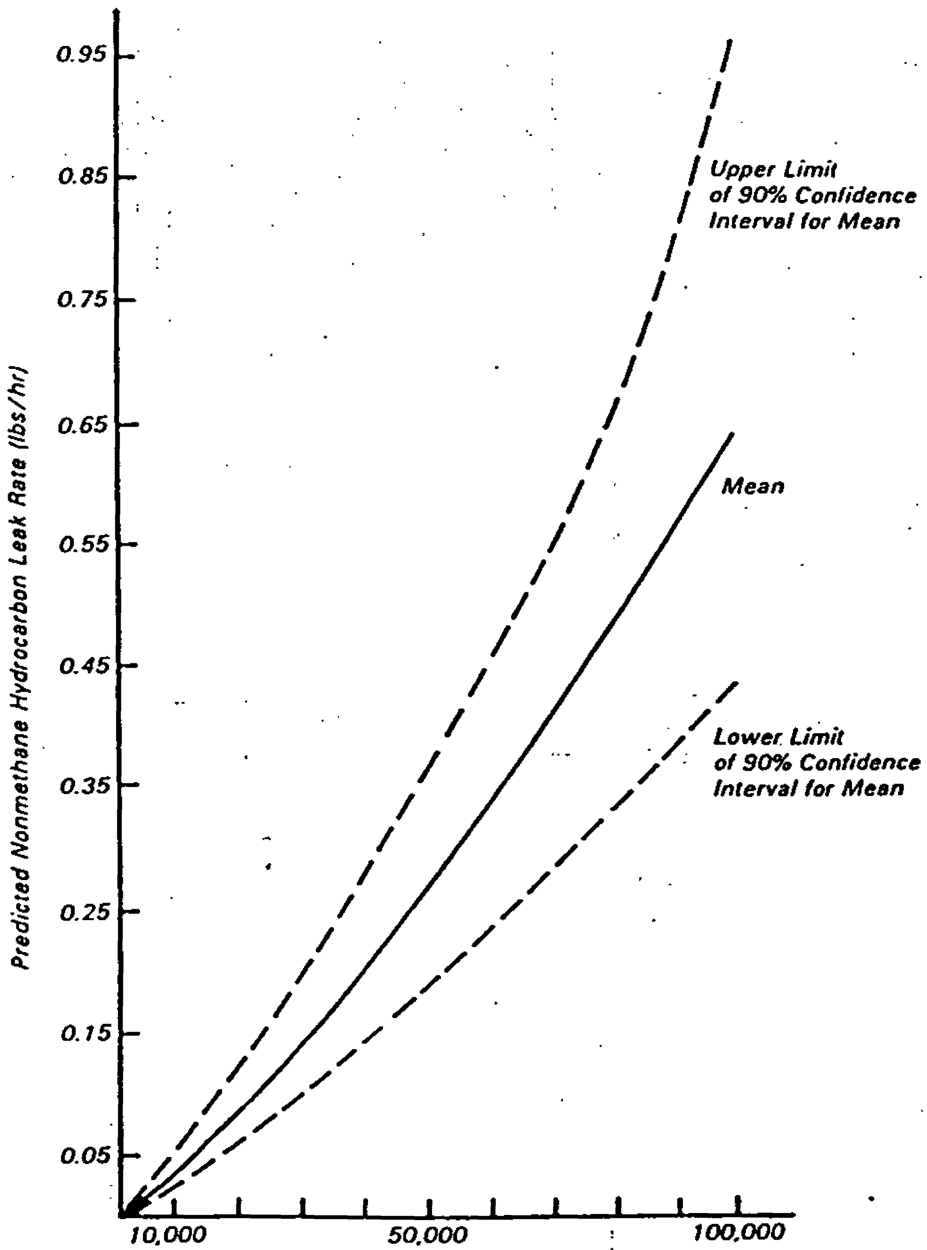
A study to determine the short-term effect of maintenance on valve emissions was conducted. Two types of maintenance were studied. Directed maintenance which involves simultaneous maintenance and monitoring until no further reduction in hydrocarbon detector readings can be achieved, and undirected maintenance which is not monitored.

The study indicated that directed maintenance can produce greater reductions in emissions than undirected maintenance. It also showed that the percentage emission reduction is lower for valves with initially smaller leak rates. Undirected maintenance actually increased average emissions from valves with initial leak rates ≤ 0.001 pounds per hour.

The results of the study are presented in Table 2. Three measures of the effectiveness of maintenance are presented: average percent reduction, weight percent reduction, and median percent reduction. The average percent reduction indicates the average effectiveness of maintenance on the individual valves in each screening value range. The weight percent reduction is a measure of the total reduction in the mass of emissions for all valves in each screening value range. The median percent reduction is the middle percent reduction in emissions after all the individual percent reductions in each category have been arranged in order of magnitude.

Both the average percent reduction and the weight percent reduction are highly influenced by extremes within the leak rate range. The median percent reduction is a more robust measure of central tendency. It cannot be affected by the very large negative values of percent reduction encountered at low leak rates (particularly with undirected maintenance).

As indicated in Table 2, only a relatively small number of valves were evaluated. Thus, the absolute values of the emission reductions presented should be used with caution.



Maximum Screening Value (ppmv) at the Source Using J. W. Bacharach TLV Sniffer Calibrated with Hexane.*

**A portable hydrocarbon detector equipped with a catalytic element as a detector.*

Figure 1. Nomograph for predicting total nonmethane hydrocarbon leak rates from maximum screening values—valves, gas/vapor streams.

Table 2. Summary of Valve Maintenance Data

Screening Value Range, ppmv	Undirected Maintenance: Number of Valves	Undirected Maintenance: Percent Emission Reduction	Directed Maintenance: Number of Valves	Directed Maintenance: Percent Emission Reduction
<5,000	28	P_a = -312 (-950,100)* P_w = 33 (-39,100) P_m = 29 (-1,79)	11	P_a = 54 (4,100) P_w = 86 (72,99) P_m = 88 (18,98)
5,000-50,000	15	P_a = 37 (-28,100) P_w = 67 (34,100) P_m = 82 (42,88)	8	P_a = 82 (65,98) P_w = 89 (69,100) P_m = 89 (-55,96)
>50,000	16	P_a = 55 (31,78) P_w = 90 (81,98) P_m = 67 (21,92)	8	P_a = 63 (-8,100) P_w = 93 (81,100) P_m = 93 (-33,99)
All	59	P_a = -124 (-410,100) P_w = 74 (69,88) P_m = 54 (29,82)	27	P_a = 65 (38,91) P_w = 91 (83,98) P_m = 91 (79,95)

*Numbers in parentheses are approximate 95 percent confidence interval for the percent emission reductions.

P_a = Average percent reduction, where percent reduction = $\dfrac{100 \times (\text{emission rate before maintenance} - \text{emission rate after maintenance})}{\text{emission rate before maintenance}}$

P_w = Weight percent reduction = $\dfrac{\sum \text{emission rate before maintenance} - \sum \text{leak rate after maintenance}}{\sum \text{emission rate before maintenance}} \times 100$

P_m = Median percent reduction

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B. A. Tichenor is the EPA Project Officer (see below)

The complete report is in five volumes, entitled "Assessment of Atmospheric Emissions from Petroleum Refining:"

Volume 1. Final Report (Order No. PB 80-225 253; Cost: $33.50)
Volume 2. Appendix A - Methodology (Order No. PB 80-225 261; Cost: $17.00)
Volume 3. Appendix B - Detailed Results (Order No. PB 225-279; Cost: $38.00)
Volume 4. Appendix C - Quality Assurance Procedures and Statistical Analysis of Emission Data; Appendix D - Detailed Environmental Assessment; Appendix E - Control Technology Review and Evaluation (Order No. PB 81-103830; Cost: $36.50)
Volume 5. Appendix F - Refinery Technology Characterization (Order No. PB 80-225 287; Cost: $29.00)

All the above reports will be available from: (costs subject to change)
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Telephone: 703-487-4650

The EPA Project Officer can be contacted at:
Industrial Environmental Research Laboratory
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

APPENDIX H

EQUIPMENT LISTING AND PROCESS FLOW DIAGRAMS

FOR TCC UNIT AND FLUID COKER

TOSCO CORPORATION
BAKERSFIELD REFINERY
UNIT 12 - FLUID COKER UNIT
EQUIPMENT LIST

NUMBER	NAME	
12-B-11	Flue Gas Waste Heat Boiler (State #27071-65)	
12-C-11	Stripper	(V-503)
12-C-12	Quench Column	(V-504)
12-C-13	Fractionator	(V-507)
12-C-51	Rerun Column	(V-26)

UNIT 12 - FLUID COKER (Continued)

12-C-61	Stabilizer		14-C-31	
12-D-11	Feed Surge Drum			(V-501)
12-D-12	Reactor			(V-502)
12-D-13	Burner			(V-505)
12-D-14	Elutriator			(V-506)
12-D-15	Fractionator Accumulator			(V-508)
12-D-16	Fract. Accum. Water-Draw Drum			(V-511)
12-D-17	Compressor Fuel Gas Drum			(V-193)
12-D-18	Compressor Suction Drum			(V-44)
12-D-19	Compressor Interstage Drum	North		(V-198)
12-D-20	Compressor Interstage Drum	N. Middle		(V-191)
12-D-21	Compressor Interstage Drum	S. Middle		(V-192)
12-D-22	Compressor Interstage Condensate Accum.			(V-23)
12-D-23	Compressor Discharge Drum	North		(V-6)
12-D-24	Compressor Discharge Drum	South		(V-413)
12-D-25	Gland Oil Surge Drum			(V-30)
12-D-26	Compressor Interstage Drum	South		(V-3)
12-D-27	Coke Loading Drum			
12-D-28	Purge Gas K.O. Drum			(V-514)
12-D-29	Valve Air Drum (State #20392-56)			(V-510)
12-D-30	Valve Air Drier Drum (State #21861-63)			
12-D-31	Condensate Blowcase (South of 12-D-18)			
12-D-32	Wet Scrubber Inlet Seal Drum			
12-D-33	Wet Scrubber Outlet Seal Drum			
12-D-34	Wet Scrubber Slurry Drum			

UNIT 12 - FLUID COKER (Continued)

12-D-35	Steam Separator	(275# Steam Header)	
12-D-51	Rerun Column Accumulator		(V-27)
12-D-52	Heavy Gas Oil Surge Drum for Coke Spray		(Future)
12-D-53	Steam Separator (150# Steam)		
12-D-61	Stabilizer Accumulator		14-D-31
12-E-11	Feed-Gas Oil Exchanger		(E-501)
12-E-12	Feed-Slurry Exchanger		(E-502)
12-E-13 12-E-13A	Slurry Quench Steam Generator Steam Separator		(E-5027)
12-E-14 12-E-14A	Slurry Quench Steam Generator Steam Separator		(E-504)
12-E-15 12-E-15A	Gas Oil Steam Generator Steam Separator		(E-5026)
12-E-16	Gas Oil Quench Cooler		(E-503)
12-E-17	Heavy Gas Oil Cooler		(E-507)
12-E-18	Light Gas Oil Cooler		(E-510)
12-E-19	Fractionator Condenser	Btm.	(E-505B)
12-E-20	Fractionator Condenser	Top	(E-505A)
12-E-21	Fractionator Condenser		
12-E-22	Interstage Cooler	North	(E-3B)
12-E-23	Interstage Cooler	N. Middle	(E-10B)
12-E-24	Interstage Cooler	S. Middle	(E-10A)
12-E-25	Compressor Discharge Cooler		(E-2)
12-E-26	Jacket Water Cooler		NEW
12-E-27	Future		
12-E-28	Future		

UNIT 12 - FLUID COKER (Continued)

12-E-29	Interstage Cooler	South	(E-4A)
12-E-30	Blower Steam Condenser		
12-E-31	1st Stage Ejector Condenser	North	
12-E-32	2nd Stage Ejector Condenser	South	
12-E-51	Rerun Column Feed-Bottoms Exchanger		(E-32)
12-E-52	Rerun Column Reboiler		(E-31)
12-E-53	Rerun Column Bottoms Cooler		(E-610)
12-E-54	Rerun Column Condenser		(E-167)
12-E-61	Stabilizer Btms. - Feed Exchanger		14-E-31
12-E-62	Stabilizer Bottoms Cooler		14-E-32
12-E-63	Stabilizer Reboiler		14-E-33
12-E-64	Stabilizer Condenser		14-E-34
12-G-11 12-G-11T	Coker Feed Pump Turbine	North	(P-502)
12-G-12 12-G-12T	Coker Feed Pump Turbine	South	(P-501)
12-G-13 12-G-13T	Slurry Recycle Pump Turbine	North	(P-504)
12-G-14 12-G014T	Slurry Recycle Pump Turbine	South	(P-503)
12-G-15 12-G-15T	Heavy Gas Oil Pump Turbine	North	(P-506)
12-G-16 12-G-16T	Heavy Gas Oil Pump Turbine	South	(P-505)
12-G-17	Future		
12-G-18	Future		
12-G-19 12-G-19T	Fractionator Reflux Pump Turbine	North	(P-508)

UNIT 12 - FLUID COKER (Continued)

12-G-20 12-G-20T	Fractionator Reflux Pump Turbine	South	(P-507)
12-G-21 12-G-21M	Kermco Gas Oil Pump Motor		(21-G-34)
12-G-22	HVGO Injection Pump		(Future)
12-G-23 12-G-23T	Quench Water Pump Turbine	North	(P-512)
12-G-24 12-G-24T	Quench Water Pump Turbine	South	(P-511)
12-G-25 12-G-25M	Sour Water Pump Motor		(P-42)
12-G-26	Interstage Condensate Pump		
12-G-27 12-G-27M	Coke Transfer Pump Motor		
12-G-28 12-G-28T	Gland Oil Pump Turbine	North	NEW
12-G-29 12-G-29T	Gland Oil Pump Turbine	South	NEW
12-G-30 12-G-30M	Start-up Oil Pump Motor		72-G-16
12-G-31	Inhibitor Pump (By 12-E-24)		
12-G-32	Inhibitor Pump (By 12-C-13N)		
12-G-33	Inhibitor Pump (By 12-C-31S)		
12-G-34	Slop Oil Pump		11-G-51
12-G-35 12-G-35M	Water Wash Booster Pump Motor		
12-G-36 12-G-36T	Blower Condensate Pump Turbine	South	
12-G-37 12-G-37T	Blower Condensate Pump Turbine	North	
12-G-38 12-G-38M	Recycle Water Wash Pump Motor		
12-G-39 12-G-39M	Wet Scrubber Slurry Pump Motor		
12-G-40	Future		
12-G-41 12-G-41T	Compressor Jacket Water Pump(North) Turbine		
12-G-42 12-G-42M	Compressor Jacket Water Pump(South) Motor		

UNIT 12 - FLUID COKER (Continued)

12-G-51	Rerun Column Feed Pump		(P-516)
12-G-52	Rerun Column Bottoms Pump		(P-199)
12-G-53	Rerun Column Reflux Pump		(P-30)
12-G-54	Injector Pump	(At Wet Scrubber)	
12-G-61	Stabilizer Reflux Pump		14-G-31
12-G-71	Wet Scrubber Recycle Pump		
12-G-71M	Motor		
12-G-72	Caustic Injector Pump (At Wet Scrubber)		
12-G-72M	Motor		
12-G-73	Wet Scrubber Acid Pump		
12-G-73M	Motor		
12-G-74	Coke Transfer Pump		
12-G-74M	Motor		
12-G-75	Future		
12-G-76	Future		
12-G-77	Caustic Injection Pump (At Wet Scrubber)		
12-G-77M	Motor		
12-H-11	Auxiliary Burner		(F-501)
12-J-11	Slurry Strainer	North	(SP-503)
12-J-12	Slurry Strainer	South	(SP-503)
12-J-13	Valve Air Drier	East	
12-J-13A	Valve Air Drier	West	
12-J-13B	Valve Air Prefilter		
12-J-14	1st Stage Ejector		
12-J-15	2nd Stage Ejector		
12-J-16	Start-Up Ejector		
12-J-17	Gas Oil Strainer	North	
12-J-18	Gas Oil Strainer	South	
12-J-19	Future		
12-J-20	Heavy Gas Oil Strainer	(Discharge)	

UNIT 12 - FLUID COKER (Continued)

12-J-21	Heavy Gas Oil Strainer	(Discharge)	
12-J-22	Beghouse		
12-J-23	Flush Oil Strainer	(Under 12-D-25)	
12-J-24	Flush Oil Strainer	(At Flush Oil Pumps)	
12-J-71	Wet Scrubber Venturi Scrubber		
12-J-72	Wet Scrubber Separator		
12-K-11	Burner Air Blower		(C-501)
12-K-11A	Main Lube Oil Pump		
12-K-11B	Pump Turbine		
12-K-11C	Governor Lube Oil Pump		
12-K-11D	Blower Turbine Steam Separator		
12-K-11E	Lube Oil Cooler	Btm.	
12-K-11F	Lube Oil Cooler	Top	
12-K-11T	Blower Turbine		
12-K-12	Gas Compressor	North	(CP-503)
12-K-12A	1st Stage Suction Pulsation Drum		
12-K-12B	1st Stage Discharge Pulsation Drum		
12-K-12C	2nd Stage Suction Pulsation Drum		
12-K-12D	2nd Stage Discharge Pulsation Drum		
12-K-12E	Lube Oil Cooler		(E-509)
12-K-12F	Lube Oil Filter		
12-K-12G	Fuel Gas Surge Drum		
12-K-13	Gas Compressor	N. Middle	(CP-19)
12-K-13A	Suction Pulsation Drum		
12-K-13B	Discharge Pulsation Drum		
12-K-13E	Lube Oil Cooler		(E-189)
12-K-13F	Lube Oil Filter		
12-K-13G	Fuel Gas Surge Drum		
12-K-14	Gas Compressor	S. Middle	(CP-20)
12-K-14A	Suction Pulsation Drum		
12-K-14B	Discharge Pulsation Drum		
12-K-14E	Lube Oil Cooler		(E-190)
12-K-14F	Lube Oil Filter		
12-K-14G	Fuel Gas Surge Drum		
12-K-15	Gas Compressor	South	

UNIT 12 - FLUID COKER (Continued)

12-K-15A	Suction Pulsation Drum	
12-K-15B	Discharge Pulsation Drum	
12-K-15C	Fuel Gas Surge Drum	
12-K-15E	Lube Oil Cooler	
12-K-15F	Lube Oil Filter	
12-K-16	Gas Compressor	
12-K-16A	Suction Pulsation Drum	
12-K-16B	Discharge Pulsation Drum	
12-K-16E	Lube Oil Cooler	
12-K-16F	Lube Oil Filter	
12-K-16G	Fuel Gas Bottle	
12-K-22	Baghouse Suction Fan	
12-K-22M	Motor	
12-K-23	Baghouse Discharge Fan	
12-K-23M	Motor	
12-T-11	Coke Tank	(3M-04)
12-T-11A	Coke Dust Precipitator	
12-T-12	Jacket Water Surge Tank	(V-516)
12-T-13	Coke Transfer Tank	
12-T-14	50 Be' Caustic Storage Tank	(12-C-71)
12-T-14E	50 Be' Caustic Heater	
12-T-15	Nalco Wt. 128 Storage Tank	

TOSCO CORPORATION
BAKERSFIELD REFINERY
UNIT 17 - T.C.C. UNIT
EQUIPMENT LIST

NUMBER	NAME	
17-C-11	Fractionator	(V-702)
17-C-12	Stripper	(V-704)
17-C-51	Splitter	(V-1201)
17-C-61	Feed Prep. Column	
17-C-81	Medium T.C.C. Caustic Scrubber	(V-1107)
17-C-82	Lt. T.C.C. Caustic Contactor	(V-1301)
17-C-83	Merox Regenerator	(V-69)
17-C-84	Lt. T.C.C. Sweetening Contactor	(V-170)
17-C-85	Lt. T.C.C. Caustic Prewash Column (17-D-81)	(V-4)
17-C-86	Lt. T.C.C. Water Wash Column	
17-C-87	Med. T.C.C. Water Wash Column	

UNIT 17 - T.C.C. UNIT (Continued)

7-D-11	Feed Surge Drum		(V-701)
17-D-12	Tar Separator		(V-723)
17-D-13	Reactor		(V-713)
17-D-14	Kiln	North	(V-715A)
17-D-15	Kiln	South	(V-715B)
17-D-16	Steam Drum (State #4173-55)		(V-714)
17-D-17	Lift Pot		(V-716)
17-D-18	Separator Surge Drum		(V-712)
17-D-19	Catalyst Storage		(V-717)
17-D-19A	Elutriator		
7-D-20	Catalyst Fines Drum		(V-718)
17-D-21	Fractionator Accumulator		(703-V)
17-D-22	Compressor Interstage Drum		(V-705)
17-D-23	Compressor Discharge Drum		(V-706)
17-D-23A	Sour Water Drum		
17-D-24	Compressor Suction Drum		
17-D-25	Valve Air Drum (State #11365-62)		(V-724)
17-D-26	Starting Air Drum (State #12573-55)		(V-721)
17-D-27	Fractionator Bottoms K. O. Drum		
17-D-28	Compressor Suction K. O. Drum		
17-D-29	1st. Stage Suction K. O. Drum	South	
17-D-30	2nd. Stage Suction K. O. Drum	North	
17-D-51	Splitter Accumulator		(V-1202)

UNIT 17 - T.C.C. UNIT (Continued)

17-D-61	Feed Prep. Surge Drum		
17-D-62	Feed Prep. Column Accumulator		
17-D-63	Condensate Accumulator		
17-D-64	Feed Prep. Sidecut Drum		(V-752)
17-D-65	Sour Gas K. O. Drum (By 17-H-11)		

17-D-82	Merox Regenerator Accumulator		(V-9)
17-D-83	Lt. T.C.C. Sweetening Drum		(1M-61)
17-D-84	Future		
17-D-85	Regenerated Merox Drum		(2C-01)
17-D-86	Disulfide Oil Drum		
17-D-87	Medium T.C.C. Sweetening Drum		(5C-54)
17-D-88	Merox Reagent Mix Drum		
17-D-89	Merox Reagent Mix Drum		
17-D-90	Merox Reagent Mix Drum		

17-E-11	Feed-Quench Exchanger	Bottom	(E-701B)
17-E-12	Feed-Quench Exchanger	Top	(E-701A)
17-E-13	Future		
17-E-14	Quench Steam Generator	East	(E-703A)
17-E-15	Future		

UNIT 17 - T.C.C. UNIT (Continued)

17-E-16	Circulating Reflux Steam Generator		(E-704)
17-E-17	Heavy Cycle Oil Cooler		(E-705)
17-E-18	Future		
17-E-19	Future		
17-E-20	Fractionator Condenser	E. Btm.	(E-708D)
17-E-21	Fractionator Condenser	E. Top	(E-708C)
17-E-22	Fractionator Condenser	W. Btm.	(E-708B)
17-E-23	Fractionator Condenser	W. Top	(E-708A)
17-E-24	Compressor Intercooler		(E-709)
17-E-25	Compressor Discharge Cooler		(E-710)
17-E-26	Catalyst Cooler	North	(E-712A)
17-E-27	Catalyst Cooler	South	(E-712B)
17-E-28	Blower Steam Condenser		(E-713)
17-E-29	Jacket Water Cooler		(New)
17-E-30	Future		
17-E-31	Future		
17-E-32	Light Cycle Oil Cooler		(14-E-18)
17-E-33	Blower Ejector Condenser		

17-E-51	Splitter Feed Preheater		(E-1205)
17-E-52	Splitter Reboiler		(E-1202)
17-E-53	Heavy T.C.C. Cooler		
17-E-54	Splitter Condenser		(E-1201)
17-E-55	Medium T.C.C. Cooler	East	(E-1153)
17-E-56	Medium T.C.C. Cooler	West	

UNIT 17 - T.C.C. UNIT (Continued)

17-E-61 17-E-61F 17-E-61G 17-E-61M	Feed Prep. Column Condenser Fan Gear Motor		
17-E-62	Future		
17-E-63	Steam Condenser		
17-E-64	Bottoms Steam Generator		
17-E-65	Bottoms Cooler		
17-E-66	1st. Stage Ejector Condenser		
17-E-67	2nd. Stage Ejector Condenser		
17-E-68	Fuel Oil Cooler		
17-E-69	Fuel Oil Cooler	(21-E-40)	(E-15)
17-E-81	Merox Regenerator Preheater	Top	(E-43)
17-E-82	Merox Regenerator Cooler	Btm.	(E-43)
17-G-11 17-G-11M	Feed Pump Motor	North	(P-701A)
17-G-12 17-G-12T	Feed Pump Turbine	South	(P-701B)
17-G-13 17-G-13M	Sour Water Pump Motor	North	(NEW)

UNIT 17 - T.C.C. UNIT (Continued)

17-G-14	Tar Separator Bottoms Pump	East	(P-716B)
17-G-15 17-G-15M	Fractionator Bottoms Pump Motor	North	(P-706A)
17-G-16	Fractionator Bottoms Pump	South	(P-706B)
17-G-17 17-G-17M	Quench Pump Motor	West	(P-704A)
17-G-18 17-G-18T	Quench Pump Turbine	East	(P-704B)
17-G-19 17-G-19M	Recycle Pump Motor	West	(P-703A)
17-G-20 17-G-20T	Recycle Pump Turbine	East	(P-703B)
17-G-21 17-G-21M	Circulating Reflux Pump Motor		(P-705)
17-G-22 17-G-22M	Lean Oil Pump Motor	East	(P-710A)
17-G-23 17-G-23T	Lean Oil Pump Turbine	West	(P-710B)
17-G-24 17-G-24M	Light Cycle Oil Pump Motor		(P-709)
17-G-25 17-G-25M	Fractionator Reflux Pump Motor	West	(P-707A)
17-G-26 17-G-26T	Fractionator Reflux Pump Turbine	East	(P-707B)
17-G-27 17-G-27M	Fractionator Accumulator Pump Motor	North	(P-708A)
17-G-28 17-G-28T	Fractionator Accumulator Pump Turbine	South	(P-708B)
17-G-29 17-G-29M	Sour Water Pump Motor	South	(P-711)
17-G-30	Interstage Condensate Pump	East	(P-702B)
17-G-31	Interstage Condensate Pump	West	(P-702A)
17-G-32 17-G-32T	Blower Condensate Pump Turbine	East	(P-714B)
17-G-33 17-G-33T	Blower Condensate Pump Turbine	West	(P-714A)
17-G-34 17-G-34M	Feed Booster Pump Motor	West	(72-G-39)

UNIT 17 - T.C.C. UNIT (Continued)

17-G-35	Feed Booster Pump	East	(72-G-40)
17-G-35T	Turbine		
17-G-36	Tar Separator Bottoms Pump	West	(P-263)
17-G-36T	Turbine		
17-G-37	Compr. Jacket C. W. Pump	North	
17-G-37T	Turbine		
17-G-38	Compr. Jacket C. W. Pump	South	
17-G-38M	Motor		
17-G-50	Medium T.C.C. Pump		
17-G-50E	Gland Oil Cooler		
17-G-50T	Turbine		
17-G-51	Heavy T.C.C. Pump	West	(P-1202A)
17-G-51E	Gland Oil Cooler		
17-G-51M	Motor		
17-G-52	Heavy T.C.C. Pump	East	(P-1202B)
17-G-52T	Turbine		
17-G-53	Splitter Reflux Pump	West	(P-1201A)
17-G-53M	Motor		
17-G-54	Splitter Reflux Pump	East	(P-1201B)
17-G-54T	Turbine		
17-G-55	Inhibitor Pump (By North of 17-D-23)		
17-G-56	Inhibitor Pump (By 17-C-11)		
17-G-57	Future		
17-G-58	Coker Naphtha Feed Pump		
17-G-58T	Turbine		
17-G-59	Caustic Injection Pump (By 15-G-59)		
17-G-60	Coker Naphtha Feed Pump		
17-G-60M	Motor		
17-G-61	Feed Prep. Feed Pump	East	
17-G-61M	Motor		
17-G-62	Feed Prep. Feed Pump	West	
17-G-62T	Turbine		

<u>UNIT 17 - T.C.C. UNIT (Continued)</u>

17-G-63	Bottoms Pump	East
17-G-63M	Motor	
17-G-64	Bottoms Pump	West
17-G-64T	Turbine	
17-G-65	Reflux Pump	East
17-G-65M	Motor	
17-G-66	Reflux Pump	West
17-G-66T	Turbine	
17-G-67	Condensate Pump	East
17-G-67M	Motor	
17-G-68	Condensate Pump	West
17-G-68T	Turbine	
17-G-69	Oily Water Pump	North
17-G-69M	Motor	
17-G-70	Slop Oil Pump	South
17-G-70M	Motor	
17-G-71	Cooling Water Pump (Box Cooler)	South
17-G-71M	Motor	
17-G-72	Catalyst Slurry Pump	
17-G-72M	Motor	
17-G-73	Cooling Water Pump (By Box Cooler)	North
17-G-73M	Motor	
17-G-74	Feed Prep. Sidecut Pump	North
17-G-74M	Motor	
17-G-75	Feed Prep. Sidecut Pump	South
17-G-75T	Turbine	
17-G-76	Fuel Oil Booster Pump	
17-G-76M	Motor	

17-G-81	Light T.C.C. Merox Pump	(P-247)
17-G-81M	Motor	
17-G-82	40 Be' Caustic Pump	(P-1311)
17-G-82M	Motor	
17-G-83	Antioxidant Pump	

UNIT 17 - T.C.C. UNIT (Continued)

17-G-84	40 Be' Spent Caustic Pump	(P-1314)
17-G-85	15 Be' Spent Caustic Pump	(P-32)
17-G-86	15 Be' Caustic Transfer Pump	
17-G-87	Regenerated Merox Pump	(P-77)
17-G-87D	Pulsation Drum	
17-G-88	Regenerated Merox Pump	(P-1301)
17-G-88M	Motor	
17-G-89	Disulfide Oil Pump	(P-1306)
17-G-89M	Motor	
17-G-90	Water Wash Pump	
17-G-90M	Motor	
17-G-91	Medium T.C.C. Merox Pump	(15-G-53)
17-G-91M	Motor	
17-G-92	Spray Water Pump (Wet Scrubber)	
17-G-92M	Motor	
17-G-93	Make-up Water Pump (Wet Scrubber)	
17-G-93M	Motor	
17-G-94	Antioxidant Pump	

17-H-11	Feed Heater	(H-701)
17-H-12	Combustion Air Heater	(H-702)
17-H-13	Lift Air Heater	(H-703)

17-H-61	Feed Prep. Heater

UNIT 17 - T.C.C. UNIT (Continued)

17-J-11	Catalyst Elevator		(M-703)
17-J-11M	Motor		
17-J-12	Passenger Elevator		(M-704)
17-J-12M	Motor		
17-J-13	Catalyst Fines Cyclone		(M-702)
17-J-14	Fractionator Bottoms Strainer	East	(L-701A)
17-J-15	Fractionator Bottoms Strainer	West	(L-701B)
17-J-16	Blower Condenser Ejector	East	
17-J-17	Blower Condenser Ejector	West	
17-J-18	Tar Separator Bottoms Strainer		
17-J-19	Future		
17-J-20	T.C.C. Wet Scrubber		

17-J-61	1st. Stage Ejector	East
17-J-61A	1st. Stage Ejector	West
17-J-62	2nd. Stage Ejector	East
17-J-62A	2nd. Stage Ejector	West

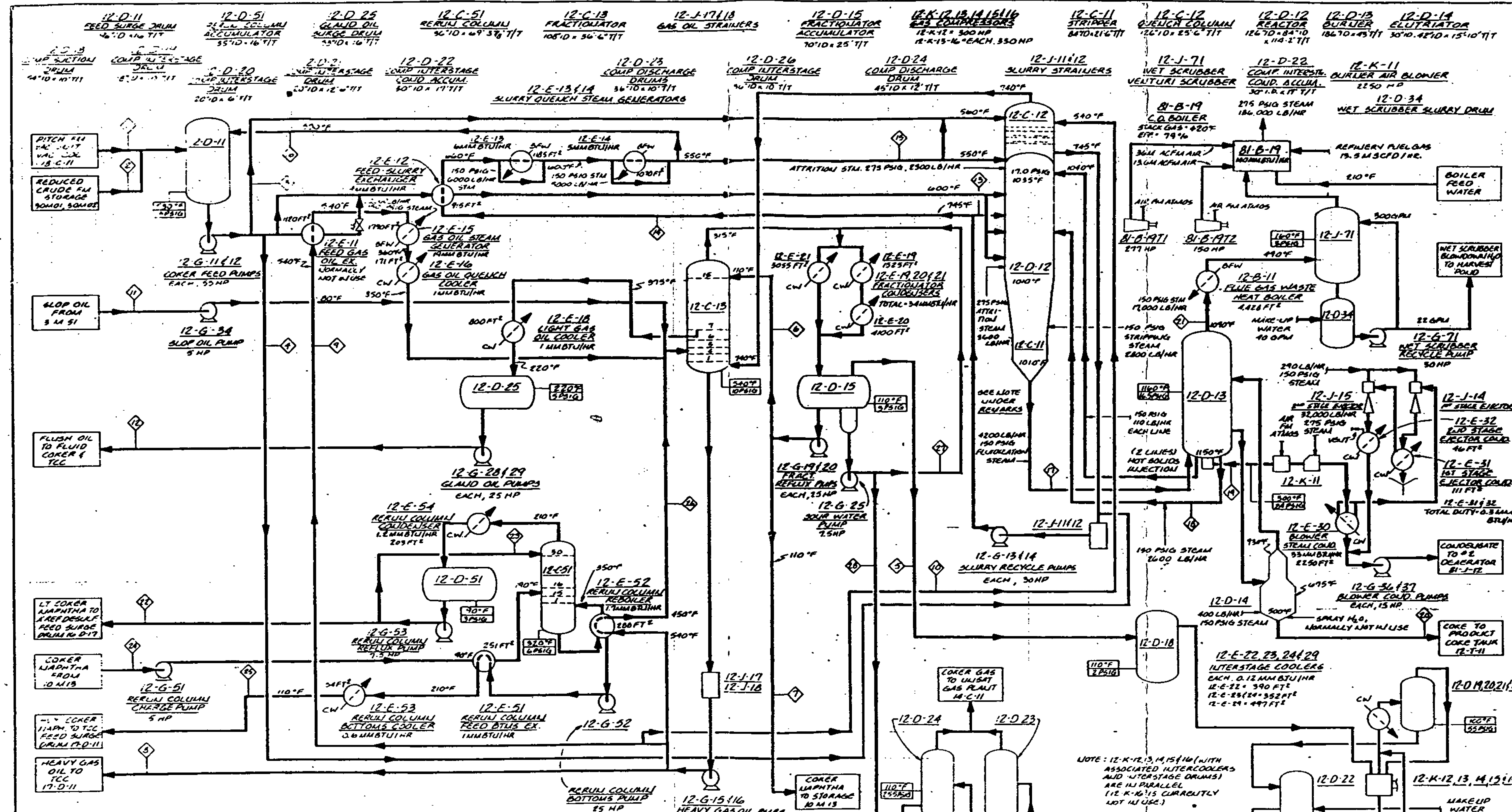
17-K-11	Gas Compressor	South	(CP-701A)
17-K-11A	1st. Stage Suction Pulsation Drum		(V-708A)
17-K-11B	1st. Stage Discharge Pulsation Drum		(V-709A)
17-K-11C	2nd. Stage Suction Pulsation Drum		(V-710A)
17-K-11D	2nd. Stage Discharge Pulsation Drum		(V-711A)

UNIT 17 - T.C.C. UNIT (Continued)

17-K-11E	Lube Oil Cooler	
17-K-11F	Lube Oil Filter	
17-K-11G	Fuel Gas Surge Drum	
17-K-12	Gas Compressor	Middle
17-K-12A	1st. Stage Suction Pulsation Drum	
17-K-12B	1st. Stage Discharge Pulsation Drum	
17-K-12C	2nd. Stage Suction Pulsation Drum	
17-K-12D	2nd. Stage Discharge Pulsation Drum	
17-K-12E	Lube Oil Cooler	
17-K-12F	Lube Oil Filter	
17-K-12G	Fuel Gas Surge Drum	
17-K-13	Gas Compressor	North
17-K-13A	1st. Stage Suction Pulsation Drum	
17-K-13B	1st. Stage Discharge Pulsation Drum	
17-K-13C	2nd. Stage Suction Pulsation Drum	
17-K-13D	2nd. Stage Discharge Pulsation Drum	
17-K-13E	Lube Oil Cooler	
17-K-13F	Lube Oil Filter	
17-K-13G	Fuel Gas Surge Drum	
17-K-14	Gas Compressor	
17-K-14A	1st. Stage Suction Pulsation Drum	
17-K-14B	1st. Stage Discharge Pulsation Drum	
17-K-14C	2nd. Stage Suction Pulsation Drum	
17-K-14D	2nd. Stage Discharge Pulsation Drum	
17-K-14E	Lube Oil Cooler	
17-K-14F	Lube Oil Filter	
17-K-14G	Fuel Gas Bottle	
17-K-15	Air Blower	
17-K-15A	Silencer	
17-K-15D	Condensate Accumulator	
17-K-15E	Lube Oil Cooler	East
17-K-15F	Lube Oil Cooler	West
17-K-15G	Main Lube Oil Pump	
17-K-15H	Auxiliary Lube Oil Pump	
17-K-15M	Motor	
17-K-15T	Blower Turbine	
17-K-16	Future	

UNIT 17 - T.C.C. UNIT (Continued)

17-K-17	Cooling Air Fan	(CP-703)
17-K-17A	Silencer	
17-K-17M	Motor	
17-K-18	Fines Cyclone Vacuum Blower	(CP-704)
17-K-18M	Motor	
17-K-19	Future	
17-K-20	Wet Scrubber Blower	
17-K-20M	Motor	
17-T-11	Compressor Jacket Water Tank	
17-T-12	Future	
17-T-13	Recycle Liquid Supple Tank (Wet Scrubber)	
17-T-61	Hotwell	
17-T-62	Catalyst Slurry Tank	
17-T-62J	Mixer	
17-T-62M	Motor	
17-T-81	15 Be' Caustic Blend Tank	(7X-02)
17-T-82	Spent 40 Be' Caustic Tank	(3C-02)
17-T-83	50 Be' Caustic Tank	(3C-02)
17-T-84	40 Be' Caustic Tank	(1C-1311)
17-T-85	40 Be' Caustic Tank	(1C-1312)
17-T-86	Spent 40 Be' Caustic Tank	(2.5C-01)
17-T-87	Spent 40 Be' Caustic Tank	(2.5C-02)
17-T-88	Spent 40 Be' Caustic Tank	500 bbl
17-T-89	Spent 40 Be' Caustic Tank	1000 bbk



STREAM NO.	1	2	3	4	5	6	7
DESCRIPTION	PITCH FM VACUUM UNIT	REDUCED CRUDE FM STORAGE	FRESH FEED TO QUENCH TOWER	[illegible]	OVERHEAD WET GAS	FRACT. REFLUX	COKER NAPHTHA TO STORAGE
RATE BPSD	7100	0	2200	300	5.5 MM SCF/D	3700	1600
MAXIMUM RATE	7100	0	2200	300	5.5 MM SCF/D	3700	1600

STREAM NO.	8	9	10	11	12	13	14	15	16	17
DESCRIPTION	HEAVY GAS OIL TO TCC	HVY. GAS OIL PUMPAROUND	HEAVY GAS OIL WASH	SLOP OIL FEED	FLUSH OIL TO FLUID COKER / TCC	SLURRY RECYCLE	SLURRY TO QUENCH TOWER	SLURRY TO QUENCH TOWER TOP & BTM	SLURRY SPILLBACK	COLD COKE TO BURNER
RATE BPSD	3200	14000	2,000	700	500	3500	10,100	9600	500	13 TONS/MIN
MAXIMUM RATE	3200	14000	2,000	700	500	3500	10,100	9600	500	13 TONS/MIN

STREAM NO	18	19	20	21	22	23	24	25	26	27	28
DESCRIPTION	HOT COKE TO REACTOR	AIR TO BURNER	PROD COKE	FLUE GAS TO WET GAS SCRUBBER	LT COKER NAPHTHA TO A REF-DESULF.	RERUN TOWER REFLUX	COKER NAPHTHA	HVY COKER NAPHTHA TO TCC	HOT OIL TO RERUN BOILER	FRACT. OVHD WASH WATER	SOUR WATER TO 86-D-51
RATE BPSD	3 TONS/MIN	2,500 SCF/MIN	250 T/D	20,000 SCF/MIN	400	100	1600	1200	3100	900	1400
MAXIMUM RATE	13 TONS/MIN	2,500 SCF/MIN	250 T/D	20,000 SCF/MIN	400	100	1600	1200	3100	2000	1400

REFERENCE DESCRIPTION DRAWINGS

2	6-1-82

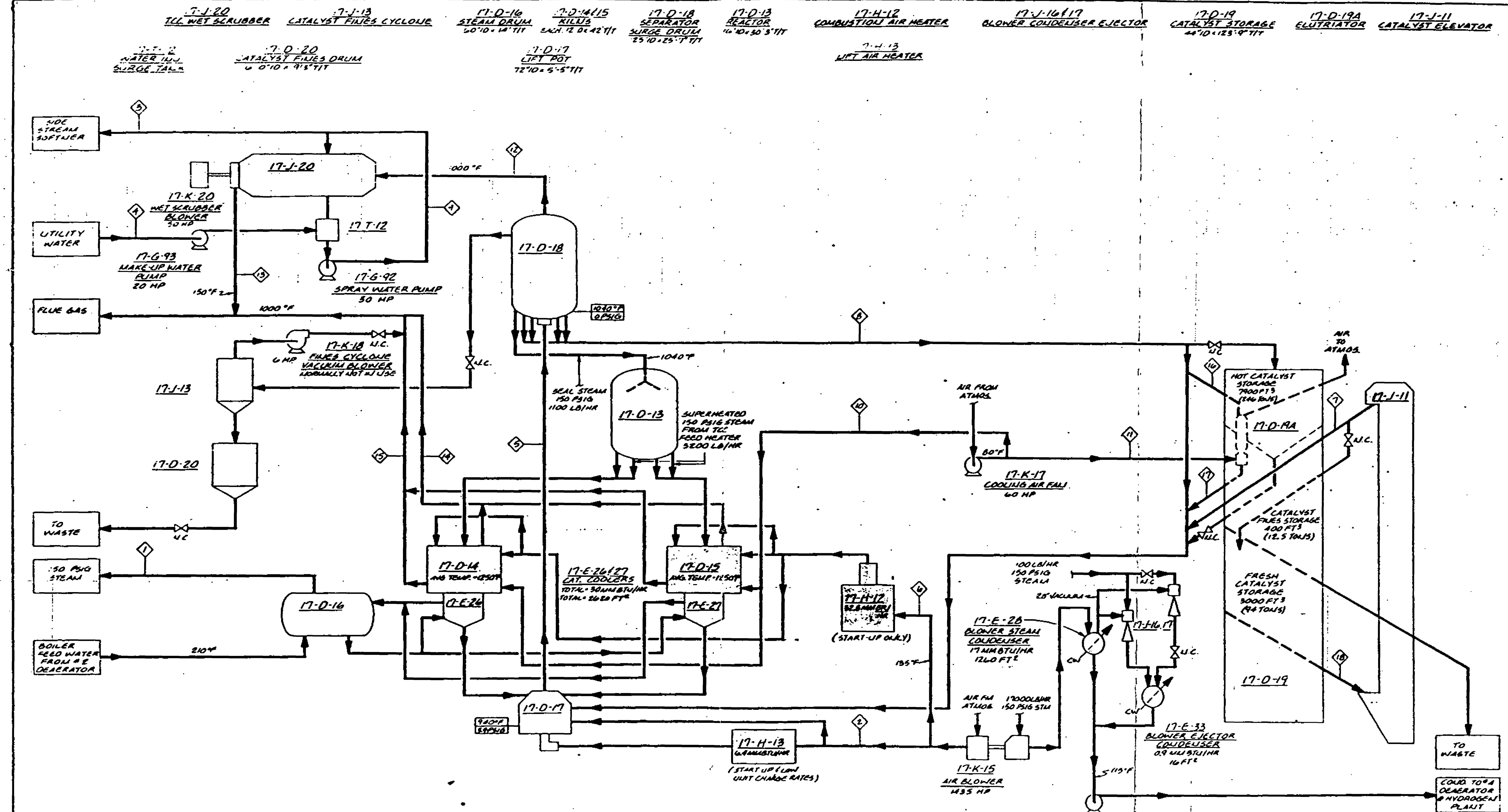
UNMETERED 150 PSIG STEAM FLOWRATE TO HOT & COLD COKE RISERS 150 PSIG 9000 LB/HR

TOSCO CORPORATION

PROCESS FLOW DIAGRAM
FLUID COKER

1/30/? J.G. 12-F-4 2

3-12-82



STREAM NO	1	2	3	4	5	6	7	8
DESCRIPTION	STEAM FM 17-D-16	LIFT AIR FM BLOWER OUTLET	WET SCRUBBER BLOWDOWN	WET SCRUBBER MAKE-UP WATER	CATALYST CIRCULATION	COMBUS. AIR HEATER FLOWRATE	CATALYST MAKE-UP	CATALYST BYPASSING REACTOR
RATE BPSD	27,500 LB/HR	[illegible] MSCF/MIN	25 GPM	45 GPM	320 TONS/HR		0.75 T/D	15 T/HR
DESIGN RATE						23 MSCF/MIN		

STREAM NO	9	10	11	12	13	14	15	16
DESCRIPTION	SPRAY-WATER CIRCULATION	COOLING AIR TO KILNS	COOLING AIR TO ELUTRIATOR	AIR TO TCC WET SCRUBBER	AIR FROM TCC WET SCRUBBER	FLUE GAS FROM KILN	FLUE GAS FROM KILN	CATALYST TO ELUTRIATOR
RATE BPSD	175 GPM			66 MSCF/MIN	7.8 MSCF/MIN			
DESIGN RATE		4300 SCFM	700 SCFM			20.5 MSCF/MIN	8.1 MSCF/MIN	2-7 TONS/HR

STREAM NO	17	18
DESCRIPTION	CATALYST FROM ELUTRIATOR	FRESH CATALYST TO 17-J-11
RATE BPSD		
DESIGN RATE	2-7 TONS/HR	0.75 TONS/DAY

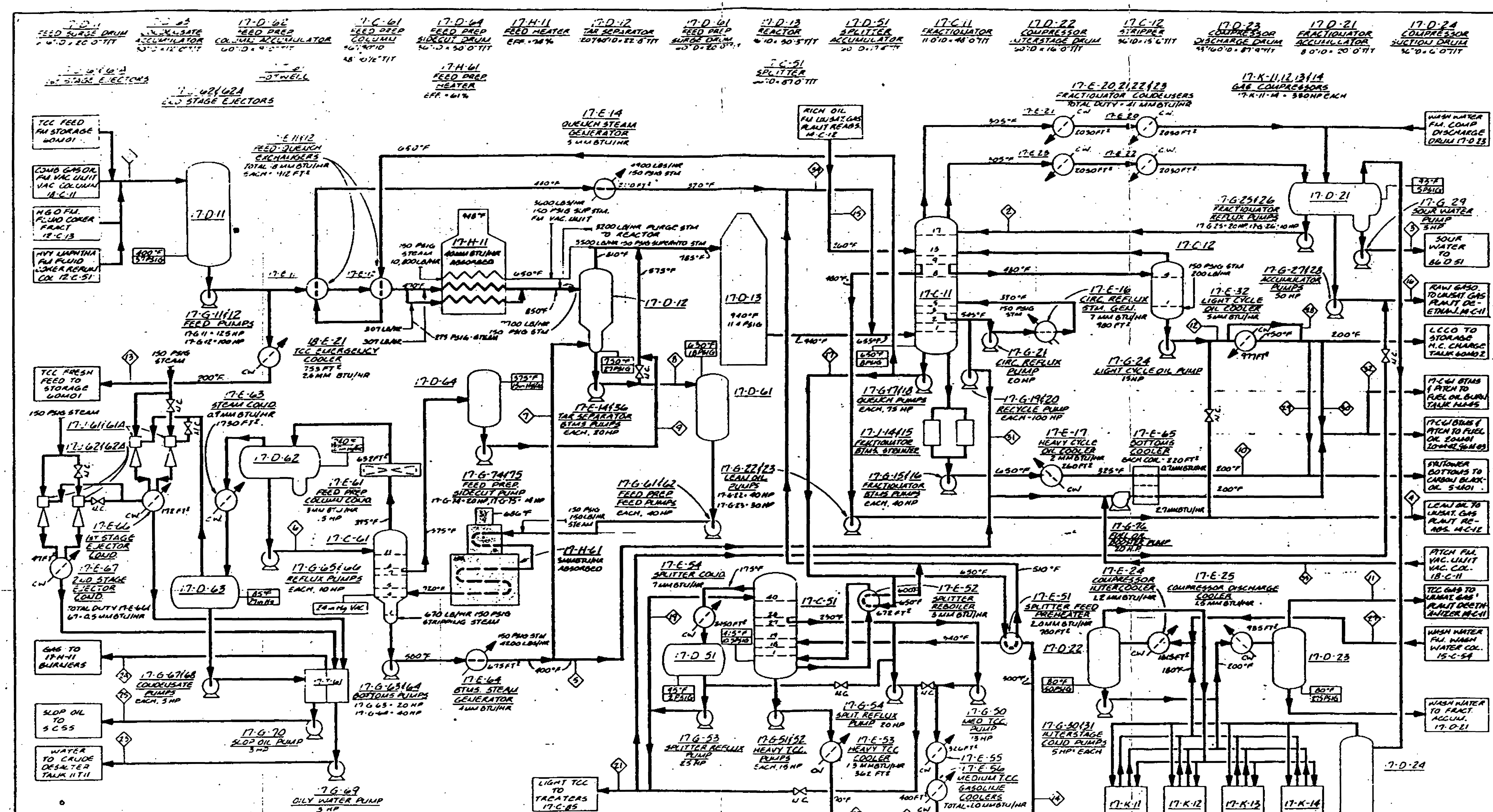
REFERENCE DESCRIPTION DRAWINGS

TOSCO CORPORATION

PROCESS FLOW DIAGRAM
TCC CATALYST HANDLING

	NONE		
	1-?-82	17-F-7	1
	J.G.		

3-12-82



STREAM No	1	2	3	4	5	6	7	8	9
DESCRIPTION	UNIT FEED	SYNTOWER REFLUX	SYNTOWER ACCUM SOUR WATER	LEAN OIL TO GAS PLANT	FEED PREP BTMS. TO FUEL OIL	FEED PREP TWR REFLUX	FEED PREP BTMS QUENCH	FEED PREP HEATER FEED	FEED PREP SIDECUT LIQ FEED TO TCC
FLOW RATE BPSD	12,000	4100	1400	10,100	1700	1000	490	4220	1490
DESIGN RATE									

STREAM No	10	11	12	13	14	15	16	17	18	19	20	21
DESCRIPTION	SYNTOWER BTMS TO STORAGE	TCC WET GAS	TCC LCCO FM SYNTOWER	TCC FRESH FEED TO STORAGE	TCC GASO. SPLIT FEED	RICH OIL FM GASCON	RAW TCC GASO TO GAS CON.	SYNTOWER QUENCH CIRC	SYNTOWER CIRC REFLUX	GASO. SPLIT REFLUX	MED. TCC GASO.	LIGHT TCC GASOLINE
FLOW RATE BPSD	760	12 MMSCFD	3100	1200	3700	10,180	3000	4120	4100	1550	1260	1720
DESIGN RATE												

STREAM No	22	23	24	25	26	27	28	29	30	31	32	33	34
DESCRIPTION	HVY TCC GASO TO STORAGE	H2O TO CRUDE DESALT TANK	GAS TO 17-H-11 BURNERS	SLOP OIL TO SC-55	PURCHASED CYCLE OIL	WASH H2O FM 15-C-54	17-E-32 BYPASS	LCCO TO CARBON BLK OIL	LCCO TO FUEL OIL	RECYCLE GAS TO FUEL OIL	FUEL OIL TO BURN TANK	VACUUM PITCH	QUENCH
FLOW RATE BPSD	720	60	5 FOEB	50	0	410	600	0	0	0	100	0	20,000
DESIGN RATE													

3	CJN.	10-12-82	REVISED
2		6-1-82	REVISED

TOSCO CORPORATION

PROCESS FLOW DIAGRAM
TCC FEED PREPARATION
REACTION & DISTILLATION

DRAWN: JG
17-F-6
REV. 3

3-12-82

APPENDIX I

REPRESENTATIVE TCC KILN GAS ANALYSIS

CATALYST SECTION DATA

	1-27-75	5-19-75	10-8-75	3-30-76	1-19-77	6-13-77
North Kiln Data						
Top flue O_2	1.0	1.2	2.4	1.7	1.9	2.4
Top flue CO	3.6	5.0	6.9	4.8	8.7	6.9
Top flue CO_2	11.0	10.9	10.6	10.5	11.0	10.5
Cat. Weir, in.	5 3/4	7 1/4	7 1/2	7 1/4	7	6 1/2
Btm. flue O_2	15.9	11.6	14.1	13.1	13.6	14.9
Btm. flue CO	--	--	--	--	—	--
Btm. flue CO_2	5.4	8.6	6.5	7.4	7.0	5.6
Cat. Temp. Out	1065	1057	1090	1063	1060	1075
South Kiln Data						
Top flue O_2	0.9	1.3	2.0	2.0	1.5	1.6
Top flue CO	3.4	4.4	6.8	5.1	8.4	6.7
Top flue CO_2	11.3	11.1	10.9	10.3	11.6	108
Cat. Weir, in.	5 1/2	6 1/4	6 1/2	7 1/4	6	6 1/2
Btm. flue O_2	13.2	11.3	13.6	11.3	14.9	N.A.
Btm. flue CO	--	--	--	--	—	--
Btm. flue CO_2	7.9	9.2	7.1	9.4	5.8	N.A.
Cat. Temp. Out	1078	1150	1147	1124	1110	1123
General Data						
Cat. Circ. T/hr	290	320	320	320	315	315
T to React, °F	1145	1108	1098	1074	1100	1091
" Out, Rx, °F	934	935	938	930	934	936
Comb. Air, SCFH	23445	21569	25008	25008	25008	23,445
Spent Cat.%C	0.90	1.52	1.09	1.19	.80	.87
Regen.Cat.%C	0.03	0.17	0.046	0.22	.08	.07
Calc Coke Cat.	5046	8640	6688	6208	4536	5040
Calc Coke P &I	7567	9202	8596	8925	8810	8291

TOSCOPETRO CORPORATION
BAKERSFIELD REFINERY

GAS ANALYSIS REPORT

LABORATORY GAS LAB		OPERATOR D.C. WALKER			DATE MAY 3, 1977	
UNIT TCC	KILN STACK GAS					
SAMPLE DATE	5-3-77					
SAMPLE TIME	1 00 PM					
PERCENT	GAS VOL					
HYDROGEN 13						
NITROGEN + INERTS 9	78.79					
OXYGEN	* 7.5					
CARBON MONOXIDE 17	* 4.9					
CARBON DIOXIDE 21	* 8.5					
HYDROGEN SULFIDE 25						
METHANE 29	0.12					
ETHANE 33	0.04					
ETHYLENE 37						
PROPANE 41	0.02					
PROPYLENE 45	0.01					
ISOBUTANE 49	0.01					
NORMAL BUTANE 53	0.01					
TOTAL BUTENES 57						
1,3-BUTADIENE 61						
ISOPENTANE 65	TRACE					
NORMAL PENTANE 69	TRACE					
TOTAL PENTENES 73						
TOTAL C6 PLUS 77	0.10					

DIST: JAK
RWT
RDM
JAV(2)
JLC

REMARKS
*ORSAT ANALYSIS

PREPARED BY D. L. Walker
SUBMITTED BY A. G. Wyman (AGW)

Form 95003-T 12-76

DATA AND RESULTS:

Sample type TCC UNIT Date 2/10/78 Time 1700

10,300 ppm C_1 = 53 @ 200X

COMPONENT	RESPONSE	ATTENUATION	AREA	ppm. vol. C_	ppm as C
STD. PROPANE	[illegible]	10	73	1030	
METHANE	0.-	10	65	630	
ETHYLENE					
ETHANE	1.41	10	7	140	
PROPYLENE					
PROPANE	1.00	10.	7	100	
BUTENES					
BUTANES					
PENTENES					
PENTANES					
> n-PENTANE	0.500	10	less than 5	less 40	
CARBON MONOXIDE	—	—	—	~~580~~ *	

Total light hydrocarbons C_ 870 *ppm vol. (dry)
as carbon C_ ________*ppm (dry)

Total olefins C_ ________ppm as Carbon________ppm

~~*methane neglected~~

* orsat analysis on 2/15/78 shows 3.9% & 4.0% CO

CALCULATION OF NMHC

May 3, 1977 Test

Component	Measured ppm	MW	ppm (as CH_4)*
Ethane	400	30	750
Propane	200	44	550
Propylene	100	42	262.5
Isobutane	100	58	362.5
N-butane	100	58	362.5

*Equivalent ppm as CH_4 =

$$\text{Measured ppm} \times \frac{\text{MW Component}}{\text{MW } CH_4}$$

February 10, 1978 Test

Component	Measured ppm	MW	ppm (as CH_4)*
Ethane	140	30	262.5
Propane	100	44	275
N-butane	100	58	362.5

*Equivalent ppm as CH_4 =

$$\text{Measured ppm} \times \frac{\text{MW Component}}{\text{MW } CH_4}$$

$$\text{Average} = \frac{2287.5 + 537.5}{2} = 1412.5 \text{ ppm (as } CH_4\text{)}$$

ESA 26200-455

APPENDIX J

TCC CATALYST LIFT SCRUBBER TEST DATA

AUGUST 3, 1976 SOURCE TEST BY KCAPCD

1700 Flower Street
P. O. Box 997
Bakersfield, California 93302

(805) 861-3682

KERN COUNTY HEALTH DEPARTMENT
AIR POLLUTION CONTROL DISTRICT

OWEN A. KEARNS, M.D., M.P.H.
Director of Public Health
Air Pollution Control Officer

SOURCE TEST

August 3, 1976

LION OIL COMPANY
TCC Scrubber

Source Test Performed By: V. Leung
P. Calvillo

Process Observations By: T. Paxson

Report Prepared By: V. Leung

Report Approved By: L. Landis

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(8/3/76:19pp)

SOURCE TEST

LION OIL COMPANY

Unit Tested: The catalyst lift system exhaust scrubber for the TCC unit.

Date Tested: August 3, 1976.

Purpose of the Test: This test was conducted to determine the concentration and emission rate of particulate matter emitted in the exhaust stream.

Source Test Description: Two particulate samples were collected isokinetically while traversing the sampling probe across the duct at 6 sampling points representing equal areas of the duct cross section. Two sampling ports were employed to collect each sample. Each port was located approximately 15 feet downstream and 5 feet upstream from the nearest bend or other source of turbulence.

Sampling Method: (Refer to the diagram on page 11) The method employed to collect these samples is generally described in Joy Manufacturing's Bulletin WP-50 and the Los Angeles Source Testing Manual.

Moisture Content: (Refer to pages 14&18) The preliminary value was determined psychrometrically. The reported value was determined by measuring the impinger condensate.

Duct Gas Density: (Refer to pages 14&18) The gas density was based on the molecular weight of dry air corrected for moisture.

Duct Temperature: The duct temperature was measured with a metal stem thermometer.

Velocity: The velocity was determined with a slant manometer and Type S pitot tube which was attached to the probe.

Results:

Sample Run	Emissions		Process Weight	%Isokinetic
	gr/scf	lb/hr	T/hr	
A.	0.025	2.4	310	97
B.	0.014	1.3	310	100
Mean	0.020	1.9	310	99

PROCESS OBSERVATIONS- Lion Oil Company Thermofor Catalytic Cracking Unit Catalyst Lift System Surge Separator Exhaust Gas Scrubber Source Test

DATE: 3 August 76

OBSERVER: Thomas Paxson, Air Sanitation Engineer

PROCESS DESCRIPTION AND OBSERVATIONS:

The Lion Oil Company Thermofor Catalytic Cracker receives a gas oil feedstock which is heated, passed through a reactor packed with a catalyst and separated in a fractionating column into gas, gasoline, light fuel oil, heavy fuel oil and recycle oil. During the source test, the TCC unit received approximately 550 barrels per hour of gas oil feed.

The TCC unit actually consists of two systems: the hydrocarbons processing circuit and the catalyst processing circuit. Catalyst is continually passed through the reactor, the kilns in which it is regenerated, the lift pot, the surge separator and back into the reactor. The surge separator discharges catalyst into the column feeding the reactor and discharges gas through a Krebs scrubber which discharges into the kiln exhaust stack. The duct between the scrubber and the kiln stack was fitted with sampling ports and it was at this point the separator surge exhaust gas was sampled for compliance with Rules 404 and 405. Catalyst was being circulated through the circuit at a rate of 310 tons per hour.

The Krebs scrubber consists of a quench section, a wet impingement plate section and an exhaust fan. The pressure drop across the scrubber was constant at about 7 inches water column.

There were no detectable visible emissions from the TCC kiln stack.

APPENDIX K

CO BOILER SOURCE TEST DATA

SEPTEMBER 22, 1982 TEST FOR ARB BY CHEMECOLOGY

CHEMECOLOGY CORPORATION

18823 Porterville Hwy., Bakersfield, CA 93308 • (805) 399-9335
Mailing Address: P.O. Box 1193, Bakersfield, CA 93302

FIELD DATA SOURCE TEST

PREPARED FOR: STATE OF CALIFORNIA AIR RESOURCES BOARD
POST OFFICE BOX 2815
SACRAMENTO, CA 95812

ATTENTION: MR. GARY L. ZIMMERMAN

REGARDING: DETERMINE EMISSIONS FOR NOx, CO, CO_2 AND O_2

REGULATORY AGENCY: C.A.R.B.
PURPOSE: DETERMINATION OF COMPLIANCE
TEST DATE: SEPTEMBER 22, 1982
UNIT TESTED: CO BOILER, TOSCO REFINERY, BAKERSFIELD, CALIFORNIA

REPORT NUMBER: 1498
TESTED BY: A. Winkler
A. WINKLER
REVIEWED BY: JKS

CHEMECOLOGY CORPORATION

CHEMECOLOGY CORPORATION

INTRODUCTION

On September 22, 1982 Chemecology performed a source test on the carbon monoxide boiler at Tosco Refinery in Bakersfield. The test was performed at the request of the California State Air Resources Board without prior notice to Tosco Refinery. Testing was performed by Andy Winkler and Tim Brennan of Chemecology with Gary Zimmerman present representing the State Air Resources Board.

The Tosco Bakersfield Refinery operates a CO boiler (#9) which burns the gaseous by products of a fluid coker. Refinery fuel gas was used as a makeup fuel. (See Diagram A). The boiler is rated at 160,000 pounds per hour steam flow and is manufactured by Zurn Industries.

Triplicate one (1) hour runs were performed with calibrations before and after each test run. Concentrations of NOx, CO, CO_2 and O_2 were measured using approved EPA instrumentation methods and Protocol 1 certified span gases.

Volume flow rates and %H_2O (EPA Method #2 and #4 respectively) were measured at the outlet during the instrument test runs. Lbs/hr calculations were made using the average of two volume flow rates measured.

Zalco Laboratories of Bakersfield analyzed duplicate gas samples of the Fuel Gas and Coke Oven Off Gas and a combined F Factor was calculated. It was necessary to back calculate the Coke Oven Off Gas Feed Rate to determine the combined F Factor of the two gases combusted in the CO Incinerator.

Tosco Bakersfield
CO Boiler
9/22/82

SUMMARY OF RESULTS: lbs/MMBtu

			CO		NOx		Lbs/MMBtu	
Time	$\%O_2$	$\%CO_2$	ppm Dry	ppm @ 3% O_2	ppm Dry	ppm @ 3% O_2	CO	NOx
10:15-11:15	4.8	10.2	410	450	155	170	0.42	0.26
11:30-12:30	3.8	11.7	500	520	145	155	0.48	0.23
12:46-13:46	3.6	12.0	440	450	160	165	0.42	0.25
Average	4.1	11.3	450	475	155	165	(0.44)	(0.25)

Equations:

$$\text{Lbs/MMbtu} = \text{ppm} * \text{MW} * \frac{20.9}{20.9-\%O_2} * 2.59 * 10^{-9} * \text{F factor (@ 60°F std)} * \frac{460+68}{460+60}$$

MW(NOx) = 46 gm/mole

MW(CO) = 28 gm/mole

F Factor = 10,600 $SDCF_o$/MMBtu

Tosco Bakersfield
CO Boiler
9/22/82

SUMMARY OF RESULTS: lbs/hr

Time	$\%O_2$	$\%CO_2$	ppm CO	ppm NOx	SDCFM 1/	Lbs/hr CO	Lbs/hr NOx
10:15-11:15	4.8	10.2	410	155	48,200	87.4	54.3
11:30-12:30	3.8	11.7	500	145	48,200	106.6	50.8
12:46-13:46	3.6	12.0	440	160	48,200	93.8	56.0

Equations:

$$\text{Lbs/hr} = \text{ppm} * \text{MW} * 1.581 * 10^{-7} * \text{SDCFM}$$

MW(CO) = 28; MW(NOx) = 46 grams/mole

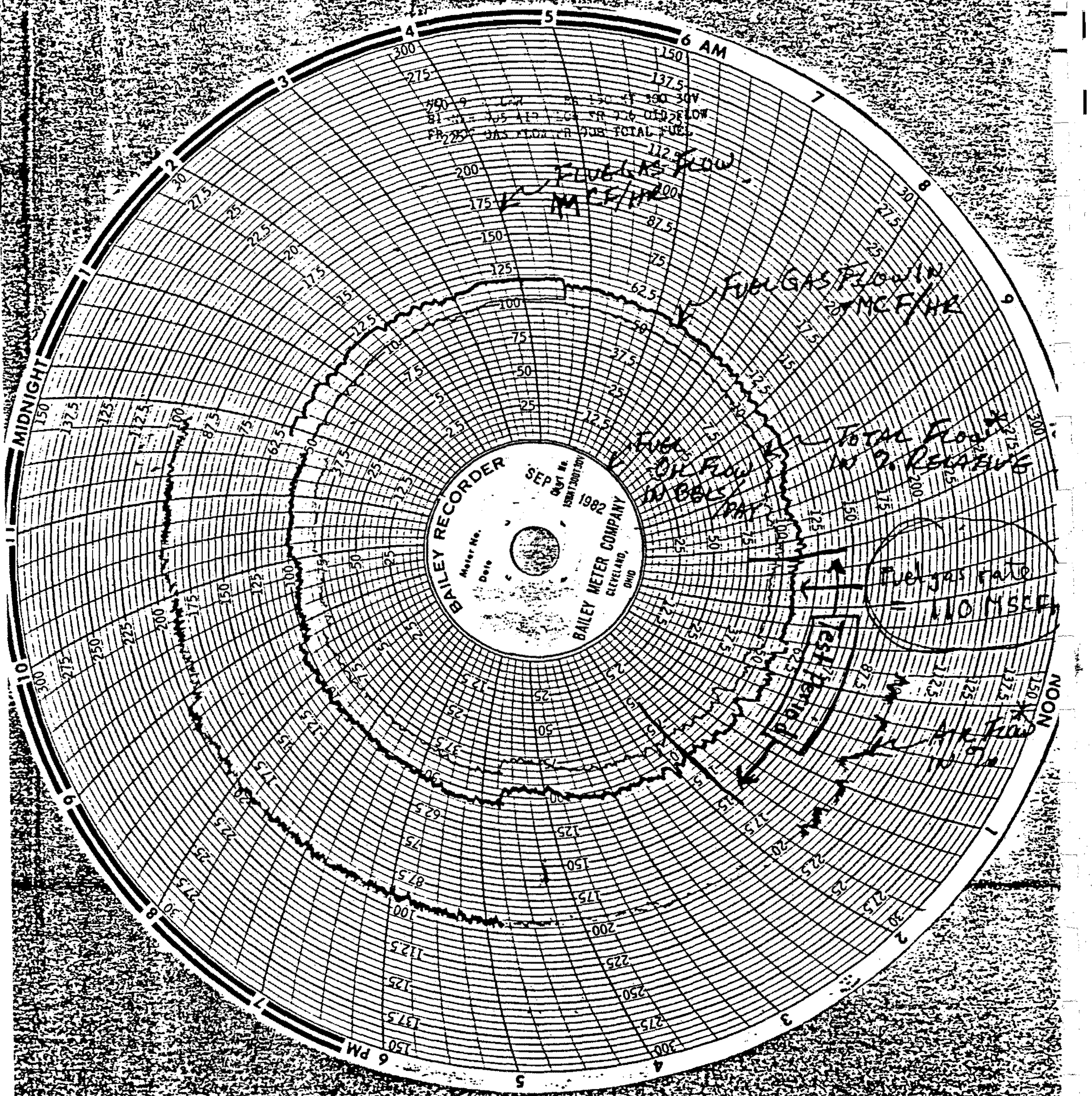
1/ Average of two volume flow rates (Method #2)

Revised 11/22/82.

Tosco Bakersfield
CO Boiler
9/22/82

SUMMARY OF RESULTS: Fuel Data

	Fuel Rate (SCFH)	"F" Factor (SDCF_o/MMBtu)	Fuel Calorific Value (Btu/SCF)	Energy Rate (MMBtu/hr)
FUEL GAS	110,000	8,480	1,834	202
COKE OVEN OFF GAS	488,000	36,800	34.2	16.7
TOTAL		10,600 SDCF_o/MMBtu		219 MMBtu/hr



* THESE VALUES ARE NOT ON THE CHART. SCALE VALUES ARE LOCATED ON A BAR WHICH IS ACROSS FACE OF CHART HOUSING. SCALE IS LINEAR 0-100%.

APPENDIX L

AP-42 EMISSION FACTORS

TABLE 1.4-1. UNCONTROLLED EMISSION FACTORS FOR NATURAL GAS COMBUSTION[a]

Furnace Size & Type (10^6 Btu/hr heat input)	Particulates[b]		Sulfur Dioxide[c]		Nitrogen Oxide[d,e]		Carbon Monoxide[f,g]		Volatile Organics: Nonmethane		Volatile Organics: Methane	
	$kg/10^6 m^3$	$lb/10^6 ft^3$	$kg/10^6 m^3$	$lb/10^6 ft^3$	$kg/10^6 m^3$	$lb/10^6 ft^3$	$kg/10^6 m^3$	$lb/10^6 ft^3$	$kg/10^6 m^3$	$lb/10^6 ft^3$	$kg/10^6 m^3$	$lb/10^6 ft^3$
Utility boilers (>100)	16-80	1-5	9.6	0.6	8800[h]	550[h]	640	40	23	1.4	4.8	0.3
Industrial boilers (10 - 100)	16-80	1-5	9.6	0.6	2240	140	560	35	44	2.8	48	3
Domestic and commercial boilers (<10)	16-80	1-5	9.6	0.6	1600	100	320	20	84	5.3	43	2.7

[a] All emission factors are expressed as weight per volume fuel fired.
[b] References 15-18.
[c] Reference 4 (based on an average sulfur content of natural gas of 4600 $g/10^6 Nm^3$ (2000 $gr/10^6$ scf).
[d] References 4-5,7-8,11,14,18-19,21.
[e] Expressed as NO_2. Test results indicate that about 95 weight % of NO_x is NO.
[f] References 4,7-8,16,18,22-25.
[g] References 16 and 18. May increase 10 to 100 times with improper operation or maintenance.
[h] Use 4400 $kg/10^6 m^3$ (275 $lb/10^6 ft^3$) for tangentially fired units. At reduced loads, multiply this factor by the load reduction coefficient given in Figure 1.4-1. See text for potential NO_x reductions by combustion modifications. Note that the NO_x reduction from these modifications will also occur at reduced load conditions.

Table 3.3.2-1. EMISSION FACTORS FOR HEAVY-DUTY, NATURAL-GAS-FIRED PIPELINE COMPRESSOR ENGINES[a]

EMISSION FACTOR RATING: A

	Nitrogen oxides (as NO_2)[b]	Carbon monoxide	Hydrocarbons (as C)[c]	Sulfur dioxide[d]	Particulate[e]
Reciprocating engines					
$lb/10^3$ hp-hr	24	3.1	9.7	0.004	NA
g/hp-hr	11	1.4	4.4	0.002	NA
g/kW-hr	15	1.9	5.9	0.003	NA
$lb/10^6$ scf[f]	3,400	430	1,400	0.6	NA
$kg/10^6$ Nm^3[f]	55,400	7,020	21,800	9.2	NA
Gas turbines					
$lb/10^3$ hp-hr	2.9	1.1	0.2	0.004	NA
g/hp-hr	1.3	0.5	0.1	0.002	NA
g/kW-hr	1.7	0.7	0.1	0.003	NA
$lb/10^6$ scf[g]	300	120	23	0.6	NA
$kg/10^6$ Nm^3[g]	4,700	1,940	280	9.2	NA

[a] All factors based on References 2 and 3.

[b] These factors are for compressor engines operated at rated load. In general, NO_x emissions will increase with increasing load and intake (manifold) air temperature and decrease with increasing air-fuel ratios (excess air rates) and absolute humidity. Quantitative estimates of the effects of these variables are presented in Reference 2.

[c] These factors represent total hydrocarbons. Nonmethane hydrocarbons are estimated to make up to 5 to 10 percent of these totals, on the average.

[d] Based on an assumed sulfur content of pipeline gas of 2000 gr/10^6 scf (4600 g/Nm^3). If pipeline quality natural gas is not fired, a material balance should be performed to determine SO_2 emissions based on the actual sulfur content.

[e] Not available from existing data.

[f] These factors are calculated from the above factors for reciprocating engines assuming a heating value of 1050 Btu/scf (9350 kcal/Nm^3) for natural gas and an average fuel consumption of 7500 Btu/hp-hr (2530 kcal/kW-hr).

[g] These factors are calculated from the above factors for gas turbines assuming a heating value of 1,050 Btu/scf (9,350 kcal/Nm^3) of natural gas and an average fuel consumption of 10,000 Btu/hp-hr (3,380 kcal/kW-hr).

References for Section 3.3.2

1. Standard Support Document and Environmental Impact Statement - Stationary Reciprocating Internal Combustion Engines. Aerotherm/Acurex Corp., Mountain View, Calif. Prepared for Environmental Protection Agency, Research Triangle Park, N.C. under Contract No. 68-02-1318, Task Order No. 7, November 1974.

2. Urban, C.M. and K.J. Springer. Study of Exhaust Emissions from Natural Gas Pipeline Compressor Engines. Southwest Research Institute, San Antonio, Texas. Prepared for American Gas Association, Arlington, Va. February 1975.

3. Dietzmann, H.E. and K.J. Springer. Exhaust Emissions from Piston and Gas Turbine Engines Used in Natural Gas Transmission. Southwest Research Institute, San Antonio, Texas. Prepared for American Gas Association, Arlington, Va. January 1974.

Table 9.1-1. EMISSION FACTORS FOR PETROLEUM REFINERIES

Process	Particulates	Sulfur oxides (as SO_2)	Carbon monoxide	Total hydro-carbons[a]	Nitrogen oxides (as NO_2)	Aldehydes	Ammonia	Emission factor rating
Boilers and process heaters,								
Fuel Oil	See Section 1.3 - Fuel Oil Combustion							
Natural Gas	See Section 1.4 - Natural Gas Combustion							
Fluid catalytic cracking units,[b]								
Uncontrolled								
lb/10³bbl fresh feed	242 (93 to 340)[c]	493 (100 to 525)	13,700	220	71.0 (37.1 to 145.0)	19	54	B
kg/10³ liters fresh feed	0.695 (0.267 to 0.976)	1.413 (0.286 to 1.505)	39.2	0.630	0.204 (0.107 to 0.416)	0.054	0.155	B
Electrostatic precipitator and CO boiler								
lb/10³ bbl fresh fed	45[d] (7 to 150)	493 (100 to 525)	Neg[e]	Neg	71.0[f] (37.1 to 145.0)	Neg	Neg	B
kg/10³ liters fresh feed	0.128 (0.020 to 0.428)	1.413 (0.286 to 1.505)	Neg	Neg	0.204[f] (0.107 to 0.416)	Neg	Neg	B
Moving-bed catalytic cracking units[g]								
lb/10³ bbl fresh feed	17	60	3,800	87	5	12	6	B
kg/10³ liters fresh feed	0.049	0.171	10.8	0.250	0.014	0.034	0.017	B
Fluid coking units[h]								
Uncontrolled								
lb/10³ bbl fresh feed	523	NA[i]	NA	NA	NA	NA	NA	C
kg/10³ liters fresh feed	1.50	NA	NA	NA	NA	NA	NA	C
Electrostatic precipitator and CO boiler								
lb/10³ bbl fresh feed	6.85	NA	Neg	Neg	NA	Neg	Neg	C
kg/10³ liters fresh feed	0.0196	NA	Neg	Neg	NA	Neg	Neg	C
Delayed coking units	NA	NA	NA	NA	NA	NA	NA	
Compressor engines[j]								
Reciprocating engines								
lb/10³ ft³ gas burned	Neg	2s[k]	0.43	1.4	3.4	0.1	0.2	B
kg/10³ m³ gas burned	Neg	32s	7.02	21.8	55.4	1.61	3.2	B
Gas turbines								
lb/10³ ft³ gas burned	Neg	2s	0.12	0.02	0.3	NA	NA	B
kg/10³ m³ gas burned	Neg	32s	1.94	0.28	4.7	NA	NA	B

Table 9.1-1. (Continued) EMISSION FACTORS FOR PETROLEUM REFINERIES

Process	Particulates	Sulfur oxides (as SO_2)	Carbon monoxide	Total hydrocarbons	Nitrogen oxides (as NO_2)	Aldehydes	Ammonia	Emission factor rating
Blowdown systems[l]								
Uncontrolled								
lb/10³ bbl refinery feed	Neg	Neg	Neg	580	Neg	Neg	Neg	C
kg/10³ liters refinery feed	Neg	Neg	Neg	1,662	Neg	Neg	Neg	C
Vapor recovery system and flaring								
lb/10³ bbl refinery feed	Neg	26.9	4.3	0.8	18.9	Neg	Neg	C
kg/10³ liters refinery feed	Neg	0.077	0.012	0.002	0.054	Neg	Neg	C
Vacuum distillation[m] column condensers								
Uncontrolled								
lb/10³ bbl refinery feed	Neg	Neg	Neg	18	Neg	Neg	Neg	C
kg/10³ liters refinery feed	Neg	Neg	Neg	0.052	Neg	Neg	Neg	C
lb/10³ bbl vacuum feed	Neg	Neg	Neg	50 (0-130)	Neg	Neg	Neg	C
kg/10³ liters vacuum feed	Neg	Neg	Neg	0.144	Neg	Neg	Neg	C
Controlled	Neg	Neg	Neg	Neg	Neg	Neg	Neg	C
Claus plant and tail gas treatment		See section 5.18						

[a] Overall, less than 1 percent by weight of the total hydrocarbon emissions are methane.
[b] References 2 through 8.
[c] Numbers in parenthesis indicate range of values observed.
[d] Under the New Source Performance Standards, controlled FCC regenerators will have particulate emissions lower than 19 lb/10³ bbl fresh feed.
[e] Negligible emission.
[f] May be higher due to the combustion of ammonia.
[g] Reference 2.
[h] Reference 5.
[i] NA, Not Available.
[j] References 9, 10.
[k] s = Refinery gas sulfur content (lb/1000 ft³): *Factors based on 100 percent combustion of sulfur to SO_2.*
[l] References 2, 11.
[m] References 2, 12, 13.

Table 9.1-2. FUGITIVE EMISSION FACTORS FOR PETROLEUM REFINERIES[a]

Emission Source	Process Stream Type[b]	Emission Factor Units	Emission Factors: Uncontrolled Emissions[c]	Emission Factors: Controlled Emissions	Applicable Control Technology	Emission Factor Rating
Pipeline valves[d]	II	lb/hr-source	0.059 (0.030 - 0.110)	NA	Monitoring and maintenance programs	A
		kg/day-source	0.64 (0.32 - 1.19)			
	III	"	0.024 (0.017 - 0.036)	NA		A
		"	0.26 (0.18 - 0.39)			
	IV	"	0.0005 (0.0002 - 0.0015)	NA		A
		"	0.005 (0.002 - 0.016)			
	V	"	0.018 (0.007 - 0.045)	NA		A
		"	0.20 (0.08 - 0.49)			
Open ended valves[d,e]	I	"	0.005 (0.0016 - 0.016)	NA	Installation of cap or plug on open end of valve/line	A
		"	0.05 (0.017 - 0.17)			
Flanges[d]	I	"	0.00056 (0.0002 - 0.0025)	NA	Monitoring and maintenance programs	A
			0.0061 (0.002 - 0.027)			
Pump seals[d]	III	"	0.25 (0.16 - 0.37)	NA	Mechanical seals, dual seals, purged seals, monitoring and maintenance programs, controlled degassing vents	A
		"	2.7 (1.7 - 4.0)			
	IV	"	0.046 (0.019 - 0.11)	NA		A
		"	0.50 (0.21 - 1.2)			
Compressor seals[d]	II	"	1.4 (0.66 - 2.9)	NA	Mechanical seals, dual seals, purged seals, monitoring and maintenance programs, controlled degassing vents	A
		"	15 (7.2 - 31)			
	V	"	0.11 (0.05 - 0.23)	NA		A
		"	1.2 (0.5 - 2.5)			
Process drains[d]	I	"	0.070 (0.023 - 0.20)	NA	Traps and covers	A
		"	0.76 (0.25 - 2.2)			
Pressure vessel relief valves (gas service)[d,f]	II	"	0.36 (0.10 - 1.3)	Negligible	Rupture disks upstream of relief valves and/or venting to a flare	A
		"	3.9 (1.1 - 14)			
Cooling towers	-	lb/10[6] gal cooling water	6	0.70	Minimization of hydrocarbon leaks into cooling water system. Monitoring of cooling water for hydrocarbons	D
		kg/10[6] liters cooling water	0.7	0.083		
		lb/10[3] bbl refinery feed[g]	10	1.2		
		kg/10[3] liters refinery feed	0.03	0.004		
Oil/water separators	-	lb/10[3] gal wastewater	5	0.2	Covered separators and/or vapor recovery Systems	D
		kg/10[3] liter waste water	0.6	0.024		
		lb/10[3] bbl refinery feed	200	10		
		kg/10[3] liters refinery feed	0.6	0.03		
Storage		See Section 4.3				
Loading		See Section 4.4				

[a] Data from References 2, 4, 12 and 13 except as noted. Overall, less than 1% by weight of the total VOC emissions are methane.
NA = Not Available.
[b] The volatility and hydrogen content of the process streams have a substantial effect on the emission rate of some fugitive emission sources. The stream identification numerals and group names and descriptions are:

Stream Identification Numeral	Stream Name	Stream Group Description
I	All streams	All streams
II	Gas streams	Hydrocarbon gas/vapor at process conditions (containing less than 50% hydrogen, by volume)
III	Light liquid and gas/liquid streams	Liquid or gas/liquid stream with a vapor pressure greater than that of kerosene (> 0.1 psia @ 100°F or 689 Pa @ 38°C), based on the most volatile class present at > 20% by volume
IV	Heavy liquid streams	Liquid stream with a vapor pressure equal to or less than that of kerosene (≤ 0.1 psia @ 100°F or 689 Pa @ 38°C), based on the most volatile class present at > 20% by volume
V	Hydrogen streams	Gas streams containing more than 50% hydrogen by volume

[c] Numbers in parentheses are the upper and lower bounds of the 95% confidence interval for the emission factor.
[d] Data from Reference 17.
[e] The downstream side of these valves is open to the atmosphere. Emissions are through the valve seat of the closed valve.
[f] Emission factor for relief valves in gas service is for leakage, not for emissions caused by vessel pressure relief.
[g] Refinery rate is defined as the crude oil feed rate to the atmospheric distillation column.

final Section is written, edited and published. To reflect an ever expanding data base, Sections may be revised at any time, and any review comments or data appropriate to this process are encouraged and requested.

The limited applicability of emission factors must be understood. To give some notion of the accuracy of the factors for a specific process, each set of factors has been ranked according to the amount of data upon which it is based. In the past, Sections have been rated only as a whole. Future updates, to the degree possible, will include ratings by pollutant for each process. Each rating has been based on the weighting of various information categories used to obtain the factor(s). These categories and associated numerical values are:

Measured emission data: 20 points maximum.
Process data: 10 points maximum.
Engineering analysis: 10 points maximum.

The emission data category rates the amount of measured source test data available for the development of the factor(s). The process data category involves such considerations as variability of the process and resultant effect on emissions, as well as the amount of data available on these variables. Finally, the engineering analysis category is concerned with data upon which a material balance or related calculation can be made. Depending on which information categories are employed to develop it, each set of factors is assigned a numerical score of from 5 to 40 points. Each numerical score is, in turn, converted to letter ratings which are presented throughout this publication as follows:

Numerical Rating	Letter Rating
5 or less	E (Poor)
6 to 15	D (Below average)
16 to 25	C (Average)
26 to 35	B (Above average)
36 to 40	A (Excellent)

Banking Certificate

NEW FILE REQUEST FORM

Company Name: Texaco Refining and Marketing

Permit Number: 2007130 **Project Number:** 870731

Description: ERC Banking Certificate

2007130/101, 201, 401, 501, 601

Sec 27, T29S, R27E Refinery Avenue

~~File Type (check one): ATC___ PTO___~~ **Issue Date:** 04/14/90

Permit Processor: PLY **Date of Request:** 11/21/91

(Please Sign)

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

EMISSION REDUCTION CREDIT CERTIFICATE

2700 "M" Street, Suite 275
Bakersfield, CA 93301
(805) 861-3682

William J. Roddy
Air Pollution Control Officer

ISSUE DATE:	April 14, 1990	**CERTIFICATE NO.**	2007130/101
EXPIRATION DATE:	April 14, 1992	**DATE:**	July 21, 1987

EMISSION REDUCTION CERTIFICATE IS HEREBY GRANTED TO:

TEXACO REFINING AND MARKETING, INC.

This Emission Reduction Credit (ERC) can only be used in accordance with Kern County Air Pollution Control District New Source Review Rule (NSR) (Rule 210.1)

ACTUAL HISTORICAL ERC: (Renewed One Time)

Pollutant: Particulate Matter (PM-10)

Amount: 30.81 lbm/day

S	T	R	Location:
27	29S	27E	6500 Refinery Avenue, Bakersfield

EMISSION REDUCTION CREDIT ACHIEVED BY:

Shutdown of Themofor catalytic cracking unit, fluid coker unit, and CO boiler serving fluid coker.

Transfer of ownership and all emission reduction credit certificate activity shall be accomplished in accordance with the requirements of Kern County Air Pollution Control District Rule 210.3-Emission Reduction Banking.

Validation Signature:

Allan Phillips for

Manager of Engineering Evaluation
(May 3, 1990)

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

EMISSION REDUCTION CREDIT CERTIFICATE

2700 "M" Street, Suite 275
Bakersfield, CA 93301
(805) 861-3682

COUNTY OF KERN · STATE OF CALIFORNIA

William J. Roddy
Air Pollution Control Officer

ISSUE DATE: April 14, 1990	**CERTIFICATE NO.** 2007130/201
EXPIRATION DATE: April 14, 1992	**DATE:** July 21, 1987

EMISSION REDUCTION CERTIFICATE IS HEREBY GRANTED TO:

TEXACO REFINING AND MARKETING, INC.

This Emission Reduction Credit (ERC) can only be used in accordance with Kern County Air Pollution Control District New Source Review Rule (NSR) (Rule 210.1)

ACTUAL HISTORICAL ERC: (Renewed One Time)

Pollutant: Sulfur Dioxide

Amount: 515.62

S	T	R	Location:
27	29S	27E	6500 Refinery Avenue, Bakersfield

EMISSION REDUCTION CREDIT ACHIEVED BY:

Shutdown of Themofor catalytic cracking unit, fluid coker unit, and CO boiler serving fluid coker.

Transfer of ownership and all emission reduction credit certificate activity shall be accomplished in accordance with the requirements of Kern County Air Pollution Control District Rule 210.3-Emission Reduction Banking.

Validation Signature:

Allan Phillips for

Manager of Engineering Evaluation
(May 3, 1990)

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

EMISSION REDUCTION CREDIT CERTIFICATE

2700 "M" Street, Suite 275
Bakersfield, CA 93301
(805) 861-3682

William J. Roddy
Air Pollution Control Officer

ISSUE DATE:	April 14, 1990	CERTIFICATE NO.	2007130/401
EXPIRATION DATE:	April 14, 1992	DATE:	July 21, 1987

EMISSION REDUCTION CERTIFICATE IS HEREBY GRANTED TO:

TEXACO REFINING AND MARKETING, INC.

This Emission Reduction Credit (ERC) can only be used in accordance with Kern County Air Pollution Control District New Source Review Rule (NSR) (Rule 210.1)

ACTUAL HISTORICAL ERC: (Renewed One Time)

Pollutant: Oxides of Nitrogen

Amount: 2,748.85 lbm/day

S	T	R	Location:
27	29S	27E	6500 Refinery Avenue, Bakersfield

EMISSION REDUCTION CREDIT ACHIEVED BY:

Shutdown of Themofor catalytic cracking unit, fluid coker unit, and CO boiler serving fluid coker.

Transfer of ownership and all emission reduction credit certificate activity shall be accomplished in accordance with the requirements of Kern County Air Pollution Control District Rule 210.3-Emission Reduction Banking.

Validation Signature:

Allan Phillips for

Manager of Engineering Evaluation

(May 3, 1990)

AC

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

EMISSION REDUCTION CREDIT CERTIFICATE

2700 "M" Street, Suite 275
Bakersfield, CA 93301
(805) 861-3682

COUNTY OF KERN · STATE OF CALIFORNIA

William J. Roddy
Air Pollution Control Officer

ISSUE DATE: April 14, 1990	**CERTIFICATE NO.** 2007130/501
EXPIRATION DATE: April 14, 1992	**DATE:** July 21, 1987

EMISSION REDUCTION CERTIFICATE IS HEREBY GRANTED TO:

TEXACO REFINING AND MARKETING, INC.

This Emission Reduction Credit (ERC) can only be used in accordance with Kern County Air Pollution Control District New Source Review Rule (NSR) (Rule 210.1)

ACTUAL HISTORICAL ERC: (Renewed One Time)

Pollutant: Non-Methane Hydrocarbons

Amount: 1,431.69 lbm/day

S	T	R	Location:
27	29S	27E	6500 Refinery Avenue, Bakersfield

EMISSION REDUCTION CREDIT ACHIEVED BY:

Shutdown of Themofor catalytic cracking unit, fluid coker unit, and CO boiler serving fluid coker.

Transfer of ownership and all emission reduction credit certificate activity shall be accomplished in accordance with the requirements of Kern County Air Pollution Control District Rule 210.3-Emission Reduction Banking.

Validation Signature:

Allan Phillips for

Manager of Engineering Evaluation
(May 3, 1990)

AP

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

EMISSION REDUCTION CREDIT CERTIFICATE

2700 "M" Street, Suite 275
Bakersfield, CA 93301
(805) 861-3682

William J. Roddy
Air Pollution Control Officer

ISSUE DATE:	April 14, 1990	**CERTIFICATE NO.**	2007130/601
EXPIRATION DATE:	April 14, 1992	**DATE:**	July 21, 1987

EMISSION REDUCTION CERTIFICATE IS HEREBY GRANTED TO:

TEXACO REFINING AND MARKETING, INC.

This Emission Reduction Credit (ERC) can only be used in accordance with Kern County Air Pollution Control District New Source Review Rule (NSR) (Rule 210.1)

ACTUAL HISTORICAL ERC: (Renewed One Time)

Pollutant: Carbon Monoxide

Amount: 25,918.96 lbm/day

S	T	R	Location:
27	29S	27E	6500 Refinery Avenue, Bakersfield

EMISSION REDUCTION CREDIT ACHIEVED BY:

Shutdown of Themofor catalytic cracking unit, fluid coker unit, and CO boiler serving fluid coker.

Transfer of ownership and all emission reduction credit certificate activity shall be accomplished in accordance with the requirements of Kern County Air Pollution Control District Rule 210.3-Emission Reduction Banking.

Validation Signature:

Allan Phillips for

Manager of Engineering Evaluation

(May 3, 1990)

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

EMISSION REDUCTION CREDIT CERTIFICATE

1601 "H" Street, Suite 150
Bakersfield, California 93301-5199
Telephone: (805) 861-3682

LEON M HEBERTSON, M.D.
Director of Public Health
Air Pollution Control Officer

ISSUE DATE: April 14, 1988	CERTIFICATE NO. 2007130/101
EXPIRATION DATE: April 14, 1990	DATE: July 21, 1987

EMISSION REDUCTION CERTIFICATE IS HEREBY GRANTED TO:

TEXACO REFINING AND MARKETING, INC.

This Emission Reduction Credit (ERC) may be used in accordance with Kern County Air Pollution Control District New Source Review Rule (NSR) (Rule 210.1)

NSR SPECIFIC LIMITING CONDITION ERC:
(To be removed upon transfer of ownership)

Pollutant: —— Amount: ~~0~~

ACTUAL HISTORICAL ERC:

Pollutant: Particulate Matter (PM10) Amount: 30.81 lbm/day

S	T	R	Location:
27	29S	27E	6500 Refinery Avenue, Bakersfield

EMISSION REDUCTION CREDIT ACHIEVED BY:

Shutdown of Themofor catalytic cracking unit, fluid coker unit, and CO boiler serving fluid coker.

____ Conditional Permits to Operate are attached which replace current Permits.

____ Granting of this ERC requires the original certificate owner and all subsequent owners to *obtain Authority to Construct and Permit to Operate for the following stationary source category:*

Transfer of ownership and all emission reduction credit certificate activity shall be accomplished in accordance with the requirements of the Kern County Air Pollution Control District Rule 210.3-Emission Reduction Banking.

Validation Signature:

Manager of Engineering Evaluation

ØM

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

EMISSION REDUCTION CREDIT CERTIFICATE

1601 "H" Street, Suite 150
Bakersfield, California 93301-5199
Telephone: (805) 861-3682

LEON M HEBERTSON, M.D.
Director of Public Health
Air Pollution Control Officer

ISSUE DATE:	April 14, 1988	CERTIFICATE NO.	2007130/ 201
EXPIRATION DATE:	April 14, 1990	DATE:	July 21, 1987

EMISSION REDUCTION CERTIFICATE IS HEREBY GRANTED TO:

TEXACO REFINING AND MARKETING, INC.

This Emission Reduction Credit (ERC) may be used in accordance with Kern County Air Pollution Control District New Source Review Rule (NSR) (Rule 210.1)

NSR SPECIFIC LIMITING CONDITION ERC:
(To be removed upon transfer of ownership)

Pollutant: — Amount: Ø

ACTUAL HISTORICAL ERC:

Pollutant: Sulfur Dioxide Amount: 515.62 lbm/day

S	T	R	Location:
27	29S	27E	6500 Refinery Avenue, Bakersfield

EMISSION REDUCTION CREDIT ACHIEVED BY:

Shutdown of Themofor catalytic cracking unit, fluid coker unit, and CO boiler serving fluid coker.

____ Conditional Permits to Operate are attached which replace current Permits.

____ Granting of this ERC requires the original certificate owner and all subsequent owners to obtain Authority to Construct and Permit to Operate for the following stationary source category:

Transfer of ownership and all emission reduction credit certificate activity shall be accomplished in accordance with the requirements of the Kern County Air Pollution Control District Rule 210.3—Emission Reduction Banking.

Validation Signature:

Manager of Engineering Evaluation

Dm

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

EMISSION REDUCTION CREDIT CERTIFICATE

1601 "H" Street, Suite 150
Bakersfield, California 93301-5199
Telephone: (805) 861-3682

LEON M HEBERTSON, M.D.
Director of Public Health
Air Pollution Control Officer

ISSUE DATE:	April 14, 1988	CERTIFICATE NO.	2007130/401
EXPIRATION DATE:	April 14, 1990	DATE:	July 21, 1987

EMISSION REDUCTION CERTIFICATE IS HEREBY GRANTED TO:

TEXACO REFINING AND MARKETING, INC.

This Emission Reduction Credit (ERC) may be used in accordance with Kern County Air Pollution Control District New Source Review Rule (NSR) (Rule 210.1)

NSR SPECIFIC LIMITING CONDITION ERC:
(To be removed upon transfer of ownership)

Pollutant: — Amount: -0-

ACTUAL HISTORICAL ERC:

Pollutant: Oxides of Nitrogen Amount: 2,748.85 lbm/day

S	T	R	Location:
27	29S	27E	6500 Refinery Avenue, Bakersfield

EMISSION REDUCTION CREDIT ACHIEVED BY:

Shutdown of Themofor catalytic cracking unit, fluid coker unit, and CO boiler serving fluid coker.

____Conditional Permits to Operate are attached which replace current Permits.

____Granting of this ERC requires the original certificate owner and all subsequent owners to obtain Authority to Construct and Permit to Operate for the following stationary source category:

Transfer of ownership and all emission reduction credit certificate activity shall be accomplished in accordance with the requirements of the Kern County Air Pollution Control District Rule 210.3—Emission Reduction Banking.

Validation Signature:

Manager of Engineering Evaluation

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

EMISSION REDUCTION CREDIT CERTIFICATE

1601 "H" Street, Suite 150
Bakersfield, California 93301-5199
Telephone: (805) 861-3682

LEON M HEBERTSON, M.D.
Director of Public Health
Air Pollution Control Officer

ISSUE DATE:	April 14, 1988	CERTIFICATE NO.	2007130/501
EXPIRATION DATE:	April 14, 1990	DATE:	July 21, 1987

EMISSION REDUCTION CERTIFICATE IS HEREBY GRANTED TO:

TEXACO REFINING AND MARKETING, INC.

This Emission Reduction Credit (ERC) may be used in accordance with Kern County Air Pollution Control District New Source Review Rule (NSR) (Rule 210.1)

NSR SPECIFIC LIMITING CONDITION ERC:
(To be removed upon transfer of ownership)

Pollutant: — Amount: -0-

ACTUAL HISTORICAL ERC:

Pollutant: Non-Methane Hydrocarbons Amount: 1,431.69 lbm/day

S	T	R	Location:
27	29S	27E	6500 Refinery Avenue, Bakersfield

EMISSION REDUCTION CREDIT ACHIEVED BY:

Shutdown of Themofor catalytic cracking unit, fluid coker unit, and CO boiler serving fluid coker.

____ Conditional Permits to Operate are attached which replace current Permits.

____ Granting of this ERC requires the original certificate owner and all subsequent owners to obtain Authority to Construct and Permit to Operate for the following stationary source category:

Transfer of ownership and all emission reduction credit certificate activity shall be accomplished in accordance with the requirements of the Kern County Air Pollution Control District Rule 210.3—Emission Reduction Banking.

Validation Signature:

Manager of Engineering Evaluation

Om

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

EMISSION REDUCTION CREDIT CERTIFICATE

1601 "H" Street, Suite 150
Bakersfield, California 93301-5199
Telephone: (805) 861-3682

LEON M HEBERTSON, M.D.
Director of Public Health
Air Pollution Control Officer

ISSUE DATE:	April 14, 1988	CERTIFICATE NO.	2007130/601
EXPIRATION DATE:	April 14, 1990	DATE:	July 21, 1987

EMISSION REDUCTION CERTIFICATE IS HEREBY GRANTED TO:

TEXACO REFINING AND MARKETING, INC.

This Emission Reduction Credit (ERC) may be used in accordance with Kern County Air Pollution Control District New Source Review Rule (NSR) (Rule 210.1)

NSR SPECIFIC LIMITING CONDITION ERC:

(To be removed upon transfer of ownership)

Pollutant: —   Amount: -0-

ACTUAL HISTORICAL ERC:

Pollutant: Carbon Monoxide   Amount: 25,918.96 lbm/day

S	T	R	Location:
27	29S	27E	6500 Refinery Avenue, Bakersfield

EMISSION REDUCTION CREDIT ACHIEVED BY:

Shutdown of Themofor catalytic cracking unit, fluid coker unit, and CO boiler serving fluid coker.

____Conditional Permits to Operate are attached which replace current Permits.

____Granting of this ERC requires the original certificate owner and all subsequent owners to obtain Authority to Construct and Permit to Operate for the following stationary source category:

Transfer of ownership and all emission reduction credit certificate activity shall be accomplished in accordance with the requirements of the Kern County Air Pollution Control District Rule 210.3-Emission Reduction Banking.

Validation Signature:

Manager of Engineering Evaluation

Fresno
Kern
Kings
Madera

San Joaquin Valley
Unified Air Pollution Control District
2314 Mariposa Street
Fresno, California 93721
(209) 488-3330
FAX (209) 488-3134

Merced
San Joaquin
Stanislaus
Tulare

ISSUE DATE: December 23, 1991

CERTIFICATE NO. 2007130/101

DATE: July 21, 1982

Combine ERC's into one document
Reissued as 2007130/102/203/403/502/602 WZIC
1/21/92

EMISSION REDUCTION CERTIFICATE IS HEREBY GRANTED TO:

TEXACO REFINING AND MARKETING, INC.

ACTUAL HISTORICAL ERC:

Pollutant: Particulate Matter (PM_{10})

Amount: 30.81 lbm/day

S	T	R	Location:
27	29S	27E	6500 Refinery Avenue, Bakersfield

EMISSION REDUCTION CREDIT ACHIEVED BY:

Shutdown of Themofor catalytic cracking unit, fluid coker unit, and CO boiler serving fluid coker.

Validation Signature:

Allan Phillips for

Manager of Engineering Evaluation

Fresno
Kern
Kings
Madera

San Joaquin Valley
Unified Air Pollution Control District
2314 Mariposa Street
Fresno, California 93721
(209) 488-3330
FAX (209) 488-3134

Merced
San Joaquin
Stanislaus
Tulare

ISSUE DATE: December 23, 1991	**CERTIFICATE NO.** 2007130/501
	DATE: July 21, 1987

EMISSION REDUCTION CERTIFICATE IS HEREBY GRANTED TO:

TEXACO REFINING AND MARKETING, INC.

ACTUAL HISTORICAL ERC:

Pollutant: Non-Methane Hydrocarbons (NMHC)

Amount: 1,431.69 lbm/day

S	T	R	Location:
27	29S	27E	6500 Refinery Avenue, Bakersfield

EMISSION REDUCTION CREDIT ACHIEVED BY:

Shutdown of Themofor catalytic cracking unit, fluid coker unit, and CO boiler serving fluid coker.

Combine ERC's into one document
Reissued as 2007130/102/203/403/502/602 WZK
1/21/92

Validation Signature:

Allan Phillips for

Manager of Engineering Evaluation

Fresno
Kern
Kings
Madera

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2314 Mariposa Street
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Merced
San Joaquin
Stanislaus
Tulare

ISSUE DATE: December 23, 1991

CERTIFICATE NO. 2007130/601

DATE: July 21, 1987

EMISSION REDUCTION CERTIFICATE IS HEREBY GRANTED TO:

TEXACO REFINING AND MARKETING, INC

ACTUAL HISTORICAL ERC:

Pollutant: Carbon Monoxide

Amount: 25,918.96 lbm/day

S	T	R	Location:
27	29S	27E	6500 Refinery Avenue, Bakersfield

EMISSION REDUCTION CREDIT ACHIEVED BY:

Shutdown of Themofor catalytic cracking unit, fluid coker unit, and CO boiler serving fluid coker.

Combine ERCs into one document
Reissued as 2007130/102/203/403/502/601
1/21/92
WZL

Validation Signature:

Allan Phillips for

Manager of Engineering Evaluation

Fresno	Merced
Kern	San Joaquin
Kings	Stanislaus
Madera	Tulare

San Joaquin Valley Unified Air Pollution Control District

2314 Mariposa Street
Fresno, California 93721
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FAX (209) 488-3134

ISSUE DATE: December 23, 1991

CERTIFICATE NO. 2007130/101

DATE: July 21, 1987

EMISSION REDUCTION CERTIFICATE IS HEREBY GRANTED TO:

TEXACO REFINING AND MARKETING, INC.

ACTUAL HISTORICAL ERC:

Pollutant: Particulate Matter (PM_{10})

Amount: 30.81 lbm/day

Typographical error reissued Phi

S	T	R	Location:
27	29S	27E	6500 Refinery Avenue, Bakersfield

EMISSION REDUCTION CREDIT ACHIEVED BY:

Shutdown of Themofor catalytic cracking unit, fluid coker unit, and CO boiler serving fluid coker.

Note: Only PM-10 can be used as offsets.

Validation Signature:

Allan Phillips /m

Manager of Engineering Evaluation

Fresno		Merced
Kern		San Joaquin
Kings		Stanislaus
Madera		Tulare

San Joaquin Valley
Unified Air Pollution Control District
2314 Mariposa Street
Fresno, California 93721
(209) 488-3330
FAX (209) 488-3134

ISSUE DATE: December 23, 1991

CERTIFICATE NO. 2007130/501

DATE: July 21, 1987

EMISSION REDUCTION CERTIFICATE IS HEREBY GRANTED TO:

TEXACO REFINING AND MARKETING, INC.

ACTUAL HISTORICAL ERC:

Pollutant: Non-Methane Hydrocarbons (NMHC)

Amount: 1,431.69 lbm/day

typographical error
reissued PLP

S	T	R	Location
27	29S	27E	6500 Refinery Avenue, Bakersfield

EMISSION REDUCTION CREDIT ACHIEVED BY:

Shutdown of Themofor catalytic cracking unit, fluid coker unit, and CO boiler serving fluid coker.

Note: Only PM-10 can be used as offsets.

Validation Signature:

Allan Phillips for

Manager of Engineering Evaluation

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ISSUE DATE: December 23, 1991

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DATE: July 21, 1987

EMISSION REDUCTION CERTIFICATE IS HEREBY GRANTED TO:

TEXACO REFINING AND MARKETING, INC.

ACTUAL HISTORICAL ERC:

Pollutant: Carbon Monoxide

Amount: 25,918.96 lbm/day

typographical error
reissued PLY

S	T	R	Location:
27	29S	27E	6500 Refinery Avenue, Bakersfield

EMISSION REDUCTION CREDIT ACHIEVED BY:

Shutdown of Themofor catalytic cracking unit, fluid coker unit, and CO boiler serving fluid coker.

Note: Only PM-10 can be used as offsets.

Validation Signature:

Allan Phillips for

Manager of Engineering Evaluation

Douglas W. McCormick
A. Q. E. II
Date Started: 7 January 1988
Date Completed: 14 January 1988
Reviewed by [illegible], [illegible]

Texaco Refining & Marketing Inc.
P. O. Box 1476
Bakersfield, CA 93302
ATTN: Mr. L. E. Perrier
Plant Manager
Phone: (805) 326-4265

Emissions Summary pg (19)

Application #'s: 2007130/101, '130/201, '130/401, '130/501, '130/601

Date Received: 31 July 1987

I <u>Project Description:</u> Bank actual historical emission reductions resulting from shutdown of Thermofor Catalytic Cracking Unit, Fluid Coker, and CO Boiler on Fluid Coker exhaust (P/O 2007130, 2007134, and 2007148 to be surrendered)

Texaco Refining and Marketing Inc. is requesting five Banking Certificates for Actual Historical Emission Reduction credits resulting from the shut down of equipment in Area 2 of their Bakersfield plant (the old Tosco refinery). The equipment shut down includes all process equipment associated with the Area 2 TCC unit, the Area 2 Coker, and the Area 2 CO boiler. As stated in Texaco's application, This equipment was last operated by Tosco Corp. in Nov. 1983, however, Permits To Operate for this equipment have been maintained by TEXACO REFINING & MARKETING, INC. AND THE EQUIPMENT is reported to be in operable condition.

I Project Description Cont.:

Pursuant to District policy "A source that renews its permits and keeps them current, has maintained all equipment in operating condition, has not removed, modified or disassembled any equipment and has a legal right to operate same shall be considered an operating source." Since the permits and equipment in question have been maintained in accordance with this policy, these applications are considered as Timely UNDER RULE 210.3 SECTION C.4.(b) therefore, Texaco has requested banking certificates for the following actual historical emission reductions:

PM - 36.17 lbm/day, SO_2 - 1,621.23 lbm/day
NO_2 - 2,791.38 lbm/day, HC - 1,431.68 lbm/day
CO - 25,918.96 lbm/day

II Applicable Rules and Regulations:

Rule 210.3 Section C.2.(b) Ineligibile Reductions - shutdown where product replaced by another stationary source.
Section C.3. Only reductions beyond RACT bankable for shutdowns.
Section C.4.(b) Application to be filed within 90 day of date reduction occurred.
Section D.1.(b) Reduction credit in validation criteria.
(1) has, in fact, actually occurred
(2) is surplus, not previously required or used,
(3) will be permanent,
(4) can be quantified,
(5) can be enforced.

2007130/101 + ~~4~~ 3 others

III. Equipment Listing!

A. Thermofor Catalytic Cracking (TCC) Unit: (2007130)

1. Four compressor I e Engines (330 hp each) scrubbed fuel gas fired
2. Four process heaters 17-H-11 Feed heater, 58.4 MMBtu/hr, Dual Fuel Fired
   17-H-12 Combustion air heater, 6.4 MMBtu/hr, scrubbed fuel gas fired
3. Two fired kilns 37.2 MMBtu/hr each, oil fired
   17-H-13 Lift air heater, 6.4 MMBtu/hr, " "
   17-H-61 Feed Preparation heater, 14.2 MMBtu/hr " "
4. Catalyst Lift Scrubber
5. Assorted valves and flanges

B. Fluid Coker: (2007134)

1. Fluid coker w/Ducon venturi scrubber exhausting through CO Boiler, 2007148) 60×10^6 Btu/hr oil fired burner
2. Coke storage Tank w/ABE Mark III fabric collector
3. Five compressor I e Engines (1-300 hp & 4-330 hp), scrubbed fuel gas fired
4. Assorted valves and flanges

C. CO Boiler: (2007148)

2.16 MM BTU/HR DUAL* FUEL FIRED ERIE CITY MODE 42 SAOA-MJ-DAR BURNER w/ CO GAS VORTEX SECTION

* RESTRICTED TO SCRUBBED FUEL GAS FIRING, UNABLE TO COMPLY WITH EMISSION LIMITS WHEN OIL FIRED.

2007130/101 + 4 others

III. ERC Review:

A. Section C. 2.:

This section identifies emission reductions which cannot be validated as ERCs, and therefore, are not eligible for the receipt of Banking Certificates.

The applicant is proposing the permanent shutdown of three source operations within an existing stationary source. The emission reductions represented by shutdown of the Fluid Coker are not inelgible for banking under 210.3 C.2(b) (as the products produced by the fluid coker - fuel gas, napthas, gas oils, residual oils, and coke - are now being produded by TRMI at their recently acquired Gibson St. delayed coking unit) because in fact TRMI is operating 1 coking operation where previously 2 coking operation were in use.

B. Section C. 3.

This section states that "Emission reductions shall be calculated in a manner not inconsistent with Rule 210.1. An ERC for a source operation shutdown shall be granted only in an amount equal to the emissions which would have occurred from the specific source if Reasonably Available Control Technology (RACT) for that source catagory had been applied."

Rule 210.1 allows the use of any consecutive two year period out of the five years preceeding the date of the application in calculating a source operations actual historical emissions if the APCO determines such alternate period is more represantative of normal operations.

IV E.R.C. Review Cont.:

B. Section C.3 Cont.:

A review of 40 CFR Part 51 Appendix B and District files reveals that RACT for the equipment to be shut down is defined as follows:

1. Valves and Flanges:
An effective inspection and maintenance program in accordance with the requirements of Rule 414.1

2. Compressor I C Engines:
Use of PUC quality (≤0.2 gr S/100 scf) natural gas as fuel with proper adjustment of air to fuel ratio.

3. Fuel Burning Equipment:
a. Particulate Matter: Use of natural gas or distillate fuel oil with a maximum emission factor of 2 lbm/1000 gal (AP-42 External Combustion Uncontrolled oil Firing emission factor) (0.015 lb/MMBtu)
b. Sulfur Compounds: Limit sulfur content in fuel burned or treat flue gas. Suggested fuel sulfur limits are; 0.3% S by weight for residual oil and 10 gr H_2S/100 scf fuel gas (40 CFR Part 51 App. B sec. 3.1)
c. Oxides of Nitrogen: Use of Low NOx burner assemblies achieving the following emission factors; 0.11 lbm/MM BTU for gas combustion and 0.30 lbm/MM BTU for fuel oil (i.e. 25% NOx reduction resulting from excess air control)
d. Hydrocarbons: clean efficient combustion.
e. Carbon Monoxide: clean efficient combustion.

IV ERC Review Cont.!

B. Section C. 3. Cont.:

4. TCC Catalyst Lift Scrubber:

Effective mist eliminator

TCC kiln - Complete secondary combustion of off gas in CO boiler or fume incinerator

5. Fluid Coker:

Complete secondary combustion of offgas in CO boiler

6. CO Boiler:

Use of low sulfur gas as fuel and low NOx burner assemblies

7. Coke storage Tank:

Ventilated through properly designed fabric collector

IV. ERC Review Cont.:

C. Section C. 4.(b):

This section requires an applicant to file an application for a banking certificate no more than 90 days after such reduction occurs. The APCO has determined, that these applications are timely because Permits to Operate this equipment are currently valid and the equipment is capable of being operated. THE DATE THE REDUCTIONS ARE DEEMED TO HAVE OCCURRED IS THE DATE THE PERMITS TO OPERATE ARE SURRENDERED TO THE DISTRICT.

D. Section D.1.b.

This section requires the Control Officer to determine the following:

1. The emission reductions have, in fact, actually occurred;

The applicant has submitted summaries and partial copies of refinery operational records pertaining to fuels consumption, fuel quality, unit throughputs and production for the process units in question. Since this equipment is no longer operating (verified by District inspection) and since the Permits to Operate will be surrendered: it is concluded that emissions reductions will have occurred by the time banking certificates are issued.

IV ERC Review Cont.:

D. Section D. 1. b. Cont.:

2. That The ERC's Are Surplus:

A review of District files reveals that the shutdown of the TCC unit, the fluid coker and the CO boiler were not required by law and that the resulting emission reductions have not been utilized as tradeoffs or offsets for any other projects. Therefore, it is concluded that resulting emission reductions are surplus.

3. That the ERC's Are Permanent:

Texaco Refining and Marketing has indicated that the Permits To Operate for the TCC unit, the Fluid Coker and the CO Boiler will be surrendered and the equipment rendered inoperable upon issuance of the ERC banking certificates. Therefore, such emission reductions are considered to be permanent.

IV ERC Review Cont.:

D. Section D. 1. b. Cont.:

4. Can the ERC's be Quantified:

The applicant's submittal pertaining to actual fuel consumption, fuel quality, unit throughput and production for these process units along with source test data and the use of AP-42 emission factors allows quantification of emissions reductions calculated in a manner not inconsistent with the requirements of Rule 210.1 section 4.

5. Can the ERC's be Enforced:

Surrender of the Permits to Operate and rendering the equipment inoperable provides the A.P.C.O with the legal ability to insure the TCC Unit, the Fluid Coker, and the CO Boiler are not operated and thus are not the source of air contaminant emissions.

V ERC Emission Calculations:

In accordance with the requirements of Rule 210.3 section e.3 and Rule 210.1 Section 4.B. Texaco Refining And Marketing has submitted the following information: a) monthy gas reports giving gas consumption of TCC Heaters, TCC compressors and Coker compressors for July 1982 - August 1983 (gas consumption of this equipment for Sept. 1983 - October 1983 was estimated based on average heat input to TCC heaters per bbl of feedstock and average fuel gas flow to compressors per bbl of feed stock, b) monthly gas gravities reports (giving heating values and H_2S concentrations, c) Representative operating summaries for August 1983 (giving # of burners on TCC unit which were oil fired), d) MR-05 Final Unit Yield Report, "Refinery Operational Report" (giving CO boiler fuel sulfur content, fuel consumption and steam production), e) TCC burner capacity information, f) Final Unit Yeild Report for TCC Unit and Fluid Coker (giving actual charge throughputs in bbl/month), g) summary of value and flange count determination, h) equipment listing by permit unit and process flow diagrams for the TCC Unit and the Fluid COker, i) a representative TCC kiln gas analysis, J) summary page of TCC Catalyst Lift Scrubber Test Data for 8/3/76, K) summary page of CO Boiler Source test Data conducted on 9/22/82 and, l) copies of relevent AP-42 Emission Factors.

Since the equipment in question ceased operating in October 1983 no other operational data was submitted by Texaco.

V ERC Emission Calculations Cont.:

The data submitted represents operating records for 141 days out of the five years preceeding the date of application (July 1982 - July 1987). A review of this data reveals that the time period representing normal operation of the facility is July 1982 - June 1984, therefore, emission reductions will be average over this time period based on the 141 days of actual operation documented by the applicant within this Time frame,

* PLEASE SEE ATTACHMENT

A. TCC Unit:

1. Gas-Fired Compressor Engines:

Ref. EPA-AP-42 Table 9.1-1 Emission Factors For Petroleum Refineries Gas Fired Compressor Engines, Reciprocating

	PM_{10}	SO_2	NO_2	HC	CO
$\dot{m}$ lbm/10^6 ft^3 =	Neg.	2000 S	3400	1400	430

where S = gas sulfur content in lbm/10^3 s ft^3

@ BACT sulfur level (see note pg. 12)

SO_2

$$(2000)\left(\frac{0.2\,gr\ H_2S}{100\ scf^3}\right)\left(\frac{1.0}{1.0}\right)\left(\frac{1\ lb}{7000\ gr}\right)$$

0.57 lbm SO_2/10^6 ft^3

2007130/101 + 4 others (12)

V ERC Emission Calculations Cont.

A. TCC Unit Cont.

1. Gas-Fired Compressors Engines : RECIPROCATING

Average daily fuel consumption = 283,056.4 ft^3/day ‡

Average daily heating value = 1273 BTU/ft^3

Average fuel gas H_2S content = 0.2 7.4 gr/100 ft^3 (Assumes 99% removal IN MEA ABSORBER of ACTUAL HISTORICAL AVG. H_2S CONTENT)

$\Rightarrow$ 0.0004 lbm/1000 sft³

Adjusted Emission Factors

Adjustment for heating value = $\left(\frac{1273.2\ BTU}{ft^3}\right)\left(\frac{ft^3}{1050\ BTU}\right) = 1.21257$

(per notes a & f, Table 3.2-1 and not j, Table 3.1-1 AP42)

$\dot{m} = (EF)(283{,}056.4\ ft^3/day)\ \frac{1.21257\ \text{scf of 1050 Btu gas}}{1\ \text{scf of 1273.2 Btu gas}}$

$\dot{m} = (EF)\,0.343\times10^6\ \text{eq. sft}^3/\text{day}$

	PM_{10}	SO_2 *	NO_2	HC	CO
$\Rightarrow \dot{m}$ lbm/day =	Neg.	0.20	1166.97	480.52	147.59

* NOTE:

BACT for this equipment is the use of natural gas with a sulfur content of 0.2 gr/100 ft^3 (0.0003 lbm/1000 sft³), therefore, no higher emission factor may be used to calculate the bankable emission reduction from these compressors.

‡ Actual fuel consumption for July 1982 - AUG 1983 + estimated consumption for Sept - Nov 83 averaged over a full 2 year period (ie $17\ \text{months} \times \frac{\text{Avg Fuel}}{\text{month}} \times \frac{1}{24\ \text{months}} = \frac{\text{Avg Fuel}}{\text{month}}$ for 2 yr period)

V ERC Emission Calculations Cont.:

A. TCC Unit Cont.:

2. TCC Heaters Gas-Fired Emissions:

Ref. EPA-AP-42 Table 1.4-1 Uncontrolled Emission Factors For Natural Gas Combustion, Industrial Boilers

	PM_{10}	SO_2	NO_2 *	HC	CO
EF $lbm/10^6 ft^3$ =	1	0.6 SEE RACT EMISSION FACTOR BELOW	105	2.8	35

Average Daily Fuel Consumption: 759,622.7 sft^3/day ‡

Average Daily Heating Value: 1314 BTU/sft^3

Average Fuel Gas H_2S Content: 1.67 gr/sft^3

Fuel Gas H_2S Content BACT Level = 0.10 gr/ft^3

RACT SO2 EMISSION FACTOR $\Rightarrow EF\ SO_2 = \left(\frac{0.1\ gr\ H_2S}{sft^3}\right)\left(\frac{lb}{7000\ gr}\right)\left(\frac{64\ lbm\ SO_2}{34\ lbm\ H_2S}\right)(10^6) = 26.890756\ lbm/10^6 sft^3$

Adjustment for Heating Value $= \frac{1314}{1050} = 1.251429$

$\Rightarrow \dot{m} = (EF)(759{,}622.7\ sft^3/d_y)\left(\frac{1.251429\ sft^3 \cdot 1050\ Btu/gas}{1 \cdot sft^3 \cdot 1314\ Btu\ gas}\right)$

$\Rightarrow \dot{m} = (EF)(0.9506 \times 10^6\ sft^3/d_y)$

	PM_{10}	SO_2	NO_2	HC	CO
∴ $\dot{m}$ lbm/day =	0.95	25.56	99.81	2.66	33.27

‡ Actual fuel consumption for July 1982 - Aug 1983 + estimated fuel consumption for Sept - Nov. '83 averaged over a full 2 year period

* BACT Emission Factor for 25% control due to regulating excess air

V ERC Emission Calculations Cont.:

A. TCC Unit Cont.:

3. TCC Heaters Oil Fired Emissions:

Ref. EPA-AP-42 Table 1.3-1 Uncontrolled Emission Factors For Fuel Oil Combustion, Industrial Boilers

	PM_{10}	SO_2	NO_2*	HC	CO
EF $lbm/10^3$ gal =	10S + 3	157S	45	0.28	5

Average Daily Fuel Consumption: 924.80514 gal/day ‡

Average Fuel Sulfur Content: 0.859705 % by weight

Fuel Sulfur Content RACT Level: 0.30 % by weight

$\dot{m}$ lbm/day = (EF)(fuel consumption)

	PM	SO_2	NO_2	HC	CO
⇒ $\dot{m}$ lbm/day =	5.55	43.56	41.62	0.26	4.62

* RACT emission factor for 25% control due to regulating excess air

‡ CALCULATED OIL CONSUMPTION BASED ON # OF BURNERS OPERATING AND RATED CAPACITY OF BURNERS REDUCED BY DOWNTIME (17 MONTHS/24 MONTHS)

V ERC Emission Calculations Cont.:

A. TCC Unit Cont.:

4. TCC Kiln Emissions:

Ref. EPA-AP-42 Table 9.1-1 Emission Factors For Petroleum Refineries, Moving Bed Catalytic Cracking Units

	PM_{10}	SO_2	NO_2	HC	CO
EF lbm/10^3 bbl feed =	see catalyst lift scrubber; No separate PM Emissions validated for kiln	60	5.0	87.0	3800

Average daily throughput ≠ = 6,485.819 bbl/day

	PM	SO_2	NO_2	HC	CO
⇒ ṁ lbm/day =	see catalyst lift scrubber	389.15	32.43	564.27	24,646.11

5. TCC Catalyst Lift Scrubber:

From District witnessed compliance test conducted on 8/3/76 PM emissions from the catalyst lift scrubber were determined to be 1.9 lbm / 550 bbl feed ≡ 3.45 lbm/10^3 bbl feed

	PM		PM_{10} *
⇒ ṁ lbm/day =	22.41	⇒	22.19

≠ Actual TCC unit feed throughput for July 1982 - Nov. 1983 averaged over a full 2 year period.

* Ref. Interim Report To State/local APC Agencies of Particle Size Distributions And Emission Factors (Including PM_{10}) Table C.2-3 Typical Control Efficiencies of Various PM Control Devices: Venturi Scrubber = 99% @ 10 microns or less

IV ERC Emission Calculations Cont.:

B. Coker Compressor Emissions:

Ref. EPA AP-42 Table 9.1-1 Emission Factors For Petroleum Refineries
Gas Fired Compressor Engines, Reciprocating

	PM_{10}	SO_2	NO_2	HC	CO
$\dot{m}$ lbm/10^6 ft^3 =	Neg.	2000S	3400	1400	430

where S = gas sulfur content in lbm/1000 ft^3

Average daily fuel consumption: 206,509.2 ft^3/day ‡
Average daily heating value: 1273.2
Average fuel gas H_2S content: 2.74 gr/100 ft^3 = 0.0039 $\frac{lbm S}{1000 ft^3}$

Adjustment factor for heating value: $\frac{1273.2}{1050}$ = 1.21257
Fuel gas H_2S content BACT level = 0.2 gr/100 ft^3 = 0.0003 $\frac{lbm S}{1000 ft^3}$

CO

$\dot{m}$ lbm/day = (EF)(206,509.2 sft^3/day) $\left(\frac{1.21257 \text{ sft}^3 \text{ 1050 Btu gas}}{1 \text{ sft}^3 \text{ 1273.2 Btu gas}}\right)$

$\dot{m}$ lbm/day = (EF) x (0.2065 x 10^6 sft^3/dy) *

	PM_{10}	SO_2	NO_2	HC	CO
=> $\dot{m}$ lbm/day =	Neg.	0.12	851.38	350.57	107.68

* BACT level based on AP-42 emission factor for SO_2

‡ See note pg 11

IV ERC Emission Calculations cont.:

C. CO Boiler Emissions:

Ref, EPA - AP-42 Table 1.4-1 Uncontrolled Emission Factors For Natural Gas Combustion, Industrial Boilers

	PM_{10}	SO_2	NO_2	HC	CO
EF $lbm/10^6\ ft^3$ =	1	$\boxed{0.6}$ See BACT EM. FACTOR BELOW	$\boxed{140}$ SEE SOURCE TEST EMISSION FACTOR BELOW	2.8	$\boxed{35}$ SEE SOURCE TEST EMISSION FACTOR BELOW

Emission factors based on 9/22/82 compliance Testing

	NO_2	CO
SOURCE TEST EMISSION FACTOR: EF $lbm/10^6$ BTU =	0.25	0.44

Average Daily Fuel Consumption = 1,694,497.26 ft^3/day

Average Daily Heating Value = 1314 BTU/scf

Average Fuel Gas H_2S Content = 1.672375 gr/scf

Fuel Gas H_2S Content BACT Level = 0.10 gr/scf

SO2 BACT EMISSION FACTOR

$$\Rightarrow EF\ SO_2 = \left(\frac{0.1\ gr}{scf}\right)\left(\frac{1b}{7000\ gr}\right)\left(\frac{64\ lbm\ SO_2}{34\ lbm\ H_2S}\right)(10^6) = \boxed{\text{BACT } SO_2 \text{ EMISSION FACTOR: } 26.890756\ lbm/10^6\ ft^3}$$

$$\text{Average Daily heat input} = \left(\frac{1,694,497.26\ ft^3}{day}\right)\left(\frac{1314\ BTU}{ft^3}\right) = \frac{2,226.57 \times 10^6\ BTU}{Day}$$

$$\text{Adjustment factor for heating value} = \frac{1314}{1050} = 1.251428571$$

$$\dot{m}\ \frac{lbm}{dy} = EF\frac{lbm}{10^6 sft^3} \times 1.694 \times 10^6\ sft^3/dy \times \frac{1.251428571\ sft^3\ 1050\ Btu\ gas\ nat}{1\ sft^3\ 1314\ Btu\ gas}\ \text{co.}$$

$$\dot{m}\ \frac{lbm}{dy} = \left(EF\ \frac{lbm}{10^6 sft^3}\right) \times \left(2.121 \times 10^6\ \frac{sft^3}{dy}\ \text{eq. gas}\right)\ \text{for PM, SO2 + HC}$$

AP-42

The SO_2 emission factor has been calculated for BACT and NO_2 and CO emission factors should be those documented by compliance testing.

V ERC Emission Calculations Cont.:

C. CO Boiler Emissions:

Appropriate Emission Factors

	PM_{10}	SO_2	NO_2	HC	CO
EF lbm/10^6 ft^3 =	[illegible]	26.89		2.8	
lbm/10^6 BTU =			0.25		0.44

$\dot{m}$ = (EF lbm/10^6 ft^3)(2.121 $\times 10^6$ sft^3/day) or (EF lbm/MMBTU)(2,226.57 MM BTU/day)

	PM_{10}	SO_2	NO_2	HC	CO
⇒ $\dot{m}$ lbm/day =	2.12	57.03	556.64	5.94	979.69

D. Valve and Flange Emissions:

Ref. EPA-AP-42 Table 9.1-2 Uncontrolled Fugitive Emission Factors For Petroleum Refineries

Emission Source		lbm/hr - source
Pipeline Valves -	Gas Service	0.059
	Light Liquid Service	0.024
	Heavy liquid Service	0.0005
Flanges - All streams		0.00056

V ERC Emission Calculations Cont.:

D. Valve and Flange Emissions Cont.:

Valve & Flange Count

Type of Source	TCC Unit	Fluid Coker	Total
Valves - Gas Service	125	161	286
Light Liquid	38	22	60
Heavy Liquid	49	85	134
Flanges	318	626	944

Applicant proposed control efficiency resulting from inspection and directed maintenance program (as referenced by EPA-600/52-080-085 Assessment of Atmospheric Emissions from Petroleum Refining Table 2 pg 5)

$\therefore$ $m = (EF)(\#\ sources)(24\ hr/day)(1-91\%)(491\ day/730\ days)^{*}$

Type of Source		Controlled Emissions lbm/day
Valves - Gas Service	=	24.51
Light Liquid	=	2.09
Heavy Liquid	=	0.10
Flanges	=	0.77
Total	=	27.47

* Adjustment to 2 year average when source operated 491 days

V ERC Emission Calculations Cont.:

E. Summary of Actual Historical Emission Reductions:

	Emission Source	PM_{10}	SO_2	NO_2	HC	CO
pg (11)	TCC Unit Compressors Engines	0.00	0.20	1166.97	480.52	147.59
pg (12)	TCC Unit Heaters - Gas Fuel	0.95	25.56	99.81	2.66	33.27
pg (13)	TCC Unit Heaters - Oil Fuel	5.55	43.56	41.62	0.26	4.62
pg (15)	TCC Unit Kiln	0.00	389.15	32.43	564.27	24,646.11
pg (16)	Catalyst Lift Scrubber	22.19	0.00	0.00	0.00	0.00
pg (17)	Coker Compressors Engines	0.00	0.12	851.38	350.57	107.68
pg (18)	CO Boiler	2.12	57.03	556.64	5.94	979.69
	Fugitive Emissions	0.00	0.00	0.00	27.47	0.00
	Total Actual ERCs =	30.81	515.62	2748.85	1431.69	25,918.96

VI Conclusion:

Texaco Refining and Marketing has documented in accordance with the requirements of Rule 210.3 that actual historical emission reductions have occured at their Bakersfield plant. Therefore, Banking Certificates may be issued in the amounts calculated.

TCC UNIT HEATERS - OIL FIRED ERC SUMMARY ON THIS PAGE, CALCULATED ON PG (13) AND INCLUDED IN CONCUNCLUSIONS ON THIS PAGE ARE NOT VALIDATED PURSUANT TO RULE 210.3 SECTION D. (1)(b) AND WILL NOT BE INCLUDED IN BANKING CERTIFICATES ISSUED UNLESS, PRIOR TO ISSUANCE, TRMI SUBMITS EVIDENCE, TO THE SATISFACTION OF THE APCO, TO VALIDATE THE ERC CALCULATED HEREIN.

VII Recommendations:

Issue Actual Historical Emission Reduction Banking Certificates for the amounts summarized on page 19.

Include a condition that Permits to Operate #s 2007 130 (FCC unit), 2007 134 (Fluid Coker) and 2007 148 (CO Boiler) be surrendered and all associated equipment shall be rendered inoperable for issuance of the banking certificate.

= 2007130/101 - '130/601,

STANDARD OUTLINE FORM

PROCESSING ENGINEER:

Douglas W. Mc Cormick
A S E II

APPLICANT: Texaco Refining and Marketing

PROPOSED PROJECT:

Five emission reduction banking certificate resulting from the surrender of Permits to Operate for the Area 2 TCC unit, FC unit and the CO boiler

II. APPLICABLE RULES AND REGULATIONS:

____ A. Rule 202 (exemptions) - section(s) providing exemption(s):
____ ____ ____ ____ ____ ____

____ B. Rule 210.1 (New Source Review) - applicable section(s):
- ____ section 2.A.2 (compliance certification)
- ____ section 3.B. (section 5.A applies)
- ____ section 3.C.1., 2. (section 5.B. applies)
- ____ section 3.D.1., 2. (section 5.B. exemptions)
- ____ section 3.E. (cotton gins)
- ____ section 5.A. (BACT)
- ____ section 5.B. (LAER)
- ____ section 5.B. (modeling)
- ____ section 5.B. (offsets)
- ____ section 5.B.4. (offset ratio: ____ 1.2:1 ____ 1.5:1 or ____ modeled ratio of ____:1
- ____ section 5.B.6. (non-standard offset)
- ____ section 5.B.11. (interpollutant offsets)
- ____ section 6.B. (permitting of previously permit-exempt equip.)
- ____ section 7.A. (review period extension)
- ____ section 7.B. (public notice)
- ____ section 8 (subject to CEC review)

_X_ C. Rule 210.3 (emissions reduction banking)

____ D. Rule 401 (visible emissions)

____ E. Rule 404 (valley basin PM concentration)

____ F. Rule 404.1 (desert basin PM concentration)

____ G. Rule 405 (__ valley basin __ desert basin PM emission rate)

2007130/101 - '130/601

II. APPLICABLE RULES AND REGULATIONS CONT.:

____ H. Rule 406 (Portland cement kiln PM emission rate)

____ I. Rule 407 (sulfur compounds)

____ J. Rule 407.1 (disposal of solid and liquid waste)
____ section a. ____ section b. ____ section c. ____ section d.

____ K. Rule 407.2 (combustion contaminants)

____ L. Rule 408 (valley basin SOx, NOx, and PM emission rates)
____ exemption granted

____ M. Rule 409 (desert basin SOx, NOx, and PM emission rates)

____ N. Rule 410 (organic solvents)
___ section a. ___ section b.
___ section c. ___ section h. (exemption)

____ O. Rule 410.2 (disposal and evaporation of solvents)

____ P. Rule 410.3 (degreasing operations)
___ section b. ___ section c. ___ section d. (exemption)

____ Q. Rule 410.4 (surface coating)
___ section b. ___ section c. ___ section d. (exemption)

____ R. Rule 410.6 (perchloroethylene dry cleaning systems)
___ section b. ___ section d. (exemption)

____ S. Rule 410.7 (graphic arts)
___ section d. ___ section g. (exemption)

____ T. Rule 411 (storage of petroleum distillates or light crude)
____ section I.A.1. (welded tank/metallic shoe primary seal)
____ section I.A.2. (welded tank/resilient toroid primary seal)
____ section I.A.3. (riveted tank/metallic shoe primary seal)
____ section I.A.4. (closure device equivalent to I.A.1.)
____ section I.B. (fixed roof with internal floating roof)
____ section I.C. (fixed roof with vapor control system)
____ section VIII (emergency standby exemption)
____ vapor pressure exemption
____ size exemption
____ throughput exemption

____ U. Rule 411.1 (steam drive wells)

____ cyclic well exemption
____ section IV.B. (wellhead temperature increase exemption)
____ section IV.C. (pseudo-cyclic well exemption)

____ V. Rule 412 (gasoline storage tanks)

____ W. Rule 412.1 (refueling of motor vehicles)

____ X. Rule 413 (organic liquid loading)
____ non-"VOC-liquid" exemption
____ vapor pressure exemption
____ throughput exemption

2007 130/101 - 130/601

II. APPLICABLE RULES AND REGULATIONS CONT.:

____ Y. Rule 414 (wastewater separator)
____ section b.
____ section c. (exemptions)

____ Z. Rule 414.1 (valves, pressure relief valves, and flanges)
____ sections b., c., d., e., and f.
____ section g. (exemption)

____ AA. Rule 414.2 (vacuum producing devices of systems)

____ BB. Rule 414.3 (refinery process unit turnaround)

____ CC. Rule 414.5 (pump and compressor seals)
____ sections c., d., e., and f.
____ section i. (exemption)

____ DD. Rule 414.6 (heavy oil test station)

____ EE. Rule 415 (reduction of animal matter)

____ FF. Rule 418 (incinerator burning)

____ GG. Rule 419 (nuisance)

____ HH. Rule 422 (New Source Performance Standards)
____ subpart ______-______________________________
____ subpart ______-______________________________

____ II. Rule 423 (National Emission Standards for Hazardous Air Pollutants)

____ JJ. Rule 424 (sulfur compounds from oil field steam generators)
____ section B. ____ section D.
____ section E. (exemption) ____ section F. (exemption)
____ size exemption ____ "non-existing" steam generator

____ KK. Rule 425 (oxides of nitrogen from oil field steam generators) (Western Kern County Fields)
____ section B. ____ section C.
____ section E. ____ section F. (exemption)
____ size exemption ____ "non-existing steam generator

____ LL. Rule 425.1 (oxides of nitrogen from oil field steam generators) (Central Kern County Fields)
____ section B. ____ section C.

____ MM. Section 41700 of California Health & Safety Code (risk assessment)

____ NN. Other applicable requirements:
____
____
____
____

2007 130/101 - 130/601

Rule 202 Exempt Equipment:

Air Contaminants to be Considered:

PM_{10}, SO_2, SO_4, NO_2, HC, CO

Possible Emission Points:

NA

NSR Considerations:

NA

Air Pollution Control Equipment Design Review:

NA

Project is to determine if the requirements of Rule 210.3 have been satisfied and to calculate the bankable emission reductions.

~~SINCE ACTUAL HISTORICAL EMISSIONS IN PERIOD PRECEDING DATE REDUCTIONS BROUGHT ABOUT (DATE P TO O SURRENDERED)~~ ARE ZERO, ~~ONLY SLC ERC'S MAY BE ELIGIBLE FOR BANKING CERTIFICATES. (APPLICATION FOR "ACTUAL HISTORICAL ERC'S ARE NOT TIMELY UNDER 210.3 E.4.(b))~~ FOR NON-ATTAINMENT AIR CONTAMINANTS, (cf 210.3 C.2) "BASELINE EMISSIONS" (cf 210.3 B.3) WOULD BE ACTUAL HISTORICAL EMISSIONS (cf 210.1 4.B) ~~FOR ALL ERCS FOR NON-ATTAINMENT AIR CONTAMINANTS~~
ONLY REDUCTIONS BEYOND RACT ARE BANKABLE (cf 210.3 C.3) ~~FOR ATTAINMENT ATTAINMENT AIR CONTAMINANTS (SO_2, SO_4 & CO)~~

TEG
1/5/88

ENGINEERING EVALUATION OF APPLICATIONS FOR AUTHORITY TO CONSTRUCT

BREAK DOWN OF PROCESSING TIME

Name of Company: Texaco Refining and Marketing Inc.

Description of Project: 5 ERC Banking Applications

Receipt Date of Application: 31 July 1987

Processing Dates, Including Preliminaries: ______

PROCESSING ACTIVITY:	ACTIVITY TIME (HRS)	INITIAL
Initial Contact: ___telephone ___in person:		
8/27 - 1/4 Preliminary Review:	0.25	DM
8/27 - 1/4, 1/5 - 3/4, 1/7 - 3/4 Organization/Familiarization:	1.75	DM
8/27 - 1/2, 1/7 - 1 1/2 Project Description/Schematic/Equip. Listing:	2.00	DM
8/27 - 1/4 Listing of Applicable Rules:	0.25	DM
1/8 - 6 1/2 Rule 210.3 Compliance Review	6.50	DM
1/8 - 1, 1/11 - 6, 1/12 - 2 1/2, 1/13 - 3 1/2, 1/14 - 1 Calculation of ERC's	14.00	DM
Air Quality Impact Assesment Review:		
Preparation of Emission Profiles:		
8/27 - 1 3/4, 10/1 - 1/4 Preparation of Written Request for Info.:	2.00	DM
Telephone and Verbal Request for Info.:		
2/22 - 2 Reworking of Application Due to Change:		
1/14 - 1 Preparation of Rough Draft A's to C:	1.00	DM
General Meeting with Applicant:		
1/14 - 1 1/2 Conclusions/Recommendations/Final Review:	1.50	DM
TOTAL TIME SPENT ON EVALUATION:	29 1/4	DM

BRIEF PROJECT DESCRIPTION: 5 ERC Banking Certificates

FINAL CHECKLIST: Engineering Evaluation of Application(s) for A to C

✓ X Engineering Analysis includes all items described in guidelines, all items appear in the correct order, and all parts of analysis read logically and are legible.

X Rule 210.1 Certification of Compliance, if required, has been received and is of the proper content and form.

✓ X Package is divided into sections (each one in a folder) as described in guidelines and each folder has a correctly prepared label.

✓ X Rough draft ~~A's to C~~ Certificates have been prepared in accordance with guidelines and in correct format with correct punctutation. Drafts read logically and are legible. Each Design Condition and each Operational Condition is followed by the number of the Rule requiring the condition or providing basis for the condition.

✓ X Applicant has been notified by telephone of all conditions appearing in the A's to C but not proposed in the application.

On- Add note in system 36 - cancelled & replaced by Banking Certs. 2007130/101/102, 104-106 ✓

NR Emissions summary sheets (one for whole project and one for each A to C) have been prepared including net emissions change for project as well as net cumulative emissions change for whole stationary source. One xerox copy of each has been prepared. NSPS status has been marked.

NR Emission profiles have been prepared in accordance with guidelines, i.e., "normal" emissions are depicted, a maximum daily emission limit (110% of normal emissions) has been set, and compliance (on a "moving" yearly average) has been required.

✓ NR NSR/PSD/NSPS/BACT/LAER report has been prepared and correct number of xerox copies has been prepared. (NSR, BACT/LAER - 3; PSD - 2; NSPS - 1).

✓ NR Source test requirements summary has been prepared (don't specify emission limits, just mark "inlet", "outlet", "units", etc.) and one xerox copy has been prepared.

✓ X Initial Permit fee billing has been prepared which includes all A's to C involved in project, even if there is no fee due for one or more A's to C.

None Problems encountered time sheet has been prepared which includes all items (understandably and clearly described) which resulted in the unnecessary expenditure of time; unnecessary meaning that the time would not have been spent if the application had been correctly submitted, the data was all correct, no changes were made "in midstream", etc.

✓ X Engineering evaluation time sheet has been prepared which includes all time spent in processing the applications. This includes time spent discussing the application with others, time spent revising, etc.

Signed: D McCormick, Project Evaluation Engineer

Initialed: JEG, Supervising Engineer

8/18/94 MPE

TEXACO 870731/2007130

1. Since the source was in operation for less than two years (in the baseline period) the calculations of emissions shall be based on the full operating history of the equipment (in the baseline period). See highlighted section of attached copy of NSR rule that the application was processed under.

8/18/94 MPE

For an existing source, the emissions of any air contaminant (or precursors, as defined in Section 3.C.2.) for which the area is designated nonattainment under Section 107 of the Clean Air Act, and any air contaminant emissions which are to be used as interpollutant tradeoffs (in accordance with Section 5.B.11) for air contaminants so designated shall be based on the actual operating conditions of the existing source averaged over the two years immediately preceding the date of application. The Control Officer may allow the use of a different consecutive two year period within five years immediately preceding the date of the complete application upon a determination that it is more representative of normal source operation. If a source has been in operation for less than two years the calculation of emissions shall be based on the full operating history of the equipment. The Control Officer may allow the use of a shorter period which represents normal operation for seasonal sources.

Emissions shall be determined by using actual fuel use, source tests or other data. The burden is on the applicant to provide the necessary documentation. Where the source has not been built or has not yet begun normal operation, emission credits shall be limited to actual emission reductions provided to obtain the source's Authority to Construct. The actual emission reductions shall be based on actual fuel use, source tests, operational or other data.

The emissions of any air contaminant other than those for which the area is designated nonattainment under Section 107 of the Clean Air Act shall be based on the specific limiting conditions set forth in the existing source's Authority to Construct permits and Permits to Operate, and where no such conditions are specified, or where no Authority to Construct was required, on the actual operating conditions as set forth above. Where the operation of a specific source has been significantly reduced during the previous three years, the Control Officer may specify an averaging period or emission rate which he determines provides an equitable emission base. If violations of laws, rules, regulations, permit conditions, or orders of the District, the Air Resources Board, or the Federal Environmental Protection Agency occurred during the period used to determine the operating conditions, then adjustments to the operating conditions shall be made to determine the emissions the existing source would have caused without such violations.

C. The cumulative net change in emissions from new or modified stationary sources which are not seasonal sources shall be determined using yearly emission profiles, or alternate method as specified by the Control Officer subject to consultation with the Executive Officer of the Air Resources Board.

Yearly emissions profiles for an existing or proposed stationary source or modification shall be established by plotting the daily emissions therefrom in descending order. A separate profile shall be constructed for each pollutant.

8/27/84
11/18/85
6/01/87

Texaco Refining and Marketing Inc.
P.O. Box 1476
Bakersfield, CA 93302

Applicant: Jesse M. Gray, Jr., Plant Manager
(805) 326-4221

Date Request Received: April 10, 1990

Project Location: 6500 Refinery Avenue, Bakersfield

Type of Request: Renewal of ERC Banking Certificate #'s 2007130/101/201/401/501/601

Project Evaluation by: Allan Phillips, A.Q.E.I.
Started May 3, 1990
Finished May 3, 1990

I. Project Description:

Texaco Refining and Marketing requests a two year renewal for ERC Banking Certificate numbers 2007130/101/201/401/501/601 for emissions reductions achieved through the shutdown of a Thermofor catalytic cracking unit, fluid coker unit, and CO boiler serving the fluid coker.

II. Applicable Rules and Regulations:

Rule 210.3: Emission Reductions Banking.

III. Engineering Analysis:

Rule 210.3 section IV.D.1. states, "Banking Certificates shall be valid for a period of two years. Upon payment of the renewal fee, a Banking Certificate may be renewed for successive two-year periods provided the ERC remains intact."

ERC Banking Certificates 2007130/101/201/401/501/601 were valid from April 14, 1988 to April 14, 1990. The request for renewal was received on April 10, 1990 along with the required renewal fees of $250.00 ($50.00 per certificate). Therefore, the renewal request was timely.

According to District records, Permits to Operate 2007130,134 and 148 for the equipment supplying the emission reductions credits were cancelled on August 8, 1988, and no new permits have been issued for the same equipment since that date. Therefore, the ERC remains intact.

IV. Conclusions:

Rule 210.3 section IV.D.1. has been satisfied.

V. Recommendation:

Reissue ERC Banking Certificate numbers 2007130/101/201/401/501/601 with new validation dates of April 14, 1990 to April 14, 1992.

Name: Allan Phillips

Date: May 3, 1990

Project: ______

SUMMARY OF PROBLEMS ENCOUNTERED DURING APPLICATION PROCESSING

COMPANY NAME: Texaco Refining and Marketing, Inc.

PROJECT DESCRIPTION: ERC Banking Certificate Renewals

BRIEF DESCRIPTION OF PROBLEMS ENCOUNTERED:

1. None
2.
3.
4.
5.
6.
7.
8.
9.
10.

FRACTION OF TOTAL PROCESSING TIME SPENT ON CORRECTING THE ABOVE: 0 %

PROJECT EVALUATION STATUS REPORT — DATE SUBMITTED: ___/___/___

PROJECT ENGINEER: Allan Phillips — ASSIGNMENT DATE: 4/9/90

COMPANY: Texaco Ref & Marketing — PROJECT: Renewal of ERC Banking Certificate

~~A to C~~ NUMBER(S): 2007130/101,201,401,501,601 — RECEIPT DATE: 4/10/90

DATE PACKAGE DEEMED COMPLETE: ___/___/___ — 180th DAY: ___/___/___

EVALUATION STATUS SUMMARY:

- ✓ Project proposal familiarization completed 5-3-90
- ✓ Project proposal description completed 5-3-90
- ✓ Listing of applicable Rules and Regulations completed 5-3-90
- NR Project proposal schematic(s) completed
- NR Design review of emissions control system(s) completed
- NR Calculation of expected air contaminant emissions completed
- NR Preparation of emission profiles completed
- ✓ Comprehensive listing of conclusions & recommendations completed 5-3-90
- ✓ Rough draft ~~A's to C~~ Banking Certificates completed 5-3-90
- NR Applicant notified of A to C requirements different than proposed
- ✓ Project evaluation submitted ~~to Manager of Engineering~~ as complete 5-3-90

* ______ Waiting for additional information requested by: ___ phone ___ letter

* ______ Applicant notified of pending denial on ___/___/___

* ______ Request for 90 day extension received on ___/___/___

BRIEF PROJECT DESCRIPTION: ERC Banking Certificate Renewals

FINAL CHECKLIST: Engineering Evaluation of Application(s) for A to C

✓ Engineering Analysis includes all items described in guidelines, all items appear in the correct order, and all parts of analysis read logically and are legible.

NR Rule 210.1 Certification of Compliance, if required, has been received and is of the proper content and form.

✓ Package is divided into sections (each one in a folder) as described in guidelines and each folder has a correctly prepared label.

✓ Rough draft A's to C have been prepared in accordance with guidelines and in correct format with correct punctutation. Drafts read logically and are legible. Each Design Condition and each Operational Condition is followed by the number of the Rule requiring the condition or providing basis for the condition.

NR Applicant has been notified by telephone of all conditions appearing in the A's to C but not proposed in the application.

NR Emissions summary sheets (one for whole project and one for each A to C) have been prepared including net emissions change for project as well as net cumulative emissions change for whole stationary source. One xerox copy of each has been prepared. NSPS status has been marked.

NR Emission profiles have been prepared in accordance with guidelines, i.e., "normal" emissions are depicted, a maximum daily emission limit (110% of normal emissions) has been set, and compliance (on a "moving" yearly average) has been required.

NR NSR/PSD/NSPS/BACT/LAER report has been prepared and correct number of xerox copies has been prepared. (NSR, BACT/LAER - 3; PSD - 2; NSPS - 1).

NR Source test requirements summary has been prepared (don't specify emission limits, just mark "inlet", "outlet", "units", etc.) and one xerox copy has been prepared.

NR Initial Permit fee billing has been prepared which includes all A's to C involved in project, even if there is no fee due for one or more A's to C.

✓ Problems encountered time sheet has been prepared which includes all items (understandably and clearly described) which resulted in the unnecessary expenditure of time; unnecessary meaning that the time would not have been spent if the application had been correctly submitted, the data was all correct, no changes were made "in midstream", etc.

✓ Engineering evaluation time sheet has been prepared which includes all time spent in processing the applications. This includes time spent discussing the application with others, time spent revising, etc.

Signed: Allan Phillips 5-3-90, Project Evaluation Engineer

Initialed: ________, Supervising Engineer

~~ɹm~~

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

1601 "H" Street, Suite 150
Bakersfield, California 93301-5199
Telephone: (805) 861-3682

LEON M HEBERTSON, M.D.
Director of Public Health
Air Pollution Control Officer

August 27, 1987

Mr. L. E. Perrier
Plant Manager
Texaco Refining & Marketing, Inc.
P. O. Box 1476
Bakersfield, CA 93302

Subject: ERC Banking Certificate Applications for
TCC Unit, FC Unit, and CO Boiler Shutdown

ERC Application #'s 2007130/101, '130/201 '130/401,'130/501, '130/601

In reply refer to:
ERC #'s & Project #870731

Dear Mr. Perrier:

On July 31, 1987 we received your applications for Emission Reduction Credit Banking Certificates resulting from the November, 1985 shutdown of the Tosco T.C.C. Unit, Fluid Coker, and CO Boiler.

Review of these applications reveals that this request is not timely. Rule 210.3, section C.4.(b) requires applications for banking of emissions reductions to be submitted within 90 days after such reduction occurs. Because your proposal does not comply with this requirement, your applications for Emission Reduction Credits Banking Certificates must be denied within 30 days.

Thank you for your cooperation in this matter. Should you have any questions, please telephone Mr. Douglas McCormick of the Engineering Evaluation Section at (805) 861-3682.

Sincerely,

LEON M HEBERTSON, M.D.
AIR POLLUTION CONTROL OFFICER

Thomas Paxson, P. E., Manager
Engineerig Evaluation Section

TP/TEG/DM/nn

RESOURCE MANAGEMENT AGENCY

RANDALL L. ABBOTT
DIRECTOR

DAVID PRICE III
ASSISTANT DIRECTOR

Air Pollution Control District
WILLIAM J. RODDY, APCO

Environmental Health Services Department
STEVE McCALLEY, REHS, DIRECTOR

Planning & Development Services Department
TED JAMES, AICP, DIRECTOR

AIR POLLUTION CONTROL DISTRICT

January 2, 1992

Mr. Donald R. Hall
Plant Manager, Bakersfield Plant
Texaco Refining & Marketing, Inc.
P.O. Box 1476
Bakersfield, CA 93302

SUBJECT: **ERC Banking Certificate #'s 2007130/101, 2007130/501 and 2007130/601**

Dear Mr. Hall:

Enclosed please find revised copies of the three subject ERC Banking Certificates. These corrected copies will now replace the existing certificates.

Thank you for your cooperation in this matter. Should you have any questions, please telephone Mr. Thomas Goff of the Engineering Evaluation Section at (805) 861-3682.

Sincerely,

WILLIAM J. RODDY
Air Pollution Control Officer (SED)
Asst. Air Pollution Control Officer (SJVUAPCD)

Allan Phillips for
Thomas Paxson, P.E.
Manager, Engineering Division

TEG/bd
Enclosures

CHANGE OF STATUS FORM

Requested By: RY Date: 1/4/92
(Please Sign)

Company Name: TEXACO R&M INC.

Permit Number: 2007130 Project Number: 870731

Action: (Check Below) Effective Date: 1/21/92

==

X Cancelled
______ Denied
______ Implemented
______ Issued
______ Other (Please Explain)
______ Transferred

==

Remarks: CANCELLED AND REPLACED BY
2007130/102/203/403/502/602

NOTE: The Permit Processor is responsible for making any required changes to the AS/400 system or to the document contents.

Office Memorandum • **KERN COUNTY**

TO : Air Quality Control Division

DATE: October 31, 1985

FROM : Leon M Hebertson, M.D.
Air Pollution Control Officer

Telephone No.

SUBJECT: Shutdown Emissions

Part C - Prevention of Significant Deterioration and Part D - Plan Requirements for Nonattainment Areas of the Clean Air Act as amended August 1977 require preconstruction permits for new sources and modifications to existing sources. Once these permits are issued, the source may construct and operate within the conditions of the permits.

Therefore, a source may modify its operation, shutdown, or curtail production or operating hours, or make other changes within the limits of permit conditions without affecting these permits.

A source that renews its permits and keeps them current, has maintained all equipment in operating condition, has not removed, modified, disassembled any equipment and has a legal right to operate same shall be considered an operating source.

Source shutdown, shutting down, curtailments and permanently curtailing are terms found in Appendix S - Emission Offset Interpretative Ruling, Title 40 CFR. These terms are therefore only applicable to "offsets" and do not affect a source experiencing temporary shutdown or curtailments and then wishing to restart provided permits are kept current.

Leon M Hebertson, M.D.
Air Pollution Control Officer

September 10, 1987

Mr. Tom Paxson
Manager of Engineering
Kern County Air Pollution
Control District
1601 H Street, Suite 250
Bakersfield, CA 93301

Dear Mr. Paxson:

On July 31, 1987, Texaco Refining and Marketing, Inc. submitted an application for ERC Banking certificate for emission reductions associated with the shutdown of the former Tosco T.C.C. unit, fluid coker and CO boiler.

On September 2, 1987, we received your letter (dated August 27, 1987) denying our request to bank the emissions. The reason given for denying our application was that the application was not filed within 90 days of the date the reduction occurred as required by Rule 210.3; Sec. C.2(b).

We do not believe that the interpretation of that section was intended to apply to the actual operation of the equipment. We interpret the words "date the reduction occurred" to mean the effective date that the equipment is physically unable to be used again or the date that the permit is surrendered.

At the present time we have a valid permit to operate the equipment and the equipment is capable of being operated. It would not be in the best interest of the County or of Texaco to operate this equipment, nor do we believe that it is the intent of Rule 210.3 to require us to do so simply to establish these credits.

We hope you will reconsider, we intend to file a petition for review of your denial. We would appreciate an opportunity to discuss this with you so that we may avoid the need for an appeal.

Sincerely,

L. E. Perrier
L. E. PERRIER

DJS/mag
cc: WOB
GAT

L E Perrier
Plant Manager

Texaco USA

P O Box 1476
Bakersfield CA 93302
805 326 4200

July 31, 1987

Dr. Leon M. Hebertson, APCO
Kern County Air Pollution
Control District
1601 H Street, Suite 150
Bakersfield, CA 93301

RECEIVED
JUL 3 . 1987
KERN COUNTY AIR
LLUTION CONTROL DIST

Attn: Mr. Tom Paxson

Dear Mr. Paxson:

Enclosed are five applications and associated application filing fees in the amount of $300.00 submitted by Texaco Refining and Marketing Inc. (TRMI) for Emissions Reduction Credits (ERCs). We are applying for five separate ERCs, specifically for:

1. Particulate matter (36.1 lbs/day)
2. Sulfur dioxide (1,977.8 lbs/day)
3. Carbon monoxide (25,918 lbs/day)
4. Non-methane hydrocarbons (1,431.6 lbs/day)
5. Nitrogen oxides (2,791.3 lbs/day)

This is pursuant to the procedures specified in Rule 210.1 and 210.3 of Kern County APCD's Rules and Regulations.

The technical report which is part of these applications was prepared by our contractor, Energy Systems Associates (ESA). The data used to compile the available emissions reductions were various operating records which were kept by Tosco Corporation for the equipment which was previously under their operation. The emissions arrived at are considered to be the best available and indicative of actual emissions which occurred during the specified time period considering the restrictions required by Rule 210.3.

The operating equipment which has been evaluated to determine the level of emissions for which TRMI is requesting ERCs is specific operating unit/equipment associated with the Fluid Coking Unit, CO Boiler and the Thermofor Cracking Unit. This equipment was operated through November 1983. With the recent changes to Rule 210.1 and Rule 210.3, which significantly restricted the time frame for establishing baseline emissions (i.e., Rule 210.1, Section 4B), TRMI has prepared these applications in order to maximize any remaining ERCs which are available under the current Rule 210.3. As you are aware, Section 4B requires, where applicable, the "baseline emissions" to be based on the actual operating conditions of the source averaged over the two years immediately preceding the date of the application. In addition, this same section allows the Control Officer to use a different consecutive two-year period within the preceding five years if this other two-year period is determined to be more representative of normal operations. Since the subject equipment was last operated through November 1983, the only two-year period available and used in this evaluation of ERCs is the period from July 1982 through November 1983. This period represents 491 days averaged over the consecutive two-year 730-day period (from July 1982 to July 1894); this has reduced the level of available emissions by nearly one-third from that obtained using a full two-year average. TRMI believes that the time period chosen, considering the restrictions specified in Section 4B and the historical operating records of the subject equipment, is more representative of normal operations. As such, TRMI requests that the Control Officer allow the use of the averaging period herewith described.

In addition, we are aware that Rule 210.3, Section C.2.(i) limits the use of "shutdowns or curtailment of a stationary source" in establishing available ERCs. The intent of this restriction, we feel, is not to eliminate the use of actual emissions from equipment within a stationary source but rather to restrict the use of emissions created when the stationary source in its entirety is operationally shutdown or curtailed due to economics or other such conditions. We feel that this restriction specified in Section C.2.(i) is not applicable to the subject ERC applications which we are submitting.

The applications and referenced documentation which are attached contain all the necessary support which we feel is necessary for the District to perform their evaluation. If any clarification or expansion of this data is necessary, please contact Mr. Gordon A. Turl who will coordinate any necessary information. In addition, our contractor (ESA) will be available to assist us in providing any further technical support.

Sincerely,

L E Perrier/GAT

L. E. Perrier

GAT/jas
Enclosures
144/87

cc (w/o enclosures): David Stein (ESA)

(h) Any other emission reduction that the Control Officer reasonably determines cannot be validated.

(i) Emission reductions occurring from the shutdown or curtailment of a stationary source are not eligible as an external or off-site ERC unless and until federal regulations so allow.

3. Calculation of Emission Reductions

Emission reductions shall be calculated in a manner not inconsistent with Rule 210.1. An ERC for a source operation shutdown shall be granted only in an amount equal to the emissions which would have occurred from the specific source if Reasonably Available Control Technology (RACT) for that source category had been applied.

4. Eligibility of Emission Reductions for ERC

Eligibility of emission reductions for ERC shall be determined by the Control Officer using the following criteria:

(a) Only emission reductions achieved in accordance with the provisions of the District's Rules and Regulations and which fulfill ERC validation by the Control Officer are eligible for issuance of a Banking Certificate.

(b) To obtain an ERC, a stationary source owner/operator shall file an application as prescribed by the Control Officer no more than ninety (90) days after the date such reduction occurs commencing with the date of adoption of this rule. Applications for qualifying emission reductions occurring before the date of adoption of this rule shall be filed within one year of adoption. To obtain an ERC for actual emissions reductions provided to obtain approval of an authority to construct, an application must be filed at least 90 days prior to the expiration of that permit. Should a deposit moratorium be implemented pursuant to Section A of this rule, applications shall be received for a period of ninety (90) days after the moratorium is lifted for emission reductions occurring during the moratorium.

(c) Existing source operations exempt from permit requirements by Rule 202 and proposed for shutdown or modification for purposes of achieving an emission reduction, shall first acquire or apply for Permits to Operate pursuant to Rule 202 and then surrender such Permits before an ERC can be granted. Source operations already under Permit to Operate shall likewise surrender such Permits. Stationary sources to be modified or curtailed shall receive new Permits to Operate including conditions deemed necessary to insure ERC validation.

D. Banking Emission Reduction Credits (ERC's)

1. Application for Validation of an ERC

Application for an ERC shall be submitted and validation of an ERC by the Control Officer shall be conducted in the following manner:

Douglas W. McCormick
A. S. E. II
Date Started: 27 August 1987
Date Completed: 27 August 1987

Texaco Refining and Marketing Inc
P. O. Box 1476
Bakersfield, CA 93302
ATTN: L. E. Perrier, Plant Manager
Phone: (805) 326-4265
Application #s: 2007130/101, '130/201, '130/401, '130/501, '130/601

I Project Description:

Texaco Refining and Marketing Inc. is requesting five Banking Certificates for Actual Historical Emission Reduction Credits resulting from the shut down of equipment originally owned by Tosco. As stated in Texaco's application this equipment was last operated in November 1983 and the resulting actual historical emission reductions are: PM - 36.17 lbm/day, SO_2 - 1,621.23 lbm/day, NO_2 - 2,791.38 lbm/day, HC - 1,431.68 lbm/day, and CO - 25,918.96 lbm/day

SHUTDOWN EQUIPMENT: TOSCO TCC
TOSCO COKER & CO BOILER

II Applicable Rules and Regulations

Rule 210.3 Section C. 2. Eligibility - prohibitions
Section C. 3. BACT had been applied
Section C. 4. b Applications submitted within 90 day after date such reduction occurs
Section D. 1. b. Reductions meet the following criteria: 1) have, infact, actually occurred, 2) are surplus, 3) will be permanent, 4) can be quantified, and 5) can be enforced

III ERC Review:

A. Compliance with Rule 210.3 Section C. 4. (b):

this section of the Rule states: "To obtain an ERC, a stationary source owner/operator shall file an application as prescribed by the control officer no more than ninety (90) days after the date such reduction occurs commencing with the date of adoption of this Rule."

Rule 210.3 was adopted on 4/25/83

Applicant has stated that equipment ceased operating 11/83

III ERC Review Cont.:

A. Compliance with Section C. 4. (b) Cont.:

Because the emission reductions occured afted adoption of Rule 210.3, Banking Certificate applications should have been submitted no later than February 1984. Since these applications were submitted on July 31, 1987 (3 years and 5 months after the deadline) the applicant has not complied with the requirements of Rule 210.3 section C. 4. (b) and, therefore, Banking Certificates may not be issued by the Control Officer.

Conclusion: Requested ERCs must be denied and an intent to deny letter pursuant to Rule 210.3 section D. 2. (b) must be sent to the applicant.

NOTE: Because it has been determined that these applications must be denied, compliance with the requirements of Rule 210.3 sections C. 2, C. 3, and (D.5). (b) will not be investigated.

ENGINEERING EVALUATION OF APPLICATIONS FOR AUTHORITY TO CONSTRUCT

BREAK DOWN OF PROCESSING TIME

Name of Company: Texaco Refining & Marketing Inc.

Description of Project: 5 ERC Banking Certificates

Receipt Date of Application: 31 July 1987

Processing Dates, Including Preliminaries: 8/27/87

PROCESSING ACTIVITY:	ACTIVITY TIME (HRS)	INITIAL
Initial Contact: __telephone __in person:		
Preliminary Review:	1/4	
Organization/Familiarization:	1/4	
Project Description/Schematic/Equip. Listing:	1/2	
Listing of Applicable Rules:	1/4	
Design Review of Air Pollution Control Equip.:	NA	
Calculation of Expected Emissions:	NA	
Air Quality Impact Assesment Review:	NA	
Preparation of Emission Profiles:	NA	
Preparation of Written Request for Info.:	NA	
Telephone and Verbal Request for Info.:	—	
Reworking of Application Due to Change:	—	
Preparation of Rough Draft A's to C:	—	
General Meeting with Applicant:		
Draft Denial Letter:	1 3/4	
TOTAL TIME SPENT ON EVALUATION:	3	AJm

File copies

1601 "H" Street, Suite 150
Bakersfield, California 93301-5199
Telephone: (805) 861-3682

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

LEON M HEBERTSON, M.D.
Director of Public Health Services
Air Pollution Control Officer

February 22, 1988

Mr. Ray Menebroker, Chief
California Air Resource Board
Project Review Branch
Stationary Source Division
P. O. Box 2815
Sacramento, CA 95812

SUBJECT: Emission Reduction Credit - Public Notice

Dear Mr. Menebroker:

Enclosed for your review and comment is the analysis of Texaco Refining and Marketing, Inc.'s applications for Emission Reduction Credit.

Also enclosed are the drafted Banking Certificate documents. This project will be released to public notice on approximately February 25, 1988. This will start the 30-day public comment period.

Please submit your written comments on our analysis and draft documents as soon as possible to provide ample time for our review and consideration.

Thank you for your cooperation in this matter. Should you have any questions please telephone the Engineering Evaluation Section at (805) 861-3682.

Sincerely,

LEON M HEBERTSON, M.D.
AIR POLLUTION CONTROL OFFICER

Thomas Paxson, P. E., Manager
Engineering Evaluation Section

TP/nn
Enclosures

1601 "H" Street, Suite 150
Bakersfield, California 93301-5199
Telephone: (805) 861-3682

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

LEON M HEBERTSON, M.D.
Director of Public Health Services
Air Pollution Control Officer

February 22, 1988

Mr. Wayne Blackard, Chief
U.S.E.P.A.
New Source Section
215 Fremont Street
San Francisco, CA 94105

SUBJECT: Emission Reduction Credit - Public Notice

Dear Mr. Blackard:

Enclosed for your review and comment is the analysis of Texaco Refining and Marketing, Inc.'s applications for Emission Reduction Credit.

Also enclosed are the drafted Banking Certificate documents. This project will be released to public notice on approximately February 25, 1988. This will start the 30-day public comment period.

Please submit your written comments on our analysis and draft documents as soon as possible to provide ample time for our review and consideration.

Thank you for your cooperation in this matter. Should you have any questions please telephone the Engineering Evaluation Section at (805) 861-3682.

Sincerely,

LEON M HEBERTSON, M.D.
AIR POLLUTION CONTROL OFFICER

Thomas Paxson, P. E., Manager
Engineering Evaluation Section

TP/nn
Enclosures

REQUEST FOR PUBLIC COMMENT ON PROPOSED STATIONARY SOURCE EMISSION REDUCTION CREDIT (ERC)

Pursuant to Rule 210.3 of the Kern County Air Pollution Control District Rules and Regulations, the Air Quality Control Division of the Health Department has made a preliminary decision to issue Emission Reductions Banking Certificates to Texaco Refining and Marketing, Inc. resulting from the shutdown of equipment at their Bakersfield refinery.

Public comments regarding the expected air quality impact of this project will be received by the Division for a period of thirty (30) days after publication of this notice and will receive due consideration before final action is taken.

The application for emissions reductions credits, support documents and the Division's air quality impact analysis for this project are available for inspection at the Division's office located at 1601 H St., Ste. 210, Bakersfield, California 93301, (805) 861-3682.

February 27, 1988 (1334)

File Copy   Taken to paper 2-22-88
MM

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

1601 "H" Street, Suite 150
Bakersfield, California 93301-5199
Telephone: (805) 861-3682

LEON M HEBERTSON, M.D.
Director of Public Health Services
Air Pollution Control Officer

February 22, 1988

REQUEST FOR PUBLIC COMMENT ON PROPOSED
STATIONARY SOURCE EMISSION REDUCTION CREDIT (ERC)

Pursuant to Rule 210.3 of the Kern County Air Pollution Control District Rules and Regulations, the Air Quality Control Division of the Health Department has made a preliminary decision to issue Emission Reductions Banking Certificates to Texaco Refining and Marketing, Inc. resulting from the shutdown of equipment at their Bakersfield refinery..

Public comments regarding the expected air quality impact of this project will be received by the Division for a period of thirty (30) days after publication of this notice and will receive due consideration before final action is taken.

The application for emissions reductions credits, support documents and the Division's air quality impact analysis for this project are available for inspection at the Division's office located at 1601 H St., Ste. 210, Bakersfield, California 933011, (805) 861-3682.

ENGINEERING EVALUATION OF APPLICATIONS FOR AUTHORITY TO CONSTRUCT

BREAKDOWN OF PROCESSING TIME

Company Name: Texaco Refining and Marketing, Inc.

Company Number: 2007 Project Number: ______

Project Description: ERC Banking Certificate Renewals

Processing Dates, Including Preliminaries: Received 4-10-90; Started 5-3-90; Finished 5-3-90

PROCESSING ACTIVITY:	ACTIVITY TIME (HOURS):	INITAL:
Initial Contact: ___ telephone ___ in person	—	
Project Entry into System 36:	—	
Preliminary Review:	1/4	AP
Organization/Familiarization:	1	AP
Project Description/Schematic/Equipment Listing:	1/2	AP
Listing of Applicable Rules:	—	
Design Review of Air Pollution Control Equipment:	—	
Engineering Analysis ~~Calculation of Expected Emissions:~~	3/4	AP
Air Quality Impact Assessment Review (Modeling):	—	
Preparation of Emission Profiles:	—	
CEQA Review:	—	
Health Risk Assessment Review:	—	
Reworking of Application Due to Changes:	—	
Preparation of Rough Draft Banking Certificates ~~A's to C:~~	1/2	AP
Preparation of Written Requests for Information:	—	
Telephone and Verbal Requests for Information:	—	
General Meetings with Applicant:	—	
System 36 Data Entry (Including Emissions):	1/4	AP
______:		
TOTAL TIME SPENT ON EVALUATION:	3 1/4	AP

RESOURCE MANAGEMENT AGENCY

RANDALL L. ABBOTT
DIRECTOR

DAVID PRICE III
ASSISTANT DIRECTOR

Air Pollution Control District
WILLIAM J. RODDY, APCO

Environmental Health Services Department
STEVE McCALLEY, REHS, DIRECTOR

Planning & Development Services Department
TED JAMES, AICP, DIRECTOR

AIR POLLUTION CONTROL DISTRICT

December 26, 1991

Mr. Donald R. Hall
Plant Manager, Bakersfield Plant
Texaco Refining & Marketing Inc.
P.O. Box 1476
Bakersfield, CA 93302

SUBJECT: **SJVUAPCD ERC Banking Certificate(s)**

Dear Mr. Hall:

Pursuant to San Joaquin Valley Unified Air Pollution Control District Rule 230.1 (Emission Reduction Credit Banking), and the Air Pollution Control Officer's December 12, 1991 implementation policy, all ERC Banking Certificates previously issued in the Kern Zone are to be automatically re-issued as SJVUAPCD Banking Certificates. This policy requires new ERC Banking Certificates to be re-issued without the certificate holder paying a filing fee.

Rule 230.1 does not require actual emission reductions which occurred prior to August 22, 1989 which qualify for banking or re-banking pursuant to Rule 230.1 to be subject to a 10% reduction for the Community Bank.

Enclosed is your re-issued SJVUAPCD Emission Reduction Credit Banking Certificate. Your previously issued Kern County Air Pollution Control District Emission Reduction Banking Certificate is no longer valid for any purpose.

Thank you for your cooperation in this matter. Should you have any questions, please telephone Mr. Thomas Goff of the Engineering Division at (805) 861-3682.

Sincerely,

WILLIAM J. RODDY
AIR POLLUTION CONTROL OFFICER (SED)
ASST. AIR POLLUTION CONTROL OFFICER (SJVUAPCD)

Patty Lee Young
for Thomas Paxson, P. E.
Manager, Engineering Division

TG/cs
Enclosures