

Core Laboratories

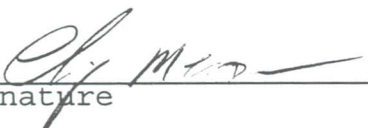
CORE LABORATORIES
ANALYTICAL REPORT

Job Number: 940493
Prepared For:

AMOCO PRODUCTION COMPANY
MIKE GREENWOOD
P.O. BOX 189
SWEENEY, TX 77480

Date: 03/23/94

*water samples
pre pilot*


Signature

3/2/94
Date:

Name: Chip Meador

CORE LABORATORIES
1733 NORTH PADRE ISLAND DRIVE
CORPUS CHRISTI, TX 78408

Title: Regional Manager



Core Laboratories

LABORATORY TESTS RESULTS
03/23/94

JOB NUMBER: 940493

CUSTOMER: AMOCO PRODUCTION COMPANY

ATTN: MIKE GREENWOOD

CLIENT I.D.: OW-1
DATE SAMPLED.: 02/28/94
TIME SAMPLED.: 10:39
WORK DESCRIPTION.: OW-1

LABORATORY I.D.: 940493-0001
DATE RECEIVED.: 03/02/94
TIME RECEIVED.: 13:45
REMARKS.: SAMPLED BY: M.G.

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Aromatic Volatile Organics		*1		EPA SW-846 8020	03/07/94	HJK
Benzene	<2	2	ug/L	EPA SW-846 8020		
Toluene	<2	2	ug/L	EPA SW-846 8020		
Ethylbenzene	<2	2	ug/L	EPA SW-846 8020		
Xylenes	<2	2	ug/L	EPA SW-846 8020		

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(512) 289-2673



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LABORATORY TESTS RESULTS
03/23/94

JOB NUMBER: 940493

CUSTOMER: AMOCO PRODUCTION COMPANY

ATTN: MIKE GREENWOOD

CLIENT I.D.: OW-2
DATE SAMPLED: 02/28/94
TIME SAMPLED: 10:25
WORK DESCRIPTION: OW-2

LABORATORY I.D.: 940493-0002
DATE RECEIVED: 03/02/94
TIME RECEIVED: 13:45
REMARKS: SAMPLED BY: M.G.

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Aromatic Volatile Organics		*1		EPA SW-846 8020	03/07/94	HJK
Benzene	41	2	ug/L	EPA SW-846 8020		
Toluene	14	2	ug/L	EPA SW-846 8020		
Ethylbenzene	60	2	ug/L	EPA SW-846 8020		
Xylenes	120	2	ug/L	EPA SW-846 8020		

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LABORATORY TESTS RESULTS
03/23/94

JOB NUMBER: 940493

CUSTOMER: AMOCO PRODUCTION COMPANY

ATTN: MIKE GREENWOOD

CLIENT I.D.....: OW-3
DATE SAMPLED.....: 02/28/94
TIME SAMPLED.....: 10:34
WORK DESCRIPTION....: OW-3

LABORATORY I.D....: 940493-0003
DATE RECEIVED.....: 03/02/94
TIME RECEIVED.....: 13:45
REMARKS.....: SAMPLED BY: M.G.

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Aromatic Volatile Organics		*1		EPA SW-846 8020	03/07/94	HJK
Benzene	77	2	ug/L	EPA SW-846 8020		
Toluene	26	2	ug/L	EPA SW-846 8020		
Ethylbenzene	100	2	ug/L	EPA SW-846 8020		
Xylenes	160	20	ug/L	EPA SW-846 8020		

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LABORATORY TESTS RESULTS
03/23/94

JOB NUMBER: 940493

CUSTOMER: AMOCO PRODUCTION COMPANY

ATTN: MIKE GREENWOOD

CLIENT I.D.: OW-4
DATE SAMPLED: 02/28/94
TIME SAMPLED: 10:38
WORK DESCRIPTION: OW-4

LABORATORY I.D.: 940493-0004
DATE RECEIVED: 03/02/94
TIME RECEIVED: 13:45
REMARKS: SAMPLED BY: M.G.

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Aromatic Volatile Organics		*1		EPA SW-846 8020	03/07/94	HJK
Benzene	51	2	ug/L	EPA SW-846 8020		
Toluene	16	2	ug/L	EPA SW-846 8020		
Ethylbenzene	64	2	ug/L	EPA SW-846 8020		
Xylenes	240	20	ug/L	EPA SW-846 8020		

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L A B O R A T O R Y T E S T S R E S U L T S
03/23/94

JOB NUMBER: 940493

CUSTOMER: AMOCO PRODUCTION COMPANY

ATTN: MIKE GREENWOOD

CLIENT I.D.....: OW-5
DATE SAMPLED.....: 02/28/94
TIME SAMPLED.....: 10:53
WORK DESCRIPTION...: OW-5

LABORATORY I.D....: 940493-0005
DATE RECEIVED....: 03/02/94
TIME RECEIVED....: 13:45
REMARKS.....: SAMPLED BY: M.G.

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Aromatic Volatile Organics		*1		EPA SW-846 8020	03/07/94	HJK
Benzene	180	20	ug/L	EPA SW-846 8020		
Toluene	52	2	ug/L	EPA SW-846 8020		
Ethylbenzene	90	2	ug/L	EPA SW-846 8020		
Xylenes	125	2	ug/L	EPA SW-846 8020		

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LABORATORY TESTS RESULTS
03/23/94

JOB NUMBER: 940493

CUSTOMER: AMOCO PRODUCTION COMPANY

ATTN: MIKE GREENWOOD

CLIENT I.D.: OW-6
DATE SAMPLED: 02/28/94
TIME SAMPLED: 11:00
WORK DESCRIPTION: OW-6

LABORATORY I.D.: 940493-0006
DATE RECEIVED: 03/02/94
TIME RECEIVED: 13:45
REMARKS: SAMPLED BY: M.G.

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Aromatic Volatile Organics		*10		EPA SW-846 8020	03/07/94	HJK
Benzene	540	20	ug/L	EPA SW-846 8020		
Toluene	20	20	ug/L	EPA SW-846 8020		
Ethylbenzene	300	20	ug/L	EPA SW-846 8020		
Xylenes	420	20	ug/L	EPA SW-846 8020		

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LABORATORY TESTS RESULTS
03/23/94

JOB NUMBER: 940493

CUSTOMER: AMOCO PRODUCTION COMPANY

ATTN: MIKE GREENWOOD

CLIENT I.D.: OW-7
DATE SAMPLED: 02/28/94
TIME SAMPLED: 10:55
WORK DESCRIPTION: OW-7

LABORATORY I.D.: 940493-0007
DATE RECEIVED: 03/02/94
TIME RECEIVED: 13:45
REMARKS: SAMPLED BY: M.G.

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Aromatic Volatile Organics		*1		EPA SW-846 8020	03/07/94	HJK
Benzene	39	2	ug/L	EPA SW-846 8020		
Toluene	15	2	ug/L	EPA SW-846 8020		
Ethylbenzene	35	2	ug/L	EPA SW-846 8020		
Xylenes	85	2	ug/L	EPA SW-846 8020		

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LABORATORY TESTS RESULTS
03/23/94

JOB NUMBER: 940493

CUSTOMER: AMOCO PRODUCTION COMPANY

ATTN: MIKE GREENWOOD

CLIENT I.D.....: OW-8
DATE SAMPLED.....: 02/28/94
TIME SAMPLED.....: 11:10
WORK DESCRIPTION...: OW-8

LABORATORY I.D....: 940493-0008
DATE RECEIVED.....: 03/02/94
TIME RECEIVED.....: 13:45
REMARKS.....: SAMPLED BY: M.G.

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Aromatic Volatile Organics		*10		EPA SW-846 8020	03/07/94	HJK
Benzene	710	20	ug/L	EPA SW-846 8020		
Toluene	26	20	ug/L	EPA SW-846 8020		
Ethylbenzene	290	20	ug/L	EPA SW-846 8020		
Xylenes	490	20	ug/L	EPA SW-846 8020		

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LABORATORY TESTS RESULTS
03/23/94

JOB NUMBER: 940493

CUSTOMER: AMOCO PRODUCTION COMPANY

ATTN: MIKE GREENWOOD

CLIENT I.D.: OW-12
DATE SAMPLED: 02/28/94
TIME SAMPLED: 10:42
WORK DESCRIPTION: OW-12

LABORATORY I.D.: 940493-0009
DATE RECEIVED: 03/02/94
TIME RECEIVED: 13:45
REMARKS: SAMPLED BY: M.G.

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Aromatic Volatile Organics		*1		EPA SW-846 8020	03/07/94	HJK
Benzene	<2	2	ug/L	EPA SW-846 8020		
Toluene	<2	2	ug/L	EPA SW-846 8020		
Ethylbenzene	<2	2	ug/L	EPA SW-846 8020		
Xylenes	<2	2	ug/L	EPA SW-846 8020		

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LABORATORY TESTS RESULTS 03/23/94

JOB NUMBER: 940493

CUSTOMER: AMOCO PRODUCTION COMPANY

ATTN: MIKE GREENWOOD

CLIENT I.D.: OW-13
DATE SAMPLED: 02/28/94
TIME SAMPLED: 11:05
WORK DESCRIPTION: OW-13

LABORATORY I.D.: 940493-0010
DATE RECEIVED: 03/02/94
TIME RECEIVED: 13:45
REMARKS: SAMPLED BY: M.G.

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Aromatic Volatile Organics		*1		EPA SW-846 8020	03/07/94	HJK
Benzene	4	2	ug/L	EPA SW-846 8020		
Toluene	15	2	ug/L	EPA SW-846 8020		
Ethylbenzene	<2	2	ug/L	EPA SW-846 8020		
Xylenes	81	2	ug/L	EPA SW-846 8020		

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LABORATORY TESTS RESULTS 03/23/94

JOB NUMBER: 940493

CUSTOMER: AMOCO PRODUCTION COMPANY

ATTN: MIKE GREENWOOD

CLIENT I.D.: OW-8 (DUP)
DATE SAMPLED: 02/28/94
TIME SAMPLED: 11:17
WORK DESCRIPTION: OW-8 (DUP)

LABORATORY I.D.: 940493-0011
DATE RECEIVED: 03/02/94
TIME RECEIVED: 13:45
REMARKS: SAMPLED BY: M.G.

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Aromatic Volatile Organics		*10		EPA SW-846 8020	03/07/94	HJK
Benzene	720	20	ug/L	EPA SW-846 8020		
Toluene	40	20	ug/L	EPA SW-846 8020		
Ethylbenzene	340	20	ug/L	EPA SW-846 8020		
Xylenes	510	20	ug/L	EPA SW-846 8020		

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Core Laboratories
QUALITY ASSURANCE REPORT
03/23/94

JOB NUMBER: 940493

CUSTOMER: AMOCO PRODUCTION COMPANY

ATTN: MIKE GREENWOOD

BTEX (Water)
DATE ANALYZED: 03/07/94 **TIME ANALYZED:** 08:59 **METHOD:** EPA SW-846 8020

QC NUMBER: 954563

MATRIX SPIKES

TEST DESCRIPTION	ANALYSIS SUB-TYPE	ANALYSIS I. D.	DILUTION FACTOR	ANALYZED VALUE	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY	DETECTION LIMITS	UNITS OF MEASURE
Benzene	MS	940524-1	1	11	0	10	110	2	ug/L
Toluene	MS	940524-1	1	11	0	10	110	2	ug/L
Ethylbenzene	MS	940524-1	1	10	0	10	100	2	ug/L
Xylenes	MS	940524-1	1	32	0	30	107	2	ug/L
4-Bromofluorobenzene	SS	940524-1	1	19	0	20	95	1	ug/L
	SS	940493-1	1	21	0	20	105	1	ug/L
	SS	940493-2	1	33	13	20	100	1	ug/L
	SS	940493-3	1	200	0	200	100	1	ug/L
	SS	940493-4	1	180	0	200	90	1	ug/L
	SS	940493-5	1	20	0	20	100	1	ug/L
	SS	940493-6	1	290	90	200	100	1	ug/L
	SS	940493-7	1	39	19	20	100	1	ug/L
	SS	940493-8	1	250	50	200	100	1	ug/L
	SS	940493-9	1	20	0	20	100	1	ug/L
	SS	940493-10	1	33	13	20	100	1	ug/L
	SS	940493-11	1	280	80	200	100	1	ug/L

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QUALITY ASSURANCE FOOTER
03/23/94

Standard Methods for the Examination of Water and Wastewater, 17th Ed. APHA, AWWA, WPCF.
USEPA SW-846 3rd. Edition, Test Methods for the Evaluation of Solid Waste
EPA-600/4-79-020, Methods for the Analysis of Water and Wastes, March 1983
Federal Register, July 1, 1992 (40 CFR Part 136).
EPA-600/2-78-054, Field and Laboratory Methods Applicable to Overburdens and Minesoils.

Quality control acceptance criteria are method dependent.

GCMS tuning criteria meet EPA CLP Statement of Work OLM01.0.

All data reported on sample "as received" unless noted.

Sample IDs with a "-00" at the end indicate a blank spike or blank spike duplicate associated with the numbered sample.

NC = Not Calculated due to value at or below detection limit.

The data in this report are within the limits of uncertainty specified in the referenced method unless otherwise indicated.

NOTE: Data in QA report may differ from final results due to digestion and/or dilution of sample into analytical range.

The "TIME ANALYZED" in the QA Report refers to the start time of the analytical batch which may not reflect the actual time of each analysis. The "DATE ANALYZED" is the actual date of analysis.

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QC SAMPLE IDENTIFICATION

1. BLANKS	Method or Method / Type	MB or MB / type [^]
	Reagent	RB
	Initial Calibration	ICB
	Continuing Calibration	CCB
	Storage	SB
2. STANDARDS	Laboratory Control	LCS
	Reference	RS
	Initial Calibration	ICV
	Continuing Calibration	CCV
3. SPIKES	Matrix	MS
	Blank	BS
	Surrogate	SS
	Post Digestion Spike	PDS
	Matrix Spike Duplicate	MSD
4. DUPLICATES	Matrix	MD
	Post Digestion Duplicate	PDD

[^] In the event that several different method blanks are analyzed, the blank type will be designated by the preparation method, i.e., ZHE, TCLP, 3010, 3050, etc.

Subcontracted Analysis Codes

Anaheim	*AN
Aurora	*AU
Casper	*CA
Houston	*HP
Lake Charles	*LC
Long Beach	*LB
Other Laboratories	*XX

* The asterisk in the "TECHN" column signifies that the analysis was performed by a subcontract laboratory.



CORE LABORATORIES

No. 6

CHAIN OF CUSTODY RECORD

CUSTOMER INFORMATION			PROJECT INFORMATION				NUMBER OF CONTAINERS	ANALYSIS / METHOD REQUEST	LAB JOB NO.	REMARKS / PRECAUTIONS	
COMPANY: Amoco Production Corp			PROJECT NAME/NUMBER:								
SEND REPORT TO: Mike Greenwood			BILLING INFORMATION								
ADDRESS: Box 189 Socorro, Texas 77486			BILL TO: ADDRESS: Sam								
PHONE: 409-490-8220			PHONE:								
FAX: 409-490-8206			FAX: PO NO.:								
SAMPLE NO.	SAMPLE ID	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER TYPE	PRES.					
	OW-1	2-28	10:39a	water 40ml glass	HCL, ice	1	✓	✓			
	OW-2	2-28	10:25a	"	"	1	✓	✓			
	OW-3	"	10:34a	"	"	1	✓	✓			
	OW-4	"	10:38a	"	"	1	✓	✓			
	OW-5	"	10:53a	"	"	1	✓	✓			
	OW-6	"	11:00a	"	"	1	✓	✓			
	OW-7	"	10:55a	"	"	1	✓	✓			
	OW-8	"	11:10a	"	"	1	✓	✓			
	OW-12	"	10:42a	"	"	1	✓	✓			
	OW-13	"	11:05a	"	"	1	✓	✓			
SAMPLER: Mike Grimm			SHIPMENT METHOD:				AIRBILL NO.:				
REQUIRED TURNAROUND: ☐ SAME DAY ☐ 24 HOURS ☐ 48 HOURS ☐ 72 HOURS ☐ 5 DAYS ☐ 10 DAYS ☐ ROUTINE ☐ OTHER											
1. RELINQUISHED BY:		DATE	2. RELINQUISHED BY:		DATE	3. RELINQUISHED BY:		DATE			
SIGNATURE: <i>Mike Greenwood</i>		3-2-94	SIGNATURE:			SIGNATURE:					
PRINTED NAME/COMPANY:		TIME 1:50 P.M.	PRINTED NAME/COMPANY:			PRINTED NAME/COMPANY:					
1. RECEIVED BY:		DATE	2. RECEIVED BY:		DATE	3. RECEIVED BY:		DATE			
SIGNATURE: <i>Dina Flores</i>		3-2-94	SIGNATURE:			SIGNATURE:					
PRINTED NAME/COMPANY: Core Laboratories		TIME 1:45	PRINTED NAME/COMPANY:			PRINTED NAME/COMPANY:					

* RUSH TURNAROUND MAY REQUIRE SURCHARGE

☐ Anaheim, California
1250 E. Gene Autry Way
Anaheim, California 92805
(714) 937-1094
(800) 404-2673

☐ Long Beach, California
3700 Cherry Avenue
Long Beach, California 90807
(310) 595-8401
(800) 814-3433

☐ Denver (Aurora), Colorado
10703 E. Bethany Drive
Aurora, Colorado 80014
(303) 751-1780
(800) 972-2673

☐ Casper, Wyoming
420 West 1st Street
Casper, Wyoming 82601
(307) 235-5741
(800) 666-0603

☐ Houston, Texas
8210 Mosely Road
Houston, Texas 77075
(713) 943-9776
(800) 734-2673

☒ Corpus Christi, Texas
1733 North Padre Island Drive
Corpus Christi, Texas 78408
(512) 289-2673
(800) 548-8228

☐ Lake Charles, Louisiana
3645 Beglis Parkway
Sulphur, Louisiana 70663
(318) 583-4926
(800) 259-4926

