COPY

BASELINE

ENVIRONMENTAL CONSULTING

28 October 1991
S9134.36

RO414

Mr. Andrew Clark-Clough
Port of Oakland
Environmental Department
530 Water Street
Oakland, CA 94621

Subject: **Status Report on Tank Repair and Tank Retrofit Activities - United Airlines Maintenance Hangar (PORT Tank Numbers MF35 and MF36)**

Dear Andrew:

The purpose of this letter is to document the status of tank repair, retrofit, and testing activities performed on two underground tanks owned by the PORT of Oakland and operated by United Airlines. The two tanks are located at 1100 Airport Drive, at the Metropolitan Oakland International Airport.

Gasoline Tank Repair Activities

A 10,000-gallon gasoline tank (# MF36) was repaired in response to a failed tank test performed in June 1990. The test was performed by Testing and Technology using the Horner method. In June 1991, Aqua Science Engineers Inc. (ASE) of San Ramon replaced a gasket at the extractor valve in the product line.

Soil Sampling Results

Stockpile. Soil containing gasoline was encountered in the soil at the depth of the gasket during tank repair. The source of the gasoline could have been the overfilling procedure performed during the June 1990 tank test. Approximately 2.5 cubic yards of gasoline-contaminated soil were excavated and sampled to determine treatment or disposal options. Laboratory reports for soil sampling in the gasoline tank area are contained in Attachment A.

One soil sample was collected from the presumed worst-case portion of the stockpile by BASELINE on 27 June 1991 (sample I.D. Prodextrv). Analyses indicated that the sample contained 6,600 mg/kg gasoline. A subsequent composite stockpile sample collected by ASE on 2 July 1991, following Bay Area Air Quality Management District guidelines for soil sample collection (sample I.D. Composite), contained 950 mg/kg gasoline. The excavated soil was aerated on-site from 3 July to 2 August 1991. On 2 August, ASE transported the aerated soil to PORT property at Langley and Doolittle for further treatment. The Langley and Doolittle site has been approved by the Regional Water Quality Control Board, San Francisco Bay Region as a central, temporary bioremediation treatment site for nonhazardous soil, subject to specified conditions.

5900 Hollis Street, Suite D • Emeryville, CA 94608 • (510) 420-8686 • FAX (510) 420-1707

Excavation. On 5 July, ASE collected two sidewall samples (sample I.D. S-1 and S-2) in the pipeline excavation at a depth of three feet below the surface. The samples were collected at the request of Alameda County Department of Environmental Health. Sample S-1 did not contain detectable levels of gasoline, benzene, toluene, ethylbenzene, or xylenes. Sample S-2 contained 1.2 mg/kg of gasoline, 0.013 mg/kg benzene, 0.027 mg/kg xylenes, and no detectable levels of toluene or ethylbenzene. Following sampling, ASE retrofitted the gasoline tank (#MF36), as described below.

Gasoline and Diesel Tank Retrofit

The 10,000-gallon gasoline (#MF36) and the 10,000-gallon diesel (#MF35) tanks were both retrofitted with new drop tubes, Posi-quick fill limiter overfill valves, and Emco Wheaton A1003-009 five-gallon spill containment manholes. Tank MF36 (gasoline) was equipped with a new coaxial drop tube in compliance with BAAQMD requirements.

Soil Sampling Results, Diesel Tank

During retrofit of the diesel tank, soil containing diesel was encountered in the area of the fill pipe. Approximately three cubic yards of the soils were excavated and sampled. Laboratory reports for the soil sampling in the diesel tank area are contained in Attachment B. A soil sample was collected from the presumed worst-case portion of the stockpile by ASE on 10 July (sample I.D. Stockpile D); the sample contained 13,000 mg/kg diesel. Subsequent analytical results indicated that the soil was nonhazardous waste according to Title 26 of the California Code of Regulations. The sample was not ignitable, did not contain metals at concentrations greater than regulatory action levels, and did not contain detectable levels of volatile organics, with the exception of 9.4 mg/kg xylenes. A 96-hour aquatic toxicity test indicated that the LC50 value exceeded 750 mg/liter. On 2 August, ASE transported the diesel-contaminated soil to the Langley and Doolittle central bioremediation treatment site.

Two samples (sample I.D. S3 and S4) were collected in the sidewalls of the diesel tank excavation at a depth of three feet. Sample S3 contained 300 mg/kg diesel; sample S4 contained 420 mg/kg diesel. Both tank excavations were backfilled with clean imported sand and the surface restored after completion of tank retrofit activities.

Unauthorized Release Reports

In 1990, the PORT submitted to the County an Underground Storage Tank Unauthorized Release/Contamination Site Report for the 10,000-gallon gasoline tank (#MF36), following failure of the precision tank test.

In June 1990, the PORT verbally notified the County of the discovery of gasoline-contaminated soil during repair activities.

In July 1991, the PORT submitted an Underground Storage Tank Unauthorized Release/Contamination Site Report for the 10,000-gallon diesel tank following discovery of diesel-contaminated soil during tank retrofit.

Transmittal of this report serves as notification of soil sampling results obtained during tank repair and retrofit activities.

Tank Testing

Following tank repair and retrofitting activities, both tanks were tested by Testing and Technology of Novato, using the Tracer Tight™ method. Both tanks were certified tight (see Attachment C for test reports).

Further Actions

- Both tanks will continue to be monitored by United Airlines using the daily inventory reconciliation method.
- Both tanks will continue to be precision tested annually by the Port of Oakland.
- Soil removed from the excavations are being bioremediated at the Langley and Doolittle site.
- The PORT intends to seek five-year operating permits for both tanks.

Should you have any questions or need additional information, please do not hesitate to contact us at your convenience.

Sincerely,

Irene

Irene Kan, M.P.H.
Vice President

IK/ic
Attachments

cc: Patricia Murphy, Port of Oakland

ATTACHMENT A

LABORATORY REPORTS FOR GASOLINE TANK AREA SAMPLES

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

RECEIVED
JUL 1 1991
BASELINE

DATE RECEIVED: 06/27/91
DATE REPORTED: 06/28/91

LAB NUMBER: 104319

CLIENT: BASELINE ENVIRONMENTAL

PROJECT ID: S9-134.36

LOCATION: UNITED AIRLINES-MF36 UST MF3?

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 104319
CLIENT: BASELINE ENVIRONMENTAL
PROJECT #: S9-134.36
LOCATION: UNITED AIRLINES-MF36

DATE RECEIVED: 06/27/91
DATE ANALYZED: 06/28/91
DATE REPORTED: 06/28/91

Total Volatile Hydrocarbons as Gasoline in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	TVH AS GASOLINE (mg/Kg)	REPORTING LIMIT (mg/Kg)
104319-1	PRODEXTRV	6,600	80

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	103

BASELINE

5900 Hollis Street, Suite D
Emeryville, CA 94608
(415) 420-8686

104319

CHAIN OF CUSTODY RECORD

Turn-Around Time 24-HR
Lab CURTIS & TOMPKINS
Contact Person IRENE KAN

Project No.	Project Name and Location
59-134.36	United Airlines - MF36

Samplers: (Signature) Irene Kan

No. Station	Date	Time	Media	Depth	Composites	No. of Containers	Station Location	Analysis: EPA 8015M - GASOLINE	Remarks	Detection Limits
PRODEXTEV	6-27-91	2:15 PM	SOIL	STOCKPILE		1	SOILS EXCAVATED ABOVE PRODUCT-EXTRACTOR VALVE	X	24-HR TA	1 MG/KG

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Irene Kan	6-27-91 1630		
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time
			6/27/91 11:20

Condition of Samples upon Arrival at Laboratory:

Remarks:
Bill to Port of Oakland P.O.# 52031

MF 36
Stockpile

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

RECEIVED

BASELINE

DATE RECEIVED: 07/02/91
DATE REPORTED: 07/03/91

LAB NUMBER: 104359

CLIENT: BASELINE ENVIRONMENTAL

MF 36

For Patricia

LOCATION: UNITED

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 104359
CLIENT: BASELINE ENVIRONMENTAL
LOCATION: UNITED

DATE RECEIVED: 07/02/91
DATE ANALYZED: 07/03/91
DATE REPORTED: 07/03/91

Total Volatile Hydrocarbons as Gasoline in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	TVH AS GASOLINE (mg/Kg)	REPORTING LIMIT (mg/Kg)
104359-5	COMPOSITE: STOCKPILE 1 OF 4 STOCKPILE 2 OF 4 STOCKPILE 3 OF 4 STOCKPILE 4 OF 4	950	80

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	100

MF 36
Unleaded tank
Repair sidewall
Samples

Curtis & Tompkins, Ltd. Analytical Laboratories. Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 07/05/91
DATE REPORTED: 07/17/91

LAB NUMBER: 104401

CLIENT: PORT OF OAKLAND

PROJECT ID: 52847

LOCATION: U.A.L.

RESULTS: SEE ATTACHED

Mary Hart
QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 104401
CLIENT: PORT OF OAKLAND
PROJECT ID: 52847
LOCATION: U.A.L.

DATE RECEIVED: 07/05/91
DATE ANALYZED: 07/11-14/91
DATE REPORTED: 07/17/91

Total Volatile Hydrocarbons with BTXE in Soils and Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
104401-1	S-1	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
104401-2	S-2	1.2	13	ND(5.0)	ND(5.0)	27

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	102

aqua science engineers inc.

Aqua Science Engineers, Inc.
PO Box 535, San Ramon CA 94583
(415) 820-9391

Chain of Custody

DATE July 5/91 PAGE 1 OF 1

SAMPLERS (SIGNATURE) (PHONE NO.) (415) 820-9391

PROJECT NAME Port of Oakland, U.A.L. NO. 52847

ADDRESS Oakland Airport

ANALYSIS REQUEST

	SAMPLE ID.	DATE	TIME	MATRIX	NO. OF SAMPLES	TPH GASOLINE (EPA 5030/8015)	TPH GASOLINE/BTEX (EPA 5030/8015-8020)	TPH DIESEL (EPA 3510/8015)	PURGABLE AROMATICS (EPA 602/8020)	PURGABLE HALOCARBONS (EPA 601/8010)	VOLATILE ORGANICS (EPA 624/8240)	BASE/NUETRALS, ACIDS (EPA 625/8270)	OIL & GREASE (EPA 5520 E&F or B&F)	PCB (EPA 608/8080)	PHENOLS (EPA 604/8040)	LUFT METALS (5) (EPA 6010+7000)	PRIORITY POLLUT. (13) (EPA 6010 ICP + 7000)	TITLE 22 (CAM 17) (EPA 6010+7000)	TCLP (EPA 1311/1310)	STLC- CAM WET (EPA 1311/1310)	REACTIVITY CORROSIVITY IGNITABILITY	
1	S-1	7/5	10:00	S	1		X															
2	S-2	7/5	10:00	S	1		X															

1. RELINQUISHED BY:	1. RECEIVED BY:	2. RELINQUISHED BY:	2. RECEIVED BY LABORATORY: 7/5
(signature) (time)	(signature) (time)	(signature) (time)	(signature) (time)
DAVID PAULL 7/5/91			Keane 14:30
(printed name) (date)	(printed name) (date)	(printed name) (date)	(printed name) (date)
Company- ASE	Company-	Company-	Company-

* SEND BILL TO PORT OF OAKLAND - SEND RESULTS TO PORT OF OAKLAND
ATT: ANDREW CLARK - CLUBHOUSE 530 WATER ST., OAKLAND, CA 94607

ATTACHMENT B

LABORATORY REPORTS FOR DIESEL TANK AREA SAMPLES

MF-35 Stockpile Sample

Curtis & Tompkins, Ltd. Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710 Phone (415) 486-0900

DATE RECEIVED: 07/10/91
DATE REPORTED: 07/12/91

LAB NUMBER: 104436

CLIENT: PORT OF OAKLAND

LOCATION: UNITED AIRLINES

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 104436
CLIENT: PORT OF OAKLAND
LOCATION: UNITED AIRLINES

DATE RECEIVED: 07/10/91
DATE ANALYZED: 07/11/91
DATE REPORTED: 07/12/91

ANALYSIS: IGNITABILITY

LAB ID	SAMPLE ID	RESULT
104436-3	STOCKPILE D	NOT IGNITABLE *

* Not ignitable as defined in CCR Title 26, Section 22-66702(a)(2).

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 104436
CLIENT: PORT OF OAKLAND
LOCATION: UNITED AIRLINES

DATE RECEIVED: 07/10/91
DATE EXTRACTED: 07/10/91
DATE ANALYZED: 07/12/91
DATE REPORTED: 07/12/91

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	DIESEL RANGE (mg/Kg)	REPORTING LIMIT (mg/Kg)
104436-3	STOCKPILE D	13,000	100

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	98

aqua science engineers inc.

Aqua Science Engineers, Inc.
PO Box 535, San Ramon CA 94583
(415) 820-9391

Chain of Custody

DATE 7/10/91 PAGE 1 OF 1

SAMPLERS (SIGNATURE) (PHONE NO.)

PROJECT NAME Port of Oakland, U.A.L. NO.

ADDRESS Airport, United Airlines

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	NO. OF SAMPLES	TPH GASOLINE (EPA 5030/8015)	TPH GASOLINE/BTEX (EPA 5030/8015-8020)	TPH DIESEL (EPA 3510/8015)	PURGABLE AROMATICS (EPA 602/8020)	PURGABLE HALOCARBONS (EPA 601/8010)	VOLATILE ORGANICS (EPA 624/8240)	BASE/NUETRALS, ACIDS (EPA 625/8270)	OIL & GREASE (EPA 5520 E&F or B&F)	PCB (EPA 608/8080)	PHENOLS (EPA 604/8040)	LUFT METALS (5) (EPA 6010+7000)	PRIORITY POLLUT. (13) (EPA 6010 ICP + 7000)	TITLE 22 (CAM 17) (EPA 6010+7000)	TCLP (EPA 1311/1310)	STLC- CAM WET (EPA 1311/1310)	REACTIVITY CORROSIVITY IGNITABILITY	
S3	7/10	8:10	S	1			X														
S4	7/10	8:00	S	1			X														
STOCKPILE D	7/10	8:00	S	1			—		HOLD												
									Y												
										HOLD											
										TO TOTAL AT CIL											
											per Alison										
												VIA									7/11/91
													1/8				10 Days				

1. RELINQUISHED BY:	1. RECEIVED BY:	2. RELINQUISHED BY:	2. RECEIVED BY LABORATORY:
10:05			Keane 10:05
(signature) (time)	(signature) (time)	(signature) (time)	(signature) (time)
DAVID PEULL 7/10/91			Alison Keane, 7/10/91
(printed name) (date)	(printed name) (date)	(printed name) (date)	(printed name) (date)
Company- ASE	Company-	Company-	Company- CAT

7:11 PORT, SEND RESULTS TO PORT, ANDREW CLARK-CLOUGH

MF 35
Stockpile
Sample

Curtis & Tompkins, Ltd. Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

PORT OF OAKLAND
ENVIR. DEPT.
91 JUL 30 AM 10 26
RECEIVED

DATE RECEIVED: 07/10/91
DATE REPORTED: 07/29/91

LAB NUMBER: 104522

CLIENT: PORT OF OAKLAND

LOCATION: UNITED AIRLINES

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 104522-1
CLIENT: PORT OF OAKLAND
LOCATION: UNITED AIRLINES
SAMPLE ID: STOCKPILE D

DATE RECEIVED: 07/10/91
DATE REQUESTED: 07/16/91
DATE ANALYZED: 07/19,22,24,25/91
DATE REPORTED: 07/29/91

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	ND	3.0	EPA 6010
Arsenic	ND	2.5	EPA 7060
Barium	51.2	0.25	EPA 6010
Beryllium	ND	0.10	EPA 6010
Cadmium	0.42	0.25	EPA 6010
Chromium (total)	22.8	0.50	EPA 6010
Cobalt	4.7	0.90	EPA 6010
Copper	18.7	0.50	EPA 6010
Lead	3.9	3.0	EPA 7420
Mercury	ND	0.10	EPA 7471
Molybdenum	ND	0.70	EPA 6010
Nickel	21.3	1.6	EPA 6010
Selenium	ND	2.5	EPA 7740
Silver	ND	0.50	EPA 6010
Thallium	ND	2.5	EPA 7841
Vanadium	17.0	0.50	EPA 6010
Zinc	47.9	0.50	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	<1	91	Mercury	4	102
Arsenic	8	93	Molybdenum	<1	101
Barium	2	98	Nickel	<1	93
Beryllium	<1	100	Selenium	5	101
Cadmium	<1	95	Silver	<1	84
Chromium	<1	101	Thallium	2	98
Cobalt	<1	99	Vanadium	<1	97
Copper	2	94	Zinc	<1	97
Lead	5	93			

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 104522-1
CLIENT: PORT OF OAKLAND
LOCATION: UNITED AIRLINES
SAMPLE ID: STOCKPILE D

DATE RECEIVED: 07/10/91
DATE REQUESTED: 07/16/91
DATE ANALYZED: 07/24/91
DATE REPORTED: 07/29/91

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES
Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Result ug/kg	Reporting Limit (ug/kg)
chloromethane	ND	1,000
bromomethane	ND	1,000
vinyl chloride	ND	1,000
chloroethane	ND	1,000
methylene chloride	ND	500
acetone	ND	1,000
carbon disulfide	ND	500
trichlorofluoromethane	ND	500
1,1-dichloroethene	ND	500
1,1-dichloroethane	ND	500
cis-1,2-dichloroethene	ND	500
trans-1,2-dichloroethene	ND	500
chloroform	ND	500
freon 113	ND	500
1,2-dichloroethane	ND	500
2-butanone	ND	1,000
1,1,1-trichloroethane	ND	500
carbon tetrachloride	ND	500
vinyl acetate	ND	1,000
bromodichloromethane	ND	500
1,2-dichloropropane	ND	500
cis-1,3-dichloropropene	ND	500
trichloroethylene	ND	500
dibromochloromethane	ND	500
1,1,2-trichloroethane	ND	500
benzene	ND	500
trans-1,3-dichloropropene	ND	500
2-chloroethylvinyl ether	ND	1,000
bromoform	ND	500
2-hexanone	ND	1,000
4-methyl-2-pentanone	ND	1,000
1,1,2,2-tetrachloroethane	ND	500
tetrachloroethylene	ND	500
toluene	ND	500
chlorobenzene	ND	500
ethyl benzene	ND	500
styrene	ND	500
total xylenes	9,400	500

ND = Not detected at or above reporting limit

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	105 %
Toluene-d8	97 %
Bromofluorobenzene	104 %

SAMPLE AND BIOASSAY INFORMATION

ABC Laboratories
29 North Olive Street
Ventura, CA 93001

CLIENT NAME: Curtis & Tompkins, Ltd. DATE: 07/18/91
1000

SAMPLE ID: 104522-1 / STOCKPILE D LAB.NO: C&T0711.348

TEST TYPE: Screening FLOW: Static TANK VOLUME: 10 Liters

DILUTION WATER: Reconstituted Fresh HARDNESS: 40 mg/l ALKALINITY: 30 mg/l
END: 45 END: 32

AERATION: Single bubble aeration in all tanks ACCL.TEMP: 20.0 deg.C

ORGANISM: Fathead Minnow SPECIES: Pimephales promelas SOURCE: Thomas Fish Co.

CARRIER: Greyhound Bus Co. DATE REC'D: 7/12/91 AVG.LNGTH: 25 mm AVG.WT.: .30g

NUMBER ORGANISMS PER TANK: 10

	Initial	24 Hour	48 Hour	72 Hour	96 Hour
Date:	07/19/91	07/20/91	07/21/91	07/22/91	07/23/91
Time:	1430	1350	1445	1430	1400

Conc. mg/l	Initial DO	Initial Dg.C	Initial pH	24 Hour DO	24 Hour Dg.C	24 Hour pH	24 Hour #M	48 Hour DO	48 Hour Dg.C	48 Hour pH	48 Hour #M	72 Hour DO	72 Hour Dg.C	72 Hour pH	72 Hour #M	96 Hour DO	96 Hour Dg.C	96 Hour pH	96 Hour #M	Tot. #M
0 (Con.)	7.9	20.9	7.8	7.5	21.0	7.9	0	6.1	20.8	7.7	0	7.7	21.1	8.3	0	7.0	21.4	8.2	0	0
750 (A)	8.0	21.9	8.1	8.3	21.1	7.8	0	6.2	20.9	7.5	0	7.1	21.0	7.6	0	6.4	21.2	7.6	0	0
750 (B)	7.6	22.0	8.2	8.1	21.0	7.7	0	6.4	20.9	7.5	0	6.8	21.1	7.8	0	6.0	21.2	7.7	0	0
400 (A)	8.0	21.9	8.3	8.0	21.0	7.7	0	6.3	20.9	7.4	0	7.0	20.9	7.8	0	6.2	21.1	7.8	0	0
400 (B)	7.7	21.9	8.2	8.1	21.1	7.8	0	6.6	21.0	7.4	0	6.8	20.9	7.8	0	6.8	21.1	7.8	0	0

96 HOUR LC50 = >750 mg/l 95% CONFIDENCE INTERVAL = N/A

CALCULATION METHOD: Binomial Test ANALYST: _____ DATE: 07/24/91
Martha Meyer, Chief Biologist

REMARKS: Beginning Sample Hardness: 38 mg/L (CACO3) Alkalinity: 28 mg/L
Ending Sample Hardness: 35 mg/L (CACO3) Alkalinity: 28 mg/L

MF 35 diesel
stockpile sample

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 07/10/91
DATE REPORTED: 07/29/91

LAB NUMBER: 104522

CLIENT: PORT OF OAKLAND

LOCATION: UNITED AIRLINES

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 104522.1
CLIENT: PORT OF OAKLAND
LOCATION: UNITED AIRLINES
SAMPLE ID: STOCKPILE D

DATE RECEIVED: 07/10/91
DATE REQUESTED: 07/16/91
DATE ANALYZED: 07/19,22,24,25/91
DATE REPORTED: 07/29/91

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	ND	3.0	EPA 6010
Arsenic	ND	2.5	EPA 7060
Barium	51.2	0.25	EPA 6010
Beryllium	ND	0.10	EPA 6010
Cadmium	0.42	0.25	EPA 6010
Chromium (total)	22.8	0.50	EPA 6010
Cobalt	4.7	0.90	EPA 6010
Copper	18.7	0.50	EPA 6010
Lead	3.9	3.0	EPA 7420
Mercury	ND	0.10	EPA 7471
Molybdenum	ND	0.70	EPA 6010
Nickel	21.3	1.6	EPA 6010
Selenium	ND	2.5	EPA 7740
Silver	ND	0.80	EPA 6010
Thallium	ND	2.5	EPA 7841
Vanadium	17.0	0.50	EPA 6010
Zinc	47.9	0.50	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	<1	91	Mercury	4	102
Arsenic	8	93	Molybdenum	<1	101
Barium	2	98	Nickel	<1	93
Beryllium	<1	100	Selenium	5	101
Cadmium	<1	95	Silver	<1	84
Chromium	<1	101	Thallium	2	98
Cobalt	<1	99	Vanadium	<1	97
Copper	2	94	Zinc	<1	97
Lead	5	93			

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 104522-1
CLIENT: PORT OF OAKLAND
LOCATION: UNITED AIRLINES
SAMPLE ID: STOCKPILE D

DATE RECEIVED: 07/10/91
DATE REQUESTED: 07/16/91
DATE ANALYZED: 07/24/91
DATE REPORTED: 07/29/91

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES
Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Result ug/kg	Reporting Limit (ug/kg)
chloromethane	ND	1,000
bromomethane	ND	1,000
vinyl chloride	ND	1,000
chloroethane	ND	1,000
methylene chloride	ND	500
acetone	ND	1,000
carbon disulfide	ND	500
trichlorofluoromethane	ND	500
1,1-dichloroethene	ND	500
1,1-dichloroethane	ND	500
cis-1,2-dichloroethene	ND	500
trans-1,2-dichloroethene	ND	500
chloroform	ND	500
freon 113	ND	500
1,2-dichloroethane	ND	500
2-butanone	ND	1,000
1,1,1-trichloroethane	ND	500
carbon tetrachloride	ND	500
vinyl acetate	ND	1,000
bromodichloromethane	ND	500
1,2-dichloropropane	ND	500
cis-1,3-dichloropropene	ND	500
trichloroethylene	ND	500
dibromochloromethane	ND	500
1,1,2-trichloroethane	ND	500
benzene	ND	500
trans-1,3-dichloropropene	ND	500
2-chloroethylvinyl ether	ND	1,000
bromoform	ND	500
2-hexanone	ND	1,000
4-methyl-2-pentanone	ND	1,000
1,1,2,2-tetrachloroethane	ND	500
tetrachloroethylene	ND	500
toluene	ND	500
chlorobenzene	ND	500
ethyl benzene	ND	500
styrene	ND	500
total xylenes	9,400	500

ND = Not detected at or above reporting limit

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	105 %
Toluene-d8	97 %
Bromofluorobenzene	104 %

SAMPLE AND BIOASSAY INFORMATION

ABC Laboratories
29 North Olive Street
Ventura, CA 93001

CLIENT NAME: Curtis & Tompkins, Ltd.

DATE: 07/18/91
1000

SAMPLE ID: 104522-1 /'STOCKPILE D

LAB.NO: C&T0711.348

TEST TYPE: Screening FLOW: Static TANK VOLUME: 10 Liters

DILUTION WATER: Reconstituted Fresh HARDNESS: 40 mg/l END: 45 ALKALINITY: 30 mg/l END: 32

AERATION: Single bubble aeration in all tanks ACCL.TEMP: 20.0 deg.C

ORGANISM: Fathead Minnow SPECIES: Pimephales promelas SOURCE: Thomas Fish Co.

CARRIER: Greyhound Bus Co. DATE REC'D: 7/12/91 AVG.LNGTH: 25 mm AVG.WT.: .30g

NUMBER ORGANISMS PER TANK: 10

	Initial	24 Hour	48 Hour	72 Hour	96 Hour
Date:	07/19/91	07/20/91	07/21/91	07/22/91	07/23/91
Time:	1430	1350	1445	1430	1400

Conc. mg/l	DO	Dg.C	pH	DO	Dg.C	pH	#M	DO	Dg.C	pH	#M	DO	Dg.C	pH	#M	DO	Dg.C	pH	#M	Tot. #M
0 (Con.)	7.9	20.9	7.8	7.5	21.0	7.9	0	6.1	20.8	7.7	0	7.7	21.1	8.3	0	7.0	21.4	8.2	0	0
750 (A)	8.0	21.9	8.1	8.3	21.1	7.8	0	6.2	20.9	7.5	0	7.1	21.0	7.6	0	6.4	21.2	7.6	0	0
750 (B)	7.6	22.0	8.2	8.1	21.0	7.7	0	6.4	20.9	7.5	0	6.8	21.1	7.8	0	6.0	21.2	7.7	0	0
400 (A)	8.0	21.9	8.3	8.0	21.0	7.7	0	6.3	20.9	7.4	0	7.0	20.9	7.8	0	6.2	21.1	7.8	0	0
400 (B)	7.7	21.9	8.2	8.1	21.1	7.8	0	6.6	21.0	7.4	0	6.8	20.9	7.8	0	6.8	21.1	7.8	0	0

96 HOUR LC50 = >750 mg/l 95% CONFIDENCE INTERVAL = N/A

CALCULATION METHOD: Binomial Test ANALYST: _____ DATE: 07/24/91
Martha Meyer, Chief Biologist

REMARKS: Beginning Sample Hardness: 38 mg/L (CACO3) Alkalinity: 28 mg/L
Ending Sample Hardness: 35 mg/L (CACO3) Alkalinity: 28 mg/L

Sidewall Samples

Curtis & Tompkins, Ltd. Analytical Laboratories. Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 07/10/91
DATE REPORTED: 07/23/91

LAB NUMBER: 104435

CLIENT: PORT OF OAKLAND

PROJECT ID: PORT OF OAKLAND, U.A.L.

LOCATION: AIRPORT, UNITED AIRLINES

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 104435
CLIENT: PORT OF OAKLAND
PROJECT ID: PORT OF OAKLAND, U.A.L.
LOCATION: AIRPORT, UNITED AIRLINES

DATE RECEIVED: 07/10/91
DATE EXTRACTED: 07/10/91
DATE ANALYZED: 07/11/91
DATE REPORTED: 07/23/91

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
104435-1	S3	ND	300	1.0
104435-2	S4	ND	420	10

ND = Not Detected at or above reporting limit.

*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	85

aqua science engineers inc.

Aqua Science Engineers, Inc.
PO Box 535, San Ramon CA 94583
(415) 820-9391

Chain of Custody

DATE 7/10/91 PAGE 1 OF 1

SAMPLERS (SIGNATURE) David C. Pull (PHONE NO.)

PROJECT NAME Port of Oakland, U.A.L. NO.

ADDRESS Airport, United Airlines

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	NO. OF SAMPLES	TPH- GASOLINE (EPA 5030/8015)	TPH- GASOLINE/BTEX (EPA 5030/8015-8020)	TPH- DIESEL (EPA 3510/8015)	PURGABLE AROMATICS (EPA 602/8020)	PURGABLE HALOCARBONS (EPA 601/8010)	VOLATILE ORGANICS (EPA 624/8240)	BASE/NEUTRALS, ACIDS (EPA 625/8270)	OIL & GREASE (EPA 5520 B&F or B&F)	PCB (EPA 608/8080)	PHENOLS (EPA 604/8040)	LUFT METALS (5) (EPA 6010+7000)	PRIORITY POLLUT. (13) (EPA 6010 ICP + 7000)	TITLE 22 (CAM 17) (EPA 6010+7000)	TCLP (EPA 1311/1310)	STLC- CAM MET (EPA 1311/1310)	REACTIVITY CORROSIVITY IGNITABILITY	
S3	7/10	8:00	S	1			X														
S4	7/10	8:00	S	1			X														
STOCKPILE D	7/10	8:00	S	1			X														
							HOLD														
									HOLD												
										TO BE TAILED											
											per Andrew										

1. RELINQUISHED BY: David C. Pull 10:05
(signature) (time)
David Pull 7/10/91
(printed name) (date)
Company- ASE

1. RECEIVED BY:
(signature) (time)
(printed name) (date)
Company-

2. RELINQUISHED BY:
(signature) (time)
(printed name) (date)
Company-

2. RECEIVED BY LABORATORY: Keane 10:05
(signature) (time)
Alison Keane, 7/10/91
(printed name) (date)
Company- C&T

Bill Port, SEND RESULTS TO PORT, ANDREW CLARK-CLOUGH

ATTACHMENT C

TANK TESTING REPORTS

TAT TESTING AND TECHNOLOGY

31-F Commercial Blvd. • Novato, CA • 94949 • (415) 883-5070
FAX • (415) 883-0859

TRACER-TIGHT • PRECISION TANK TESTING • MONITORING WELL SERVICES • ENVIRONMENTAL SERVICES

August 8, 1991

MS. Patrica Murphy
PORT OF OAKLAND
P.O. Box 2064
Oakland, CA 94604

Subject: UST Tank Test Results

Dear Ms. Murphy:

We would like to thank you for using Testing and Technology for your tank testing needs.

Enclosed are the results for the underground storage tank system tests of the two (2) 10,000 gallon tanks performed on July 23rd and 31st at United Airlines. All systems passed, meeting the guidelines set forth by state regulations.

For your convenience I have included a second copy of the report, to forward to your local regulator.

If you have any further questions, please feel free to call at (415) 883-5070.

Sincerely,

James W. Hendley
Vice President, Operations

JWH/eml

Enclosure

TESTING AND TECHNOLOGY
31F COMMERCIAL BLVD., NOVATO, CA 94949 (415) 883-5070

TRACER-TIGHT TEST REPORT

INVOICE # 1288 REPORT DATE 8/31/91

COMPANY NAME	PORT OF OAKLAND	PHONE #	(415)272-1373
TANK ADDRESS	1100 AIRPORT BLVD. OAKLAND, CA		
CONTACT NAME	PATRICIA MURPHY	PHONE #	SAME

TANK INFORMATION

TANK #	1 MF36	TANK BOTTOM DEPTH	136
TRACER USED	114B2	FILL PIPE	41
INOCULATION DATE	7/08/91	DIAMETER	95
SAMPLE DATE	7/23/91	PUMP TYPE	SUCTION
PRODUCT	GASOLINE	VAPOR RECOVERY	PH II
CAPACITY	10,000	TANK WATER	0
CONSTRUCTION	STEEL	GROUND WATER DEPTH	5'

RESULTS

TANK TEST CERTIFIED TIGHT - YES

LOSS RATE - <0.05 GPH

THIS TEST WAS PERFORMED IN ACCORDANCE WITH TRACER RESEARCH CORPORATION TRACER-TIGHT TEST METHODOLOGY AND PROCEDURES. (SEE ATTACHED PAGE FOR LABORATORY RESULTS CERTIFICATION)

TESTED BY _____
DON SEMESKI, LICENSE #94-1470

TESTING AND TECHNOLOGY
31F COMMERCIAL BLVD., NOVATO, CA 94949 (415) 883-5070

TRACER-TIGHT TEST REPORT

INVOICE # 1296 REPORT DATE 8/31/91

COMPANY NAME	PORT OF OAKLAND	PHONE #	(415)272-1373
TANK ADDRESS	1100 AIRPORT BLVD. OAKLAND, CA		
CONTACT NAME	PATRICIA MURPHY	PHONE #	SAME

TANK INFORMATION

TANK #	2 LF02	TANK BOTTOM DEPTH	136
TRACER USED	DDM+	FILL PIPE	41
INOCULATION DATE	7/17/91	DIAMETER	95
SAMPLE DATE	7/31/91	PUMP TYPE	SUCTION
PRODUCT	DIESEL	VAPOR RECOVERY	PH I
CAPACITY	10,000	TANK WATER	0
CONSTRUCTION	STEEL	GROUND WATER DEPTH	5'

RESULTS

TANK TEST **CERTIFIED TIGHT** - YES

LOSS RATE - <0.05 GPH

THIS TEST WAS PERFORMED IN ACCORDANCE WITH TRACER RESEARCH CORPORATION TRACER-TIGHT TEST METHODOLOGY AND PROCEDURES. (SEE ATTACHED PAGE FOR LABORATORY RESULTS CERTIFICATION)

TESTED BY Dave Dupont
DAVE DUPONT, LICENSE #93-1273

CERTIFICATION

91-6015a14

Location: United Airlines
1100 Airport Boulevard
Oakland, California

Date: August 6, 1991

TANK #	PRODUCT	SIZE (gal)	TRACER	LEAK STATUS
Tank 1	Gas	10,000	114B2	Pass
Tank 2	Diesel	10,000	DDM+	Pass

Tracer Research Corporation certifies that the tank and pipe systems listed in the above table have been tested by means of Tracer Tight™, which meets the criteria set forth in NFPA 329 for a precision leak test. According to EPA standard test procedures for evaluating leak detection methods, this Tracer Tight™ method is capable of detecting leaks of 0.05 gallons per hour with a Probability of Detection (P_D) of 0.97 and Probability of False Alarm (P_{FA}) of 0.029.

Submitted by: Marty Flad
Tracer Research Corporation

The following criteria are used for the classification of leakage when tracer is detected.

PASS - Leak rate less than 0.05 gallons per hour.

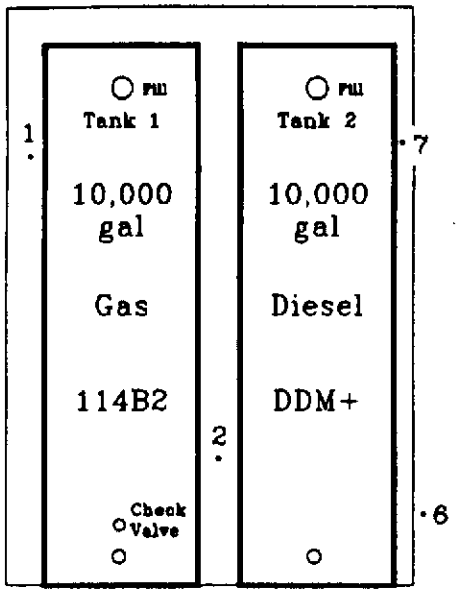
Criteria:

Tracer	Depth below grade
less than 0.1 ug/L	At five feet
less than 1.0 ug/L but greater than 0.1 ug/L	If concentration decreases with an increase in depth

FAIL - Leak rate equal to or greater than 0.05 gallons per hour.

Criteria:

Tracer	Depth below grade
greater than or equal to 1.0 ug/L	At any depth
greater than or equal to 0.1 ug/L but less than 1.0 ug/L	If concentration sustains or increases with an increase in depth.



EXPLANATION

•1 Sampling Probe Location

N

0 5 10

f e e t

91-6016a-14

UNITED AIRLINES

PORT OF OAKLAND
OAKLAND, CALIFORNIA

SAMPLING LOCATIONS

Figure 1