ETC

ENVIRONMENTAL TESTING
AND CERTIFICATION CORP.

Technical Report

for

ALLIED SIGNAL, INC.

P.O. BOX 1053R

MORRISTOWN, NJ 07962

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3150	ALLIED SIGNAL, INC.	ASIMNJTCLP	XE3	910313	1445	

RECEIVED

JUL 29 1991

Waste Management
Division

Richard P. Albert
Vice President, General Manager

This Technical Report is an INSITE℠ service generated by LODESTAR℠ Data Management Software.

284 Raritan Center Parkway ■ CN 7808 ■ Edison, New Jersey 08818-7808 ■ 908-225-5600

INTRODUCTION

Environmental Testing and Certification Corp.
284 Raritan Center Parkway, CN 7808
Edison, New Jersey 08818-7808
(201) 225-6700

Analytical Methodology for TCLP (TC)

Analytical procedures and quality assurance protocols for this analysis conform to the requirements described in the Toxicity Characteristic Final Rule (June 29, 1990 Federal Register). Sample extraction procedures for leachate preparation are performed in accordance with Method 1311 as described in the Final Rule; subsequent preparations and analyses are performed following the appropriate procedures in the SW-846 Third Edition of "Test Methods for Evaluating Solid Wastes".

This technical report contains tabulated analytical results and associated matrix spike recoveries for the sample. Note that the results reported have not been corrected for any analytical bias. Corrections may be performed using the formula that follows.

$$X_c = 100\ (X_u\ /\ \%R)$$

Where:

X_c = Bias Corrected Result
X_u = Result of Unspiked Sample
%R = Matrix Spike Recovery

COMMENTS

ETC

COMMENTS FOR SPECIFIC ANALYSES

VOLATILE FRACTION:

FC3150

Intact sample or extract required dilution resulting in elevated MDL's.

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TABULATED ANALYTICAL RESULTS

ETC

APR 18, 1991
QV60657C

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

TC - Volatile Compounds - GC/MS Analysis (QRC1)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3150	ALLIED SIGNAL, INC.	ASIMNJTCLP	XE3	910313	1445	0

Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
	Sample Concen ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen Added ug/l	% Recov
Benzene	309	25	-	-	ND	50.0	101	4380	5000	108

ETC

APR 18, 1991

TABLE 2: METHOD PERFORMANCE DATA
Surrogate Recovery Water - GC/MS Data (QR20)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3150	ALLIED SIGNAL, INC.	ASIMNJTCLP	XE3	910313	1445	0

Compound	Amount added ug	% Recovery	IFB EPA Control Limits	
			Lower	Upper
VOLATILE FRACTION (GC/MS)				
Toluene-D8	.250	101	88	110
p-Bromofluorobenzene	.250	101	86	115
1,2-Dichloroethane-D4	.250	105	76	114
ACID FRACTION (GC/MS)				
Phenol-D5	-	-	10	94
2-Fluorophenol	-	-	21	100
2,4,6-Tribromophenol	-	-	10	123
BASE/NEUTRAL FRACTION (GC/MS)				
Nitrobenzene-D5	-	-	35	114
2-Fluorobiphenyl	-	-	43	116
Terphenyl-D14	-	-	33	141
PESTICIDE/PCB FRACTION (GC)				
Dibutylchlorendate	-	-	24**	154**
2,4,5,6-Tetrachloro-m-xylene	-	-	46	185
METHOD 601				
Bromochloromethane	-	-	82	124
METHOD 602				
a,a,a-Trifluorotoluene	-	-	80	120

** Advisory Limits Only

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GC/MS QUALITY CONTROL DATA

Instrument Performance Check

Tuning and Mass Calibration

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4817 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1419

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.7
75	30.0 - 60.0% of mass 95	56.2
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.4
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	87.5
175	5.0 - 9.0% of mass 174	7.3 (8.3)1
176	Greater than 95.0%, but less than 101.0% of mass 174	85.6 (97.8)1
177	5.0 - 9.0% of mass 176	7.1 (8.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4819	04/12/91	1523
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4821 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1647

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.5
75	30.0 - 60.0% of mass 95	52.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	.9 (1.0)1
174	Greater than 50.0% of mass 95	87.8
175	5.0 - 9.0% of mass 174	7.0 (8.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	88.0 (100.3)1
177	5.0 - 9.0% of mass 176	6.6 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	
01		QC60657VS	>A4822	04/12/91	1710	
02		QC60657VS	>A4823	04/12/91	1753	
03		QC60657VS	>A4824	04/12/91	1835	
04		QC60657VS	>A4825	04/12/91	1917	
05		QC60657V	>A4827	04/12/91	2042	
06		~~FC2877V~~	~~>A4829~~	~~04/12/91~~	~~2208~~	
07		FC2877VS	>A4830	04/12/91	2252	
08		FC2877VR	>A4831	04/12/91	2335	PT 4/12/91
09		FC2509V	~~>A4832~~	04/13/91	0018	
10		FC2509VS	>A4833	04/13/91	0102	
11		~~FC3146V~~	~~>A4835~~	~~04/13/91~~	~~0229~~	
12		~~FC3146VS~~	~~>A4836~~	~~04/13/91~~	~~0355~~	
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4838 BFB Injection Date: 04/14/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 0240

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	27.8
75	30.0 - 60.0% of mass 95	49.6
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.6
173	Less than 2.0% of mass 174	1.1 (1.4)1
174	Greater than 50.0% of mass 95	81.1
175	5.0 - 9.0% of mass 174	6.4 (7.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	78.9 (97.3)1
177	5.0 - 9.0% of mass 176	6.8 (8.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4839	04/14/91	0310
02		QC60657V2	>A4840	04/14/91	0353
03		~~FC2876V2~~	~~>A4841~~	~~04/14/91~~	~~0448~~
04		~~FC3148V2~~	~~>A4842~~	~~04/14/91~~	~~0532~~
05		~~FC3146V2~~	~~>A4843~~	~~04/14/91~~	~~0615~~
06		FC3149VS	>A4846	04/14/91	0838
07		QC60657VS	>A4847	04/14/91	0921
08		QC60657V3	>A4848	04/14/91	1004
09					
10					
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17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4849 BFB Injection Date: 04/14/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1123

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.8
75	30.0 - 60.0% of mass 95	51.0
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	1.3 (1.6)1
174	Greater than 50.0% of mass 95	79.1
175	5.0 - 9.0% of mass 174	5.2 (6.6)1
176	Greater than 95.0%, but less than 101.0% of mass 174	76.8 (97.2)1
177	5.0 - 9.0% of mass 176	6.0 (7.8)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		~~FC2508V3~~	~~>A4850~~	~~04/14/91~~	~~1159~~
02		~~FC2508VS~~	~~>A4851~~	~~04/14/91~~	~~1242~~
03		FC3150V3	>A4852	04/14/91	1326
04		FC3149V3	>A4853	04/14/91	1409
05		~~FC2475V3~~	~~>A4858~~	~~04/14/91~~	~~1746~~
06		FC2475VS	>A4859	04/14/91	1830
07		QS61458V3	>A4860	04/14/91	1913
08		FC1972V3	>A4861	04/14/91	1956
09		FC1976V3	>A4862	04/14/91	2040
10		~~FC2625V3~~	~~>A4863~~	~~04/14/91~~	~~2123~~
11					
12					
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15					
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21					
22					

GT 4/18/91

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4804 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 0510

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.0
75	30.0 - 60.0% of mass 95	51.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	.8 (.9)1
174	Greater than 50.0% of mass 95	88.2
175	5.0 - 9.0% of mass 174	7.2 (8.2)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.4 (95.8)1
177	5.0 - 9.0% of mass 176	5.9 (7.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QS61452V2	>A4816	04/12/91	1330
02		QC6065YVS	344805	04/12/91	0534
03					
04					
05					
06					
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20					
21					
22					

CHAIN OF CUSTODY DOCUMENTATION

Chain of Custody Forms
Laboratory Chronicles
Subcontract

ETC

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/90

No. 90688

Environmental Testing and Certification Corp. • 284 Raritan Center Parkway • Edison, NJ 08818 • 908-225-6700

COMPANY: ALLIED SIGNAL
FACILITY/SITE: DETROIT, MI
PROJECT CONTACT: DARYL QUINN
TELEPHONE NO.: (313) 842-4400

FILT. (Y/N)
PRESERV.
ANALYSIS REQUIRED: TCLP (Benzene) all samples

LEGEND FOR PRESERVATIVE
0 - NONE
1 - HCL
2 - HNO_3
3 - H_2SO_4
4 - $Na_2SO_3 + H_2SO_4$

ITEM NO.	ETC JOB #	SOURCE CODE	SAMPLE POINT	START DATE YY/MM/DD	START TIME	NUMBER OF CONTAINERS	SAMPLER OBSERVATIONS	LAB OBSERVATIONS
1		X	B2	910312	13:45	1		
2		X	D2	910313	12:30	1		
3	FC3148	X	C2	910313	11:05	1		
4	FC3149	X	C3	910313	10:20	1		
5		X	B3	910313	10:00	1		
6		X	D3	910313	16:45	1		
7	FC3150	X	E3	910313	14:45	1		
8								
9								

Source Codes:
Well ... (W) Outfall ... (O)
Soil ... (S) River/Stream ... (R)
Bottom Sediment ... (B)
Generation Point ... (G)
Surface Impoundment ... (I)
Treatment Facility ... (T)
Leachate Collection Sys ... (C)
Lake/Ocean ... (L)
Other ... X ... (X)
Specify: Waste Tar Sludge

See log if needed for bottle provided

CHAIN OF CUSTODY CHRONICLE

1. Shuttle Opened By: (print) Rudolph Dawson Date: 3/12/91 Time: 9:05 AM
Signature: Rudolph J. Dawson Seal #: 0194487 Intact: Yes

2. I have received these materials in good condition from the above person
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

3. I have received these materials in good condition from the above person
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

4. Shuttle Sealed By: (print) Rudy Dawson Date: 3/14/91 Time: 3:25 pm
Signature: Rudolph J. Dawson Seal #: 0194484 Intact: Yes

LAB USE ONLY Opened By: Richard Day Date: 03/15/91 Time: 2:00 pm
SHUTTLE # 4410 TEMP °C ____ SEAL # 194484 COND. Intact

REMARKS
3/8/91 Seal # 0194487 KCK

SAMPLER'S SIGNATURE
Rudolph D. 3/14/91

ETC

TCLP PREP LOG (Method 1311) - Volatiles (ZHE)

QC Batch QS61452

Cooper Ind. - Due 4/18

Sample ID	Log Link	Sample Wt (g)	Initial Filtrate	Total Vol (ml)	Fraction
QS61452	BLANK	—	—	400	2TCLP/VOA
FC2384	253671	20.03	No	400	2TCLP/VOA
FC2385	253671	20.02	No	400	
FC2386	253671	20.02	No	400	
FC2387	253671	20.02	No	400	
FC2388	253671	20.03	No	400	
FC2389	253671	20.11	No	400	
FC2390	253671	20.03	No	400	
FC2391	253671	20.02	No	400	
FC2392	253671	20.02	No	400	
FC2393	253671	20.01	No	400	
FC2394	253671	20.05	No	400	
FC2395	253671	20.03	No	400	
FC3143	253741	20.02	No	400	
FC3144	253741	20.07	No	400	3TCLP/VOA
FC3145	253741	20.02	No	400	
FC3146	253741	20.02	No	400	
FC3147	253741	20.07	No	400	
FC3148	253741	20.02	No	400	
FC3149	253741	20.03	No	400	
FC3150	253741	20.13	No	400	

Set-up K. Walsh 4/6/91

Filtering K. Walsh 4/8/91

Supervisor K. Walsh 4/8/91

Start Time 4:00 PM 4/6/91

Lab Temp 21°C

Tumbler RPM 30

Stop Time 10:00 AM 4/7/91

Comments:

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 053 Page 1 of 4

Date 4/12/91 Instr. A

A-Type TCLP/VOA
Tune file APEI01
Seq. file JAA
Method file VOAA
ID file IA0197
CB file CA0197
Analyst [illegible]
Reviewed by [illegible] Date [illegible]

Batch #'s QU60657

Standards Updated
Date 4/12/91 By [illegible]

Tape # B-00700 Inj. ul

Standard	Conc ppm	Lot No.	Lot Vol.
p-BFB	50	10733	1ul
INT STD OSUV	25	107919	10ul
CALI	50	107575	2,5,10,15,20
CALII	50	107977	
KVOA	50	10398	
EE & Methyl Iodide	50	10303	

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	p-BFB	A4817	1ul	—		14:19	OK 62 JJ	
	QC60657VS	A4818	5	9			5 ul All STDS	
	QC60657VS	A4819	5	10		QT	5 ul All STDS	
	QC60657V	A4820	5	11			BLANK	
	p-BFB	A4821	1ul	—		16:47	OK ~~20~~ JJ 61 ent JJ	
	QC60657VS	A4822	5	6			20 ul All STDS	
	QC60657VS	A4823	5	7		CBUID	15 ul All STDS	
	QC60657VS	A4824	5	8		CBCAL	10 ul All STDS	
	QC60657VS	A4825	5	9		CBNRG	2 ul All STDS	
	QC60657V	A4826	5	10			BLANK	
	QC60657V	A4827	5	11		20:42	OK BLANK . JJ	
	FC2876V	A4828	1.0	12	1:5		ng rr STD	
	FC2877V	A4829	5.0	13		22:08	OK JJ	
	FC2877VS	A4830	5.0	14		22:52	OK 5ul All STDS JJ	
	FC2877VR	A4831	5.0	15		23:35	OK 5ul All STDS JJ	
	FC2509V	A4832	5	16		00:18	OK JJ	
	FC2509V	A4833	5	1		1:02	OK 10ul All STDS JJ	
	FC3148V	A4834	2.0	2	1:2.5		ng rr 1:5	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 054 Page 2 of 4

Date 4/12/91 Instr. A

A-Type PP/VOA
Tune file APEI01
Seq. file AAA
Method file VOAA
ID file IA0197
CB file CA0197
Analyst JJ
Reviewed by/Date

Batch #'s QV60657

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

Standards Updated
Date 4/13/91 By JJ

Tape # B-00700 Inj. ___ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	FC3147V	A4835	5.0	3		2:29	OK	
	FC3146 V	A4836	5.0	4			ngrr STD 2nd sur	
	FC3146 V	A4837	5.0	5		3:55	OK 10ul All STDS	
	p-BFB	A4838	1ul	—		2:40	OK 63	
	QC60657 VS	A4839	5	9	QCAL	7:10	OK 5ul All STDS	
	QC60657 V2	A4840	5	10		3:53	OK BLANK	
R	FC2876 V2	A4841	5	11		4:48	OK V2	
R	FC3148 V2	A4842	1	12	1:5	5:32	OK V2	
R	FC3146 V2	A4843	5	13		6:15	OK V2	
	FC3150V2	A4844	5	14			ngrr 1:5	
	FC3149 V2	A4845	.1	15	1:50		ng rr 1st 2 surr out	
	FC3149 VS	A4846	.1	16	1:50	8:38	OK 10ul All STDS	
	QC60657 VS	A4847	5	1		9:21 QCAL	OK 5ul All STDS	
	QC60657 V3	A4848	5	2		10:04	OK BLANK	
	p-BFB	A4849	1ul	—		11:23	OK 62-47	
	FC2508V3	A4850	5	3		11:59	OK	
	FC2508VS	A4851	5	4		12:42	OK 10ul All STDS	
R	FC3150V3	A4852	1	5	1:5	13:26	OK V2	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department

Date 4/14/91 Instr. A

A-Type PP/UOA
Tune file APE107
Seq. file AAA
Method file UOAA
ID file IA0197
CB file CA0197
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QU60657

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

Standards Updated
Date 4/14/91 By [illegible]

Tape # 6-00700 Inj. ___ ul

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
R	FC3149U3	A4853	.1	6	1:50	14:09	OK v2	
	FC3143U3	A4854	5	7			ngrr 1:5	
	FC3143U5	A4855	5	8			↓ 10 ul All STDS	
	FC3144U3	A4856	1	9	1:5		ngrr 1:5 2nd 2 sur ↓	
	FC3145U3	A4857	.5	10	1:10		ngrr 1:10 2nd 2 surr ↓	
	FC2475U3	A4858	5	11		17:46	OK	
	FC2475U5	A4859	5	12		18:30	OK 10 ul All STDS	
	QS61458U3	A4860	5	13		19:13	OK TCLP BATCH BLANK	
	FC1972U3	A4861	5	14		19:56	OK	
	FC1976U3	A4862	5	15		20:40	OK	
	FC2625U3	A4863	5	16		21:23	OK	
	QC60657U3	A4864	5	1			OK	
	QC60657U3	A4865	5	2			OK	
	p-BFB	A4866	1ul	—		2:17	OK 61-48	
	QC60651U5	A4867	5	1	QCAL	2:50	OK 5 ul All STDS	
	QC60651U4	A4868	5	2		3:34	OK BLANK	
R	FC3143U4	A4869	1	3	1:5	4:40	OK v2	
R	FC3143U5	A4870	1	4	1:5	5:23	OK v2 10 ul All STDS	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 05 Page 1 of 2

Date 4/11/91 Instr. A

A-Type TCLP/VOA
Tune file APEI01
Seq. file AAA
Method file VOAA
ID file IA0196
CB file CA0196
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QU60654

Standards Updated
Date 4/11/91 By [illegible]

Tape # B-00699 Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
p-BFB	50	10733	1ml
INT STD/SUR	25	10799	10ml
CAL I	50	107975	2,5,10,15,20
CAL II	50	10797	↓

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	p-BFB	A4785	1ml	—		7:38	OK 65-49	
	QC60654 VS	A4786	5	9	QCAL	8:06	OK 5ul Cal I, II	
	QC60654 VS	A4787	5	10		8:50	OK 5ul Cal I, II	
	QC60654 V	A4788	5	11		9:33	OK BLANK	
	FC1967 V	A4789	5	11		10:17	OK	
	FC1969 V	A4790	5	12		11:00	OK	
	FC1971 V	A4791	5	13		11:44	OK	
	FC1973 V	A4792	5	14		12:26	OK	
	FC1974 V	A4793	5	15		13:09	OK	
	FC2627 V	A4794	5	16		13:51	OK	
	FC2825 V 5ml 4/12/91	A4795	5	1		14:34	OK rr/5 MEK	
	FC2384 V	A4796	.25	2	1:20	15:17	OK	
	FC2385 V	A4797	.25	3	1:20	15:59	OK	
	FC2386 V	A4798	.25	4	1:20	16:42	OK	
	FC2387 V	A4799	.25	5	1:20	17:24	OK	
	FC2387 VS	A4800	.25	6	1:20	18:07	OK 5ul Cal I, II	
	FC2387 VR	A4801	.25	7	1:20	18:50	OK 5ul Cal I, II	
	QS61448	A4802	5	8		19:32	OK TCLP BATCH BLANK	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 052

Date 4/11/91 Instr. A

A-Type TCLP/UOA
Tune file APEI01
Seq. file JJJ
Method file UOA A
ID file IA0196
CB file CA0196
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QU60654

Standards Updated
Date 4/12/91 By [illegible]

Tape # B-00699 Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	QS61452V	A4803	5	9		20:15	OK TCLP BATCH BLANK	
	p-BFB	A4804	1ul	—		5:10	OK 74 ent — 59 ent	
	QC60654US	A4805	5	9	QCAL	5:34	OK 5ul Cal I, F	
	QC60654U2	A4806	5	10		6:17	OK BLANK	
R	FC2525U2	A4807	1	15	1:5	7:06	OK for MEK	
	FC2388U2	A4808	.25	16	1:20	7:49	OK	
	FC2389U2	A4809		1		8:31	OK	
	FC2390U2	A4810		2		9:14	OK	
	FC2391U2	A4811		3		9:57	OK	
	FC2392U2	A4812		4		10:40	OK	
	FC2393U2	A4813		5		11:22	OK	
	FC2394U2	A4814		6		12:05	OK	
	FC2395U2	A4815		7		12:48	OK	
R	QS61452U2	A4816	5	8		13:30	OK TCLP BATCH BLANK	

End of batch

R : redo , P : Aroclor search , + : Plus search

ETC

ENVIRONMENTAL TESTING
AND CERTIFICATION CORP.

Technical Report

for

ALLIED SIGNAL, INC.

P.O. BOX 1053R

MORRISTOWN, NJ 07962

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3149	ALLIED SIGNAL, INC.	ASIMNJTCLP	XC3	910313	1020	

Richard P. Albert

Vice President, General Manager

This Technical Report is an INSITE℠ service generated by LODESTAR℠ Data Management Software.

284 Raritan Center Parkway ■ CN 7808 ■ Edison, New Jersey 08818-7808 ■ 908-225-5600

INTRODUCTION

Environmental Testing and Certification Corp.
284 Raritan Center Parkway, CN 7808
Edison, New Jersey 08818-7808
(201) 225-6700

Analytical Methodology for TCLP (TC)

Analytical procedures and quality assurance protocols for this analysis conform to the requirements described in the Toxicity Characteristic Final Rule (June 29, 1990 Federal Register). Sample extraction procedures for leachate preparation are performed in accordance with Method 1311 as described in the Final Rule; subsequent preparations and analyses are performed following the appropriate procedures in the SW-846 Third Edition of "Test Methods for Evaluating Solid Wastes".

This technical report contains tabulated analytical results and associated matrix spike recoveries for the sample. Note that the results reported have not been corrected for any analytical bias. Corrections may be performed using the formula that follows.

$$X_c = 100\ (X_u\ /\ \%R)$$

Where:

X_c = Bias Corrected Result
X_u = Result of Unspiked Sample
%R = Matrix Spike Recovery

COMMENTS

ETC

COMMENTS FOR SPECIFIC ANALYSES

VOLATILE FRACTION:

FC3149

Intact sample or extract required dilution resulting in elevated MDL's.

ETC CORP.

TABULATED ANALYTICAL RESULTS

ETC

APR 18, 1991
QV60657C

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

TC - Volatile Compounds - GC/MS Analysis (QRC1)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3149	ALLIED SIGNAL, INC.	ASIMNJTCLP	XC3	910313	1020	0

Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
	Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
Benzene	4380	250	-	-	ND	50.0	101	4380	5000	108

ETC

APR 18, 1991

TABLE 2: METHOD PERFORMANCE DATA
Surrogate Recovery Water - GC/MS Data (QR20)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3149	ALLIED SIGNAL, INC.	ASIMNJTCLP	XC3	910313	1020	0

Compound	Amount added ug	% Recovery	IFB EPA Control Limits Lower	IFB EPA Control Limits Upper
VOLATILE FRACTION (GC/MS)				
Toluene-D8	.250	97	88	110
p-Bromofluorobenzene	.250	96	86	115
1,2-Dichloroethane-D4	.250	103	76	114
ACID FRACTION (GC/MS)				
Phenol-D5	-	-	10	94
2-Fluorophenol	-	-	21	100
2,4,6-Tribromophenol	-	-	10	123
BASE/NEUTRAL FRACTION (GC/MS)				
Nitrobenzene-D5	-	-	35	114
2-Fluorobiphenyl	-	-	43	116
Terphenyl-D14	-	-	33	141
PESTICIDE/PCB FRACTION (GC)				
Dibutylchlorendate	-	-	24**	154**
2,4,5,6-Tetrachloro-m-xylene	-	-	46	185
METHOD 601				
Bromochloromethane	-	-	82	124
METHOD 602				
a,a,a-Trifluorotoluene	-	-	80	120

** Advisory Limits Only

ETC CORP.

GC/MS QUALITY CONTROL DATA

Instrument Performance Check

Tuning and Mass Calibration

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4817 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1419

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.7
75	30.0 - 60.0% of mass 95	56.2
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.4
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	87.5
175	5.0 - 9.0% of mass 174	7.3 (8.3)1
176	Greater than 95.0%, but less than 101.0% of mass 174	85.6 (97.8)1
177	5.0 - 9.0% of mass 176	7.1 (8.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4819	04/12/91	1523
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4821 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1647

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.5
75	30.0 - 60.0% of mass 95	52.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	.9 (1.0)1
174	Greater than 50.0% of mass 95	87.8
175	5.0 - 9.0% of mass 174	7.0 (8.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	88.0 (100.3)1
177	5.0 - 9.0% of mass 176	6.6 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	
01		QC60657VS	>A4822	04/12/91	1710	
02		QC60657VS	>A4823	04/12/91	1753	
03		QC60657VS	>A4824	04/12/91	1835	
04		QC60657VS	>A4825	04/12/91	1917	
05		QC60657V	>A4827	04/12/91	2042	
06		~~FC2877V~~	~~>A4829~~	~~04/12/91~~	~~2208~~	
07		FC2877VS	>A4830	04/12/91	2252	
08		FC2877VR	>A4831	04/12/91	2335	RT 4/12/91
09		FC2509V	>A4832	04/13/91	0018	
10		FC2509VS	>A4833	04/13/91	0102	
11		~~FC3146V~~	~~>A4835~~	~~04/13/91~~	~~0229~~	
12		~~FC3146VS~~	~~>A4836~~	~~04/13/91~~	~~0315~~	
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4838 BFB Injection Date: 04/14/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 0240

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	27.8
75	30.0 - 60.0% of mass 95	49.6
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.6
173	Less than 2.0% of mass 174	1.1 (1.4)1
174	Greater than 50.0% of mass 95	81.1
175	5.0 - 9.0% of mass 174	6.4 (7.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	78.9 (97.3)1
177	5.0 - 9.0% of mass 176	6.8 (8.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4839	04/14/91	0310
02		QC60657V2	>A4840	04/14/91	0353
03		~~FC2876V2~~	~~>A4841~~	~~04/14/91~~	~~0448~~
04		~~FC3148V2~~	~~>A4842~~	~~04/14/91~~	~~0532~~
05		~~FC3146V2~~	~~>A4843~~	~~04/14/91~~	~~0615~~
06		FC3149VS	>A4846	04/14/91	0838
07		QC60657VS	>A4847	04/14/91	0921
08		QC60657V3	>A4848	04/14/91	1004
09					
10					
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13					
14					
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16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4849 BFB Injection Date: 04/14/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1123

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.8
75	30.0 - 60.0% of mass 95	51.0
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	1.3 (1.6)1
174	Greater than 50.0% of mass 95	79.1
175	5.0 - 9.0% of mass 174	5.2 (6.6)1
176	Greater than 95.0%, but less than 101.0% of mass 174	76.8 (97.2)1
177	5.0 - 9.0% of mass 176	6.0 (7.8)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	
01		~~FC2508V3~~	~~>A4850~~	~~04/14/91~~	~~1159~~	
02		~~FC2508VS~~	~~>A4851~~	~~04/14/91~~	~~1242~~	
03		FC3150V3	>A4852	04/14/91	1326	
04		FC3149V3	>A4853	04/14/91	1409	GT 4/18/91
05		~~FC2475V3~~	~~>A4858~~	~~04/14/91~~	~~1766~~	
06		FC2475VS	>A4859	04/14/91	1830	
07		QS61458V3	>A4860	04/14/91	1913	
08		FC1972V3	>A4861	04/14/91	1956	
09		FC1976V3	>A4862	04/14/91	2040	
10		~~FC2625V3~~	~~>A4863~~	~~04/14/91~~	~~2123~~	
11						
12						
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14						
15						
16						
17						
18						
19						
20						
21						
22						

FORM V VOA 1/87 Rev.

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4804 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 0510

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.0
75	30.0 - 60.0% of mass 95	51.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	.8 (.9)1
174	Greater than 50.0% of mass 95	88.2
175	5.0 - 9.0% of mass 174	7.2 (8.2)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.4 (95.8)1
177	5.0 - 9.0% of mass 176	5.9 (7.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QS61452V2	>A4816	04/12/91	1330
02		QC6065VS	344805	04/12/91	0534
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

CHAIN OF CUSTODY DOCUMENTATION

Chain of Custody Forms
Laboratory Chronicles
Subcontract

ETC

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/90

No. 90688

Environmental Testing and Certification Corp. • 284 Raritan Center Parkway • Edison, NJ 08818 • 908-225-6700

COMPANY: ALLIED SIGNAL
FACILITY/SITE: DETROIT, MI
PROJECT CONTACT: DARYL QUINN
TELEPHONE NO.: (313) 842-4400

FILT. (Y/N)
PRESERV.
ANALYSIS REQUIRED: TCLP (Benzene) all samples

LEGEND FOR PRESERVATIVE
0 - NONE
1 - HCL
2 - HNO_3
3 - H_2SO_4
4 - $Na_2SO_3 + H_2SO_4$

ITEM NO.	ETC JOB #	SOURCE CODE	SAMPLE POINT	START DATE YY/MM/DD	START TIME	NUMBER OF CONTAINERS	SAMPLER OBSERVATIONS	LAB OBSERVATIONS
1		X	B2	910312	13:45	1		
2		X	D2	910313	12:30	1		
3	FC3148	X	C2	910313	11:05	1		
4	FC3149	X	C3	910313	10:20	1		
5		X	B3	910313	10:00	1		
6		X	D3	910313	16:00	1		
7	FC3150	X	E3	910313	14:45	1		
8								
9								

Source Codes:
Well ... (W) Outfall ... (O)
Soil ... (S) River/Stream ... (R)
Bottom Sediment ... (B)
Generation Point ... (G)
Surface Impoundment ... (I)
Treatment Facility ... (T)
Leachate Collection Sys ... (C)
Lake/Ocean ... (L)
Other ... X ... (X)
Specify: Waste Tar Sludge

CHAIN OF CUSTODY CHRONICLE

1. Shuttle Opened By: (print) Rudolph Dawson Date: 3/12/91 Time: 9:05 AM
Signature: Rudolph J. Dawson Seal #: 0194487 Intact: Yes

2. I have received these materials in good condition from the above person
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

3. I have received these materials in good condition from the above person
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

4. Shuttle Sealed By: (print) Rudy Dawson Date: 3/14/91 Time: 3:25 pm
Signature: Rudolph J. Dawson Seal #: 0194484 Intact: Yes

LAB USE ONLY Opened By: Richard Daiz Date: 03/15/91 Time: 2:00pm
SHUTTLE # 4419 TEMP °C ____ SEAL # 194484 COND. Intact

REMARKS
3/8/91 Seal # 0194487 KCK

SAMPLER'S SIGNATURE

ETC

TCLP PREP LOG (Method 1311) - Volatiles (ZHE)

QC Batch QS61452

Cooper Ind. - Due 4/18

Sample ID	Log Link	Sample Wt (g)	Initial Filtrate	Total Vol (ml)	Fraction
QS61452	BLANK	—	—	400	2TCLP/VOA
FC2384	253671	20.03	No	400	2TCLP/VOA
FC2385	253671	20.02	No	400	
FC2386	253671	20.02	No	400	
FC2387	253671	20.02	No	400	
FC2388	253671	20.03	No	400	
FC2389	253671	20.11	No	400	
FC2390	253671	20.03	No	400	
FC2391	253671	20.02	No	400	
FC2392	253671	20.02	No	400	
FC2393	253671	20.01	No	400	
FC2394	253671	20.05	No	400	
FC2395	253671	20.03	No	400	
FC3143	253741	20.02	No	400	
FC3144	253741	20.07	No	400	3TCPREAVOA
FC3145	253741	20.02	No	400	
FC3146	253741	20.02	No	400	
FC3147	253741	20.07	No	400	
FC3148	253741	20.02	No	400	
FC3149	253741	20.03	No	400	
FC3150	253741	20.13	No	400	

Set-up K. Walden 4/6/91

Filtering K. Walden 4/8/91

Supervisor K. Walden 4/8/91

Start Time 4:00 PM 4/6/91

Lab Temp 21°C

Tumbler RPM 30

Stop Time 10:00 AM 4/7/91

Comments:

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 053 Page 1 of 4

Date 4/12/91 Instr. A

A-Type TCLP/VOA
Tune file APEI01
Seq. file IAA
Method file VOAA
ID file IA0197
CB file CA0197
Analyst [illegible]
Reviewed by [illegible] Date [illegible]

Batch #'s QV60657

Standards Updated
Date 4/12/91 By [illegible]

Tape # B-00700 Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
p-BFB	50	10733	1 ul
INT STD & SUR	25	107919	10 ul
CAL I	50	107575	2,5,10,15,20
CAL II	50	107977	
VOA	50	10398	
EE & Methyl Iodide	50	10303	

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	p-BFB	A4817	1 ul	—		14:19	OK 62 JJ	
	QC60657VS	A4818	5	9			5 ul All STDS	
	QC60657VS	A4819	5	10		QT	5 ul All STDS	
	QC60657V	A4820	5	11			BLANK	
	p-BFB	A4821	1 ul	—		16:47	OK ~~20~~ JJ 61 enh JJ	
	QC60657VS	A4822	5	6			20 ul All STDS	
	QC60657VS	A4823	5	7		CBUPD	15 ul All STDS	
	QC60657VS	A4824	5	8		CBCAL	10 ul All STDS	
	QC60657VS	A4825	5	9		CBMRG	2 ul All STDS	
	QC60657V	A4826	5	10			BLANK	
	QC60657V	A4827	5	11		20:42	OK BLANK JJ	
	FC2876V	A4828	1.0	12	1:5		ng rr STD	
	FC2877V	A4829	5.0	13		22:08	OK JJ	
	FC2877VS	A4830	5.0	14		22:52	OK 5 ul All STDS JJ	
	FC2877VR	A4831	5.0	15		23:35	OK 5 ul All STDS JJ	
	FC2509V	A4832	5	16		00:18	OK JJ	
	FC2509V	A4833	5	1		1:02	OK 10 ul All STDS JJ	
	FC3148V	A4834	2.0	2	1:2.5		ng rr 1:5	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department

Date 4/12/91 Instr. A

A-Type PP/UOA
Tune file APEI01
Seq. file AAA
Method file UOAA
ID file IA0197
CB file CA0197
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QU60657

Standards Updated
Date 4/13/91 By [illegible]

Tape # B-00700 Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	P
	FC3147U	A4835	5.0	3		2:29	OK	
	FC3146 U	A4836	5.0	4			ngrr STD 2nd sur	
	FC3146 U	A4837	5.0	5		3:55	OK 10ul All STDS	
	p-BFB	A4838	1ul	—		2:40	OK 63	
	QC 60657 US	A4839	5	9	QCAC	3:10	OK 5ul All STDS	
	QC60657 U2	A4840	5	10		3:53	OK BLANK	
R	FC2876 U2	A4841	5	11		4:48	OK U2	
R	FC3148 U2	A4842	1	12	1:5	5:32	OK U2	
R	FC3146 U2	A4843	5	13		6:15	OK U2	
	FC3150U2	A4844	5	14			ngrr 1:5	
	FC3149 U2	A4845	.1	15	1:50		ng rr 1st 2 surr out	
	FC3149 US	A4846	.1	16	1:50	8:38	OK 10ul All STDS	
	QC60657 US	A4847	5	1		9:21 QCAC	OK 5ul All STDS	
	QC60657 U3	A4848	5	2		10:04	OK BLANK	
	p-BFB	A4849	1ul	—		11:23	OK 62-47	
	FC2508U3	A4850	5	3		11:59	OK	
	FC2508US	A4851	5	4		12:42	OK 10ul All STDS	
R	FC3150U3	A4852	1	5	1:5	13:26	OK U2	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department

Date 4/14/91 Instr. A

A-Type PP/VOA
Tune file APFI07
Seq. file AAA
Method file VOAA
ID file IA097
CB file CA097
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QV60657

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

__ Standards Updated
Date 4/14/91 By [illegible]

Tape # A-00700 Inj. __ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
R	FC3149U3	A4853	.1	6	1:50	14:09	OK v2 [illegible]	
	FC3143U3	A4854	5	7			ngrr 1:5	
	FC3143U5	A4855	5	8			↓ 10 ul All STDS	
	FC3144U3	A4856	1	9	1:5		ngrr 1:5 2nd 2 sur ↓	
	FC3145U3	A4857	.5	10	1:10		ngrr 1:10 2nd 2 surr ↓	
	FC2475U3	A4858	5	11		17:46	OK [illegible]	
	FC2475U5	A4859	5	12		18:30	OK 10 ul All STDS [illegible]	
	QS61458U3	A4860	5	13		19:13	OK TCLP BATCH BLANK [illegible]	
	FC1972U3	A4861	5	14		19:56	OK [illegible]	
	FC1976U3	A4862	5	15		20:40	OK [illegible]	
	FC2625U3	A4863	5	16		21:23	OK [illegible]	
	QC60657U3	A4864	5	1			OK	
	QC60657U3	A4865	5	2			OK	
	p-BFB	A4866	1ul	—		2:17	OK 61-48 [illegible]	
	QC60651U5	A4867	5	1	QCAL	2:50	OK 5 ul All STDS [illegible]	
	QC60651U4	A4868	5	2		3:34	OK BLANK [illegible]	
R	FC3143U4	A4869	1	3	1:5	4:40	OK v2 [illegible]	
R	FC3143U5	A4870	1	4	1:5	5:23	OK v2 10 ul All STDS [illegible]	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 051 Page 1 of 2

Date 4/11/91 Instr. A

A-Type TCLP/VOA
Tune file APFI01
Seq. file AAA
Method file VOAA
ID file IA0196
CB file CA0196
Analyst [illegible]
Reviewed by/Date [illegible] 4/8

Batch #'s QU60654

__ Standards Updated
Date 4/11/91 By [illegible]

Tape # B-00699 Inj. __ ul

Standard	Conc ppm	Lot No.	Lot Vol.
p-BFB	50	10733	1ml
INT STD Std SUR	25	107919	10ml
CAL I	50	107975	2,5,10,15,20
CAL II	50	107977	

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	P
	p-BFB	A4785	1ml	—		7:38	OK 65-49	
	QC60654 VS	A4786	5	9	QCAL	8:06	OK 5ml CalI,II	
	QC60654 VS	A4787	5	10		8:50	OK 5ml CalI,II	
	QC60654 V	A4788	5	11		9:33	OK BLANK	
	FC1967 U	A4789	5	11		10:17	OK	
	FC1969 U	A4790	5	12		11:00	OK	
	FC1971 U	A4791	5	13		11:44	OK	
	FC1973 U	A4792	5	14		12:26	OK	
	FC1974 U	A4793	5	15		13:09	OK	
	FC2627 U	A4794	5	16		13:51	OK	
	FC2625 U 4/12/91	A4795	5	1		14:34	OK rr/5 MEK	
	FC2384 U	A4796	.25	2	1:20	15:17	OK	
	FC2385 U	A4797	.25	3	1:20	15:59	OK	
	FC2386 U	A4798	.25	4	1:20	16:42	OK	
	FC2387 U	A4799	.25	5	1:20	17:24	OK	
	FC2387 US	A4800	.25	6	1:20	18:07	OK 5ml CalI,II	
	FC2387 VR	A4801	.25	7	1:20	18:50	OK 5ml CalI,II	
	QS61448	A4802	5	8		19:32	OK TCLP BATCH BLANK	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 052 Page 2 of 2

Date 4/11/91 Instr. A

A-Type TCLP/UOA
Tune file APEI01
Seq. file JJJ
Method file UOIA A
ID file IA0196
CB file CA0196
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QU60654

Standards Updated
Date 4/12/91 By [illegible]

Tape # B-00699 Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	QS61452V	A4803	5	9		20:15	OK TCLP BATCH BLANK	
	p-BFB	A4804	1ul	—		5:10	OK 74 ech — 59 ech	
	QC60654US	A4805	5	9	QCAL	5:34	OK 5ul Cal I, II	
	QC60654U2	A4806	5	10		6:17	OK BLANK	
R	FC2525U2	A4807	1	15	1:5	7:06	OK for MEK	
	FC2388U2	A4808	.25	16	1:20	7:49	OK	
	FC2389U2	A4809		1		8:31	OK	
	FC2390U2	A4810		2		9:14	OK	
	FC2391U2	A4811		3		9:57	OK	
	FC2392U2	A4812		4		10:40	OK	
	FC2393U2	A4813		5		11:22	OK	
	FC2394U2	A4814		6		12:05	OK	
	FC2395U2	A4815		7		12:48	OK	
R	QS61452U2	A4816	5	8		13:30	OK TCLP BATCH BLANK	

End of batch

R : redo , P : Aroclor search , + : Plus search

ETC

ENVIRONMENTAL TESTING
AND CERTIFICATION CORP.

Technical Report

for

ALLIED SIGNAL, INC.

P.O. BOX 1053R

MORRISTOWN, NJ 07962

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3148	ALLIED SIGNAL, INC.	ASIMNJTCLP	XC2	910313	1405	

Richard P. Albert

Vice President, General Manager

This Technical Report is an INSITE℠ service generated by LODESTAR℠ Data Management Software.

284 Raritan Center Parkway ■ CN 7808 ■ Edison, New Jersey 08818-7808 ■ 908-225-5600

INTRODUCTION

Environmental Testing and Certification Corp.
284 Raritan Center Parkway, CN 7808
Edison, New Jersey 08818-7808
(201) 225-6700

Analytical Methodology for TCLP (TC)

Analytical procedures and quality assurance protocols for this analysis conform to the requirements described in the Toxicity Characteristic Final Rule (June 29, 1990 Federal Register). Sample extraction procedures for leachate preparation are performed in accordance with Method 1311 as described in the Final Rule; subsequent preparations and analyses are performed following the appropriate procedures in the SW-846 Third Edition of "Test Methods for Evaluating Solid Wastes".

This technical report contains tabulated analytical results and associated matrix spike recoveries for the sample. Note that the results reported have not been corrected for any analytical bias. Corrections may be performed using the formula that follows.

$$X_c = 100\ (X_u\ /\ \%R)$$

Where:

X_c = Bias Corrected Result
X_u = Result of Unspiked Sample
%R = Matrix Spike Recovery

COMMENTS

ETC

COMMENTS FOR SPECIFIC ANALYSES

VOLATILE FRACTION:

FC3148

Intact sample or extract required dilution resulting in elevated MDL's.

ETC CORP.

TABULATED ANALYTICAL RESULTS

ETC

APR 18, 1991
QV60657B

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

TC - Volatile Compounds - GC/MS Analysis (QRC1)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3148	ALLIED SIGNAL, INC.	ASIMNJTCLP	XC2	910313	1405	0

Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
	Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen Added ug/l	% Recov
Benzene	618	25	-	-	ND	50.0	101	29.3	100	92

ETC

APR 18, 1991

TABLE 2: METHOD PERFORMANCE DATA
Surrogate Recovery Water - GC/MS Data (QR20)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3148	ALLIED SIGNAL, INC.	ASIMNJTCLP	XC2	910313	1405	0

Compound	Amount added ug	% Recovery	IFB EPA Control Limits	
			Lower	Upper
VOLATILE FRACTION (GC/MS)				
Toluene-D8	.250	100	88	110
p-Bromofluorobenzene	.250	103	86	115
1,2-Dichloroethane-D4	.250	111	76	114
ACID FRACTION (GC/MS)				
Phenol-D5	-	-	10	94
2-Fluorophenol	-	-	21	100
2,4,6-Tribromophenol	-	-	10	123
BASE/NEUTRAL FRACTION (GC/MS)				
Nitrobenzene-D5	-	-	35	114
2-Fluorobiphenyl	-	-	43	116
Terphenyl-D14	-	-	33	141
PESTICIDE/PCB FRACTION (GC)				
Dibutylchlorendate	-	-	24**	154**
2,4,5,6-Tetrachloro-m-xylene	-	-	46	185
METHOD 601				
Bromochloromethane	-	-	82	124
METHOD 602				
a,a,a-Trifluorotoluene	-	-	80	120

** Advisory Limits Only

ETC

ETC CORP.

GC/MS QUALITY CONTROL DATA

Instrument Performance Check

Tuning and Mass Calibration

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4817 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1419

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.7
75	30.0 - 60.0% of mass 95	56.2
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.4
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	87.5
175	5.0 - 9.0% of mass 174	7.3 (8.3)1
176	Greater than 95.0%, but less than 101.0% of mass 174	85.6 (97.8)1
177	5.0 - 9.0% of mass 176	7.1 (8.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4819	04/12/91	1523
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4821 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1647

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.5
75	30.0 - 60.0% of mass 95	52.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	.9 (1.0)1
174	Greater than 50.0% of mass 95	87.8
175	5.0 - 9.0% of mass 174	7.0 (8.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	88.0 (100.3)1
177	5.0 - 9.0% of mass 176	6.6 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4822	04/12/91	1710
02		QC60657VS	>A4823	04/12/91	1753
03		QC60657VS	>A4824	04/12/91	1835
04		QC60657VS	>A4825	04/12/91	1917
05		QC60657V	>A4827	04/12/91	2042
06		~~FC2877V~~	~~>A4829~~	~~04/12/91~~	~~2208~~
07		FC2877VS	>A4830	~~04/12/91~~	2252
08		FC2877VR	~~>A4831~~	04/12/91	2335
09		FC2509V	>A4832	04/13/91	0018
10		~~FC2509VS~~	~~>A4833~~	~~04/13/91~~	~~0102~~
11		FC3147V	>A4835	04/13/91	0229
12		FC3146VS	>A4837	04/13/91	0355
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

OT 4/18/91.

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4838 BFB Injection Date: 04/14/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 0240

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	27.8
75	30.0 - 60.0% of mass 95	49.6
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.6
173	Less than 2.0% of mass 174	1.1 (1.4)1
174	Greater than 50.0% of mass 95	81.1
175	5.0 - 9.0% of mass 174	6.4 (7.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	78.9 (97.3)1
177	5.0 - 9.0% of mass 176	6.8 (8.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4839	04/14/91	0310
02		QC60657V2	>A4840	04/14/91	0353
03		~~FC2876V2~~	~~>A4841~~	~~04/14/91~~	~~0448~~
04		FC3148V2	>A4842	04/14/91	0532
05		FC3146V2	>A4843	04/14/91	0615
06		~~FC3149VS~~	~~>A4846~~	~~04/14/91~~	~~0838~~
07		~~QC60657VS~~	~~>A4847~~	~~04/14/91~~	~~0921~~
08		~~QC60657V3~~	~~>A4848~~	~~04/14/91~~	~~1004~~
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

04/18/91

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4804 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 0510

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.0
75	30.0 - 60.0% of mass 95	51.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	.8 (.9)1
174	Greater than 50.0% of mass 95	88.2
175	5.0 - 9.0% of mass 174	7.2 (8.2)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.4 (95.8)1
177	5.0 - 9.0% of mass 176	5.9 (7.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QS61452V2	>A4816	04/12/91	1330
02		QC60654VS	34805	04/12/91	0534
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

CHAIN OF CUSTODY DOCUMENTATION

Chain of Custody Forms
Laboratory Chronicles
Subcontract

ETC

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/90

No. 90688

Environmental Testing and Certification Corp. • 284 Raritan Center Parkway • Edison, NJ 08818 • 908-225-6700

COMPANY: ALLIED SIGNAL
FACILITY/SITE: DETROIT, MI
PROJECT CONTACT: DARYL QUINN
TELEPHONE NO.: (313) 842-4400

ANALYSIS REQUIRED: TCLP (Benzene only) all samples

LEGEND FOR PRESERVATIVE
0 - NONE
1 - HCL
2 - HNO_3
3 - H_2SO_4
4 - Na_2SO_3 + H_2SO_4

ITEM NO.	ETC JOB #	SOURCE CODE	SAMPLE POINT	START DATE YY/MM/DD	START TIME	NUMBER OF CONTAINERS	SAMPLER OBSERVATIONS	LAB OBSERVATIONS
1		X	B2	910312	13:45	1		
2		X	D2	910313	12:30	1		
3	FC3148	X	C2	910313	11:05	1		
4	FC3149	X	C3	910313	10:20	1		
5		X	B3	910313	10:00	1		
6		X	D3	910313	16:45	1		
7	FC3150	X	E3	910313	14:45	1		
8								
9								

Source Codes:
Well ..... (W) Outfall ..... (O)
Soil ..... (S) River/Stream ..... (R)
Bottom Sediment ..... (B)
Generation Point ..... (G)
Surface Impoundment ..... (I)
Treatment Facility ..... (T)
Leachate Collection Sys ..... (C)
Lake/Ocean ..... (L)
Other ..... X ..... (X)
Specify: Waste Tar Sludge

Log if needed
Sub-samples provided

CHAIN OF CUSTODY CHRONICLE

1. Shuttle Opened By: (print) Rudolph Dawson Date: 3/12/91 Time: 9:05 AM
Signature: Rudolph J. Dawson Seal #: 0194487 Intact: Yes

2. I have received these materials in good condition from the above person
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

3. I have received these materials in good condition from the above person
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

4. Shuttle Sealed By: (print) Rudy Dawson Date: 3/14/91 Time: 3:25 pm
Signature: Rudolph J. Dawson Seal #: 0194484 Intact: Yes

LAB USE ONLY Opened By: Richard Day Date: 03/15/91 Time: 2:00pm
SHUTTLE # 4412 TEMP. °C _____ SEAL # 194484 COND. Intact

REMARKS
3/8/91 Seal # 0194487 KCK

SAMPLER'S SIGNATURE
R. Lee 3/11/91

ETC

TCLP PREP LOG (Method 1311) - Volatiles (ZHE)

QC Batch QS61452

Corpin Ind. - Due 4/18

Sample ID	Log Link	Sample Wt (g)	Initial Filtrate	Total Vol (ml)	Fraction
QS61452	BLANK	—	—	400	2TCLP/VOA
FC2384	253671	20.03	No	400	2TCLP/VOA
FC2385	253671	20.02	No	400	
FC2386	253671	20.02	No	400	
FC2387	253671	20.02	No	400	
FC2388	253671	20.03	No	400	
FC2389	253671	20.11	No	400	
FC2390	253671	20.03	No	400	
FC2391	253671	20.02	No	400	
FC2392	253671	20.02	No	400	
FC2393	253671	20.01	No	400	
FC2394	253671	20.05	No	400	
FC2395	253671	20.03	No	400	
FC3143	253741	20.02	No	400	
FC3144	253741	20.07	No	400	3TCRE/VOA
FC3145	253741	20.02	No	400	
FC3146	253741	20.02	No	400	
FC3147	253741	20.07	No	400	
FC3148	253741	20.02	No	400	
FC3149	253741	20.03	No	400	
FC3150	253741	20.13	No	400	

Set-up K. Walden 4/6/91

Filtering K. Walden 4/8/91

Supervisor K. Walden 4/8/91

Start Time 4:00 PM 4/6/91

Lab Temp 21°C

Tumbler RPM 30

Stop Time 10:00 AM 4/7/91

Comments:

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 053 Page 1 of 4

Date 4/12/91 Instr. A

A-Type TCLP/VOA
Tune file APEI01
Seq. file JAA
Method file VOAA
ID file IA0197
CB file CA0197
Analyst [illegible]
Reviewed by [illegible] Date [illegible]

Batch #'s QU60657

Standards Updated
Date 4/12/91 By [illegible]

Tape # B-00700 Inj. ul

Standard	Conc ppm	Lot No.	Lot Vol.
p-BFB	50	10722	1ul
INT STD & SUR	25	107919	10ul
CAL I	50	107575	2,5,10,15,20
CAL II	50	107977	↓
VOA	50	10398	
EE & Methyl Iodide	50	10307	

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	P
	p-BFB	A4817	1ul	—		14:19	OK 62 JJ	
	QC60657VS	A4818	5	9			5 ul All STDS	
	QC60657VS	A4819	5	10		QT	5 ul All STDS	
	QC60657V	A4820	5	11			BLANK	
	p-BFB	A4821	1ul	—		16:47	OK ~~20~~ JJ blank JJ	
	QC60657VS	A4822	5	6			20 ul All STDS	
	QC60657VS	A4823	5	7		CBUPD	15 ul All STDS	
	QC60657VS	A4824	5	8		CBCAL	10 ul All STDS	
	QC60657VS	A4825	5	9		VMRG	2 ul All STDS	
	QC60657V	A4826	5	10			BLANK	
	QC60657V	A4827	5	11		20:42	OK BLANK . JJ	
	FC2876V	A4828	1.0	12	1:5		ng rr STD	
	FC2877V	A4829	5.0	13		22:08	OK JJ	
	FC2877VS	A4830	5.0	14		22:52	OK 5ul All STDS JJ	
	FC2877VR	A4831	5.0	15		23:35	OK 5ul All STDS JJ	
	FC2509V	A4832	5	16		00:18	OK JJ	
	FC2509V	A4833	5	1		1:02	OK 10ul All STDS JJ	
	FC3148V	A4834	2.0	2	1:2.5		ng rr 1:5	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department

Date 4/12/91 Instr. A

A-Type PP/VOA
Tune file APE101
Seq. file AAA
Method file VOAA
ID file IA0197
CB file CA0197
Analyst JJ
Reviewed by/Date

Batch #'s QV60657

Standards Updated
Date 4/13/91 By JJ

Tape # B-00700 Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	FC3147V	A4835	5.0	3		2:29	OK	
	FC3146 V	A4836	5.0	4			ngrr STD 2nd sur	
	FC3146 V	A4837	5.0	5		3:55	OK 10ul All STDS	
	p-BFB	A4838	1ul	-		2:40	OK 63	
	QC60657 V5	A4839	5	9	QCAL	7:10	OK 5ul All STDS	
	QC60657 V2	A4840	5	10		3:53	OK BLANK	
R	FC2876 V2	A4841	5	11		4:48	OK V2	
R	FC3148 V2	A4842	1	12	1:5	5:32	OK V2	
R	FC3146 V2	A4843	5	13		6:15	OK V2	
	FC3150V2	A4844	5	14			ngrr 1:5	
	FC3149 V2	A4845	.1	15	1:50		ngrr 1st 2 surr out	
	FC3149 V5	A4846	.1	16	1:50	8:38	OK 10ul All STDS	
	QC60657 V5	A4847	5	1		9:21 QCAL	OK 5ul All STDS	
	QC60657 V3	A4848	5	2		10:04	OK BLANK	
	p-BFB	A4849	1ul			11:23	OK 62-47	
	FC2508V3	A4850	5	3		11:59	OK	
	FC2508V5	A4851	5	4		12:42	OK 10ul All STDS	
R	FC3150V3	A4852	1	5	1:5	13:26	OK V2	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 052 Page 2 of 2

Date 4/11/91 Instr. A

A-Type TCLP/UOA
Tune file APEI01
Seq. file JJJ
Method file UOA A
ID file IA0196
CB file CA0196
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QU60654

Standards Updated
Date 4/12/91 By [illegible]

Tape # B-00699 Inj. ul

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	QS61452V	A4803	5	9		20:15	OK TCLP BATCH BLANK	
	p-BFB	A4804	1ul	—		5:10	OK 74ech — 59 ech	
	QC60654U5	A4805	5	9	QCAL	5:34	OK 5ul Cal I, II	
	QC60654U2	A4806	5	10		6:17	OK BLANK	
R	FC2525U2	A4807	1	15	1:5	7:06	OK for MEK	
	FC2388U2	A4808	.25	16	1:20	7:49	OK	
	FC2389U2	A4809		1		8:31	OK	
	FC2390U2	A4810		2		9:14	OK	
	FC2391U2	A4811		3		9:57	OK	
	FC2392U2	A4812		4		10:40	OK	
	FC2393U2	A4813		5		11:22	OK	
	FC2394U2	A4814		6		12:05	OK	
	FC2395U2	A4815		7		12:48	OK	
R	QS61452U2	A4816	5	8		13:30	OK TCLP BATCH BLANK	

end of batch

R : redo , P : Aroclor search , + : Plus search

ETC

ENVIRONMENTAL TESTING
AND CERTIFICATION CORP.

Technical Report

for

ALLIED SIGNAL, INC.

P.O. BOX 1053R

MORRISTOWN, NJ 07962

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3147	ALLIED SIGNAL, INC.	ASIMNJTCLP	XA2	910312	1620	

Richard P. Albert

Vice President, General Manager

This Technical Report is an INSITE℠ service generated by LODESTAR℠ Data Management Software.

284 Raritan Center Parkway ■ CN 7808 ■ Edison, New Jersey 08818-7808 ■ 908-225-5600

INTRODUCTION

Environmental Testing and Certification Corp.
284 Raritan Center Parkway, CN 7808
Edison, New Jersey 08818-7808
(201) 225-6700

Analytical Methodology for TCLP (TC)

Analytical procedures and quality assurance protocols for this analysis conform to the requirements described in the Toxicity Characteristic Final Rule (June 29, 1990 Federal Register). Sample extraction procedures for leachate preparation are performed in accordance with Method 1311 as described in the Final Rule; subsequent preparations and analyses are performed following the appropriate procedures in the SW-846 Third Edition of "Test Methods for Evaluating Solid Wastes".

This technical report contains tabulated analytical results and associated matrix spike recoveries for the sample. Note that the results reported have not been corrected for any analytical bias. Corrections may be performed using the formula that follows.

$$X_c = 100\ (X_u\ /\ \%R)$$

Where:

X_c = Bias Corrected Result
X_u = Result of Unspiked Sample
%R = Matrix Spike Recovery

ETC CORP.

TABULATED ANALYTICAL RESULTS

ETC

APR 18, 1991
QV60657B

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

TC - Volatile Compounds - GC/MS Analysis (QRC1)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3147	ALLIED SIGNAL, INC.	ASIMNJTCLP	XA2	910312	1620	0

Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
	Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen Added ug/l	% Recov
Benzene	175	5.0	-	-	ND	50.0	101	29.3	100	92

ETC

APR 18, 1991

TABLE 2: METHOD PERFORMANCE DATA
Surrogate Recovery Water - GC/MS Data (QR20)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3147	ALLIED SIGNAL, INC	ASIMNJTCLP	XA2	910312	1620	0

Compound	Amount added ug	% Recovery	IFB EPA Control Limits Lower	IFB EPA Control Limits Upper
VOLATILE FRACTION (GC/MS)				
Toluene-D8	.250	101	88	110
p-Bromofluorobenzene	.250	100	86	115
1,2-Dichloroethane-D4	.250	112	76	114
ACID FRACTION (GC/MS)				
Phenol-D5	-	-	10	94
2-Fluorophenol	-	-	21	100
2,4,6-Tribromophenol	-	-	10	123
BASE/NEUTRAL FRACTION (GC/MS)				
Nitrobenzene-D5	-	-	35	114
2-Fluorobiphenyl	-	-	43	116
Terphenyl-D14	-	-	33	141
PESTICIDE/PCB FRACTION (GC)				
Dibutylchlorendate	-	-	24**	154**
2,4,5,6-Tetrachloro-m-xylene	-	-	46	185
METHOD 601				
Bromochloromethane	-	-	82	124
METHOD 602				
a,a,a-Trifluorotoluene	-	-	80	120

** Advisory Limits Only

ETC CORP.

GC/MS QUALITY CONTROL DATA

Instrument Performance Check

Tuning and Mass Calibration

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4817 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1419

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.7
75	30.0 - 60.0% of mass 95	56.2
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.4
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	87.5
175	5.0 - 9.0% of mass 174	7.3 (8.3)1
176	Greater than 95.0%, but less than 101.0% of mass 174	85.6 (97.8)1
177	5.0 - 9.0% of mass 176	7.1 (8.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4819	04/12/91	1523
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4821 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1647

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.5
75	30.0 - 60.0% of mass 95	52.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	.9 (1.0)1
174	Greater than 50.0% of mass 95	87.8
175	5.0 - 9.0% of mass 174	7.0 (8.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	88.0 (100.3)1
177	5.0 - 9.0% of mass 176	6.6 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4822	04/12/91	1710
02		QC60657VS	>A4823	04/12/91	1753
03		QC60657VS	>A4824	04/12/91	1835
04		QC60657VS	>A4825	04/12/91	1917
05		QC60657V	>A4827	04/12/91	2042
06		~~FC2877V~~	~~>A4829~~	~~04/12/91~~	~~2208~~
07		FC2877VS	>A4830	~~04/12/91~~	2252
08		FC2877VR	~~>A4831~~	04/12/91	2335
09		FC2509V	>A4832	04/13/91	0018
10		~~FC2509VS~~	~~>A4833~~	~~04/13/91~~	~~0102~~
11		FC3147V	>A4835	04/13/91	0229
12		FC3146VS	>A4837	04/13/91	0355
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

OT 4/18/91.

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4838 BFB Injection Date: 04/14/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 0240

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	27.8
75	30.0 - 60.0% of mass 95	49.6
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.6
173	Less than 2.0% of mass 174	1.1 (1.4)1
174	Greater than 50.0% of mass 95	81.1
175	5.0 - 9.0% of mass 174	6.4 (7.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	78.9 (97.3)1
177	5.0 - 9.0% of mass 176	6.8 (8.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4839	04/14/91	0310
02		QC60657V2	>A4840	04/14/91	0353
03		~~FC2876V2~~	~~>A4841~~	~~04/14/91~~	~~0448~~
04		FC3148V2	>A4842	04/14/91	0532
05		FC3146V2	>A4843	04/14/91	0615
06		~~FC3149VS~~	~~>A4846~~	~~04/14/91~~	~~0838~~
07		~~QC60657VS~~	~~>A4847~~	~~04/14/91~~	~~0921~~
08		~~QC60657V3~~	~~>A4848~~	~~04/14/91~~	~~1004~~
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

04/19/91

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4804 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 0510

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.0
75	30.0 - 60.0% of mass 95	51.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	.8 (.9)1
174	Greater than 50.0% of mass 95	88.2
175	5.0 - 9.0% of mass 174	7.2 (8.2)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.4 (95.8)1
177	5.0 - 9.0% of mass 176	5.9 (7.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QS61452V2	>A4816	04/12/91	1330
02		QL6065YVS	344805	04/12/91	0534
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

CHAIN OF CUSTODY DOCUMENTATION

Chain of Custody Forms
Laboratory Chronicles
Subcontract

ETC

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/90

No. 90687

Environmental Testing and Certification Corp. • 284 Raritan Center Parkway • Edison, NJ 08818 • 908-225-6700

COMPANY: ALLIED SIGNAL
FACILITY/SITE: DETROIT, MI
PROJECT CONTACT: DARYL QUINN
TELEPHONE NO.: 313 842 4400

ANALYSIS REQUIRED: TCLP (Benzene) all

LEGEND FOR PRESERVATIVE
0 - NONE
1 - HCL
2 - HNO_3
3 - H_2SO_4
4 - Na_2SO_3 + H_2SO_4

ITEM NO.	ETC JOB #	SOURCE CODE	SAMPLE POINT	START DATE YY/MM/DD	START TIME (24 HR Clock)	NUMBER OF CONTAINERS	FILT. (Y/N)	PRESERV.	SAMPLER OBSERVATIONS	LAB OBSERVATIONS
1		X	0000000B1	910312	10:30	1				
2	FC3144	X	0000000A1	910312	10:50	1				
3		X	0000000D1	910312	12:00	1				
4	FC3143	X	0000000C1	910312	13:30	1			10 [illegible]	
5	FC3145	X	0000000E1	910312	11:05	1			[illegible]	
6	FC3146	X	0000000E2	910312	15:00	1			[illegible]	
7	FC3147	X	0000000A2	910312	16:20	1			[illegible]	
8		DAB 4/15/91								
9										

Source Codes:
Well .... (W) Outfall ..... (O)
Soil .... (S) River/Stream .... (R)
Bottom Sediment ..... (B)
Generation Point ..... (G)
Surface Impoundment ..... (I)
Treatment Facility ..... (T)
Leachate Collection Sys ..... (C)
Lake/Ocean ..... (L)
Other ..... (X)
Specify: WASTE TAR SLUDGE

CHAIN OF CUSTODY CHRONICLE

1. Shuttle Opened By: (print) W. E. YANOVITCH Date: 3/12/91 Time: 9:05 AM
Signature: W. E. Yanovitch Seal #: 194485 Intact: Yes

2. I have received these materials in good condition from the above person
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

3. I have received these materials in good condition from the above person
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

4. Shuttle Sealed By: (print) Rudy Dawson Date: 3/14/91 Time: 1:00
Signature: Rudolph J. Dawson Seal #: 0194486 Intact: Yes

LAB USE ONLY Opened By: Richard Diz Date: 3/15/91 Time: 2:05 pm
SHUTTLE # 108 TEMP. °C _____ SEAL # 194486 COND. intact

REMARKS
3/8/91 Seal # 0194485 KCK
3/14/91 Seal #, box to ETC 0194486 F.B.

SAMPLER'S SIGNATURE: F. B.

ETC

TCLP PREP LOG (Method 1311) - Volatiles (ZHE)

QC Batch QS61452

Cooper Ind. - Due 4/18

Sample ID	Log Link	Sample wt (g)	Initial Filtrate	Total Vol (ml)	Fraction
QS61452	BLANK	—	—	400	2TCLP/VOA
FC2384	253671	20.03	No	400	2TCLP/VOA
FC2385	253671	20.02	No	400	
FC2386	253671	20.02	No	400	
FC2387	253671	20.02	No	400	
FC2388	253671	20.03	No	400	
FC2389	253671	20.11	No	400	
FC2390	253671	20.03	No	400	
FC2391	253671	20.02	No	400	
FC2392	253671	20.02	No	400	
FC2393	253671	20.01	No	400	
FC2394	253671	20.05	No	400	
FC2395	253671	20.03	No	400	
FC3143	253741	20.02	No	400	
FC3144	253741	20.07	No	400	3TCPREP/VOA
FC3145	253741	20.02	No	400	
FC3146	253741	20.02	No	400	
FC3147	253741	20.07	No	400	
FC3148	253741	20.02	No	400	
FC3149	253741	20.03	No	400	
FC3150	253741	20.13	No	400	

Set-up K. Walsh 4/6/91

Filtering K. Walsh 4/8/91

Supervisor K. Walsh 4/8/91

Start Time 4:00 PM 4/6/91

Lab Temp 21°C

Tumbler RPM 30

Stop Time 10:00 AM 4/7/91

Comments:

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 053 Page 1 of 4

Date 4/12/91 Instr. A

A-Type TCL8/UOA
Tune file APEI01
Seq. file IAA
Method file UOMA
ID file IA0197
CB file CA0197
Analyst [illegible]
Reviewed by [illegible] Date [illegible]

Batch #'s QU60657

Standard	Conc ppm	Lot No.	Lot Vol.
p-BFB	50	107332	1ul
INT STD & SUR	25	107919	10ul
CAL I	50	107575	2,5,10,15,20
CAL II	50	107977	
KUOA	50	10398	
EE & Methyl Iodide	50	10307	

__ Standards Updated
Date 4/12/91 By [illegible]

Tape # B-00700 Inj. __ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	p-BFB	A4817	1ul	—		14:19	OK 62 JJ	
	QC60657US	A4818	5	9			5 ul All STDS	
	QC60657US	A4819	5	10		QT	5 ul All STDS	
	QC60657U	A4820	5	11			BLANK	
	p-BFB	A4821	1ul	—		16:47	OK ~~20~~ JJ 61 enh JJ	
	QC60657US	A4822	5	6			20 ul All STDS	
	QC60657US	A4823	5	7		CBUID	15 ul All STDS	
	QC60657US	A4824	5	8		CBCAL	10 ul All STDS	
	QC60657US	A4825	5	9		UNRG	2 ul All STDS	
	QC60657U	A4826	5	10			BLANK	
	QC60657U	A4827	5	11		20:42	OK BLANK . JJ	
	FC2876U	A4828	1.0	12	1:5		ng rr STR	
	FC2877U	A4829	5.0	13		22:08	OK JJ	
	FC2877US	A4830	5.0	14		22:52	OK 5ul All STDS JJ	
	FC2877UR	A4831	5.0	15		23:35	OK 5ul All STDS JJ	
	FC2509U	A4832	5	16		00:18	OK JJ	
	FC2509U	A4833	5	1		1:02	OK 10ul All STDS JJ	
	FC3148U	A4834	2.0	2	1:2.5		ng rr 1:5	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department

Date 4/12/91 Instr. A

A-Type PP/VOA
Tune file APEI01
Seq. file AAA
Method file VOAA
ID file IA0197
CB file CA0197
Analyst JJ
Reviewed by/Date

Batch #'s QV60657

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

Standards Updated
Date 4/13/91 By JJ

Tape # B-00200 Inj. ___ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	FC3147U	A4835	5.0	3		2:29	OK	
	FC3146 U	A4836	5.0	4			ngrr STR 2nd sur	
	FC3146 U	A4837	5.0	5		3:55	OK 10ul All STDS	
	p-BFB	A4838	1ul	–		2:40	OK 63	
	QC60657 US	A4839	5	9	QCAL	7:10	OK 5ul All STDS	
	QC60657 U2	A4840	5	10		3:53	OK BLANK	
R	FC2876 U2	A4841	5	11		4:48	OK U2	
R	FC3148 U2	A4842	1	12	1:5	5:32	OK U2	
R	FC3146 U2	A4843	5	13		6:15	OK U2	
	FC3150U2	A4844	5	14			ngrr 1:5	
	FC3149 U2	A4845	.1	15	1:50		ng rr 1st 2 surr out	
	FC3149 US	A4846	.1	16	1:50	8:38	OK 10ul All STDS	
	QC60657 US	A4847	5	1		9:21 QCAL	OK 5ul All STDS	
	QC60657 U3	A4848	5	2		10:04	OK BLANK	
	p-BFB	A4849	1ul	–		11:23	OK 62-47	
	FC2508U3	A4850	5	3		11:59	OK	
	FC2508US	A4851	5	4		12:42	OK 10ul All STDS	
R	FC3150U3	A4852	1	5	1:5	13:26	OK U2	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 052 Page 2 of 2

Date 4/12/91 Instr. A

A-Type TCLP/UOA
Tune file APEI01
Seq. file 333
Method file UOA A
ID file IA0196
CB file CA0196
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QU60654

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

Standards Updated
Date 4/12/91 By [illegible]

Tape # B-00699 Inj. ___ ul

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	QS61452V	A4803	5	9		20:15	OK TCLP BATCH BLANK	
	p-BFB	A4804	1ul	—		5:10	OK 74 each — 59 each	
	QC60654US	A4805	5	9	QCAL	5:34	OK 5ul Cal I, II	
	QC60654U2	A4806	5	10		6:17	OK BLANK	
R	FC2525U2	A4807	1	15	1:5	7:06	OK for MEK	
	FC2388U2	A4808	.25	16	1:20	7:49	OK	
	FC2389U2	A4809		1		8:31	OK	
	FC2390U2	A4810		2		9:14	OK	
	FC2391U2	A4811		3		9:57	OK	
	FC2392U2	A4812		4		10:40	OK	
	FC2393U2	A4813		5		11:22	OK	
	FC2394U2	A4814		6		12:05	OK	
	FC2395U2	A4815		7		12:48	OK	
R	QS61452U2	A4816	5	8		13:30	OK TCLP BATCH BLANK	

end of batch

R : redo , P : Aroclor search , + : Plus search

ETC

ENVIRONMENTAL TESTING
AND CERTIFICATION CORP.

Technical Report

for

ALLIED SIGNAL, INC.

P.O. BOX 1053R

MORRISTOWN, NJ 07962

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3146	ALLIED SIGNAL, INC.	ASIMNJTCLP	XE2	910312	1500	

Richard P. Albert

Vice President, General Manager

This Technical Report is an INSITE℠ service generated by LODESTAR℠ Data Management Software.

284 Raritan Center Parkway ■ CN 7808 ■ Edison, New Jersey 08818-7808 ■ 908-225-5600

INTRODUCTION

Environmental Testing and Certification Corp.
284 Raritan Center Parkway, CN 7808
Edison, New Jersey 08818-7808
(201) 225-6700

Analytical Methodology for TCLP (TC)

Analytical procedures and quality assurance protocols for this analysis conform to the requirements described in the Toxicity Characteristic Final Rule (June 29, 1990 Federal Register). Sample extraction procedures for leachate preparation are performed in accordance with Method 1311 as described in the Final Rule; subsequent preparations and analyses are performed following the appropriate procedures in the SW-846 Third Edition of "Test Methods for Evaluating Solid Wastes".

This technical report contains tabulated analytical results and associated matrix spike recoveries for the sample. Note that the results reported have not been corrected for any analytical bias. Corrections may be performed using the formula that follows.

$$X_c = 100\ (X_u\ /\ \%R)$$

Where:

X_c = Bias Corrected Result
X_u = Result of Unspiked Sample
%R = Matrix Spike Recovery

ETC CORP.

TABULATED ANALYTICAL RESULTS

ETC

APR 18, 1991
QV60657B

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

TC - Volatile Compounds - GC/MS Analysis (QRC1)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3146	ALLIED SIGNAL, INC.	ASIMNJTCLP	XE2	910312	1500	0

Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
	Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
Benzene	29.3	5.0	-	-	ND	50.0	101	29.3	100	92

ETC

APR 18, 1991

TABLE 2: METHOD PERFORMANCE DATA
Surrogate Recovery Water - GC/MS Data (QR20)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3146	ALLIED SIGNAL, INC	ASIMNJTCLP	XE2	910312	1500	0

Compound	Amount added ug	% Recovery	IFB EPA Control Limits	
			Lower	Upper
VOLATILE FRACTION (GC/MS)				
Toluene-D8	.250	98	88	110
p-Bromofluorobenzene	.250	98	86	115
1,2-Dichloroethane-D4	.250	113	76	114
ACID FRACTION (GC/MS)				
Phenol-D5	-	-	10	94
2-Fluorophenol	-	-	21	100
2,4,6-Tribromophenol	-	-	10	123
BASE/NEUTRAL FRACTION (GC/MS)				
Nitrobenzene-D5	-	-	35	114
2-Fluorobiphenyl	-	-	43	116
Terphenyl-D14	-	-	33	141
PESTICIDE/PCB FRACTION (GC)				
Dibutylchlorendate	-	-	24**	154**
2,4,5,6-Tetrachloro-m-xylene	-	-	46	185
METHOD 601				
Bromochloromethane	-	-	82	124
METHOD 602				
a,a,a-Trifluorotoluene	-	-	80	120

** Advisory Limits Only

ETC

ETC CORP.

GC/MS QUALITY CONTROL DATA

Instrument Performance Check

Tuning and Mass Calibration

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4817 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1419

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.7
75	30.0 - 60.0% of mass 95	56.2
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.4
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	87.5
175	5.0 - 9.0% of mass 174	7.3 (8.3)1
176	Greater than 95.0%, but less than 101.0% of mass 174	85.6 (97.8)1
177	5.0 - 9.0% of mass 176	7.1 (8.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4819	04/12/91	1523
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4821 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1647

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.5
75	30.0 - 60.0% of mass 95	52.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	.9 (1.0)1
174	Greater than 50.0% of mass 95	87.8
175	5.0 - 9.0% of mass 174	7.0 (8.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	88.0 (100.3)1
177	5.0 - 9.0% of mass 176	6.6 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4822	04/12/91	1710
02		QC60657VS	>A4823	04/12/91	1753
03		QC60657VS	>A4824	04/12/91	1835
04		QC60657VS	>A4825	04/12/91	1917
05		QC60657V	>A4827	04/12/91	2042
06		~~FC2877V~~	~~>A4829~~	~~04/12/91~~	~~2208~~
07		FC2877VS	>A4830	~~04/12/91~~	2252
08		FC2877VR	~~>A4831~~	04/12/91	2335
09		FC2509V	>A4832	04/13/91	0018
10		~~FC2509VS~~	~~>A4833~~	~~04/13/91~~	~~0102~~
11		FC3147V	>A4835	04/13/91	0229
12		FC3146VS	>A4837	04/13/91	0355
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

OT 4/18/91.

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4838 BFB Injection Date: 04/14/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 0240

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	27.8
75	30.0 - 60.0% of mass 95	49.6
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.6
173	Less than 2.0% of mass 174	1.1 (1.4)1
174	Greater than 50.0% of mass 95	81.1
175	5.0 - 9.0% of mass 174	6.4 (7.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	78.9 (97.3)1
177	5.0 - 9.0% of mass 176	6.8 (8.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4839	04/14/91	0310
02		QC60657V2	>A4840	04/14/91	0353
03		~~FC2876V2~~	~~>A4841~~	~~04/14/91~~	~~0440~~
04		FC3148V2	>A4842	04/14/91	0532
05		FC3146V2	>A4843	04/14/91	0615
06		~~FC3149VS~~	~~>A4846~~	~~04/14/91~~	~~0838~~
07		~~QC60657VS~~	~~>A4847~~	~~04/14/91~~	~~0921~~
08		~~QC60657V3~~	~~>A4848~~	~~04/14/91~~	~~1004~~
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

3T4/1/91

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4804 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 0510

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.0
75	30.0 - 60.0% of mass 95	51.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	.8 (.9)1
174	Greater than 50.0% of mass 95	88.2
175	5.0 - 9.0% of mass 174	7.2 (8.2)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.4 (95.8)1
177	5.0 - 9.0% of mass 176	5.9 (7.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QS61452V2	>A4816	04/12/91	1330
02		QC60654VS	>A4805	04/12/91	0534
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

CHAIN OF CUSTODY DOCUMENTATION

Chain of Custody Forms
Laboratory Chronicles
Subcontract

ETC

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/90

No. 90687

Environmental Testing and Certification Corp. • 284 Raritan Center Parkway • Edison, NJ 08818 • 908-225-6700

COMPANY: ALLIED SIGNAL
FACILITY/SITE: DETROIT, MI
PROJECT CONTACT: DARYL QUINN
TELEPHONE NO.: 313 842 4400

FILT. (Y/N)
PRESERV.
ANALYSIS REQUIRED: TCLP (Benzene) all

LEGEND FOR PRESERVATIVE
0 - NONE
1 - HCL
2 - HNO_3
3 - H_2SO_4
4 - Na_2SO_3 + H_2SO_4

ITEM NO.	ETC JOB #	SOURCE CODE	SAMPLE POINT	START DATE YY/MM/DD	START TIME 24 HR Clock	NUMBER OF CONTAINERS	SAMPLER OBSERVATIONS	LAB OBSERVATIONS
1		X	0000000B1	910312	10:30	1		
2	FC3144	X	0000000A1	910312	10:50	1		
3		X	0000000D1	910312	12:00	1		
4	FC3143	X	0000000C1	910312	14:35	1		
5	FC3145	X	0000000E1	910312	11:05	1		
6	FC3146	X	0000000E2	910312	15:00	1		
7	FC3147	X	0000000A2	910312	16:20	1		
8		DAB 4/15/91						
9								

Source Codes:
Well ..... (W) Outfall ..... (O)
Soil ..... (S) River/Stream ..... (R)
Bottom Sediment ..... (B)
Generation Point ..... (G)
Surface Impoundment ..... (I)
Treatment Facility ..... (T)
Leachate Collection Sys ..... (C)
Lake/Ocean ..... (L)
Other ..... (X)
Specify: WASTE TAR SLUDGE

CHAIN OF CUSTODY CHRONICLE

1. Shuttle Opened By: (print) W. E. YANOVITCH Date: 3/12/91 Time: 9:05 AM
Signature: W E Yanovitch Seal #: 194485 Intact: Yes

2. I have received these materials in good condition from the above person
Name: Signature
Date: Time: Remarks:

3. I have received these materials in good condition from the above person
Name: Signature
Date: Time: Remarks:

4. Shuttle Sealed By: (print) Rudy Dawson Date: 3/14/91 Time: 1:00
Signature: Rudolph J. Dawson Seal #: 0194486 Intact: Yes

LAB USE ONLY Opened By: Richard Diaz Date: 03/15/91 Time: 2:05 PM
SHUTTLE #: 108 TEMP: °C SEAL #: 0194486 COND: intact

REMARKS
3/8/91 Seal # 0194485 KCK
3/14/91 Seal # 0194486 box to ETC F.B.

SAMPLER'S SIGNATURE: F. B.

ETC

TCLP PREP LOG (Method 1311) - Volatiles (SHE)

QC Batch QS61452

Cooper Ind. - Due 4/18

Sample ID	Log Link	Sample Wt (g)	Initial Filtrate	Total Vol (ml)	Fraction
QS61452	BLANK	—	—	400	2TCLP/VOA
FC2384	253671	20.03	No	400	2TCLP/VOA
FC2385	253671	20.02	No	400	
FC2386	253671	20.02	No	400	
FC2387	253671	20.02	No	400	
FC2388	253671	20.03	No	400	
FC2389	253671	20.11	No	400	
FC2390	253671	20.03	No	400	
FC2391	253671	20.02	No	400	
FC2392	253671	20.02	No	400	
FC2393	253671	20.01	No	400	
FC2394	253671	20.05	No	400	
FC2395	253671	20.03	No	400	
FC3143	253741	20.02	No	400	
FC3144	253741	20.07	No	400	3TCPREP/VOA
FC3145	253741	20.02	No	400	
FC3146	253741	20.02	No	400	
FC3147	253741	20.07	No	400	
FC3148	253741	20.02	No	400	
FC3149	253741	20.03	No	400	
FC3150	253741	20.13	No	400	

Set-up K. Walden 4/6/91

Filtering K. Walden 4/8/91

Supervisor K. Walden 4/8/91

Start Time 4:00 PM 4/6/91

Lab Temp 21°C

Tumbler RPM 30

Stop Time 10:00 AM 4/7/91

Comments:

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 053 Page 1 of 4

Date 4/12/91 Instr. A

A-Type TCL8/UOA
Tune file APEI01
Seq. file JAA
Method file UOAA
ID file ZA0197
CB file CA0197
Analyst [illegible]
Reviewed by [illegible] Date [illegible]

Batch #'s QU60657

Standards Updated
Date 4/12/91 By [illegible]

Tape # B-00700 Inj. ul

Standard	Conc ppm	Lot No.	Lot Vol.
p-BFB	50	10732	1ul
INT STD OSUV	25	107919	10ul
CALI	50	107525	2,5,10,15,20
CALII	50	107927	
XUOA	50	10398	
EE & Methyl Iodide	50	10303	

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	p-BFB	A4817	1ul	—		14:19	OK 62 JJ	
	QC60657US	A4818	5	9			5 ul All STDS	
	QC60657US	A4819	5	10		QT	5 ul All STDS	
	QC60657U	A4820	5	11			BLANK	
	p-BFB	A4821	1ul	—		16:47	OK ~~20~~ JJ 61 enh JJ	
	QC60657US	A4822	5	6			20 ul All STDS	
	QC60657US	A4823	5	7		CBUPD	15 ul All STDS	
	QC60657US	A4824	5	8		CBCAL	10 ul All STDS	
	QC60657US	A4825	5	9		USMRG	2 ul All STDS	
	QC60657U	A4826	5	10			BLANK	
	QC60657U	A4827	5	11		20:42	OK BLANK . JJ	
	FC2876U	A4828	1.0	12	1:5		ng rr STD	
	FC2877U	A4829	5.0	13		22:08	OK JJ	
	FC2877US	A4830	5.0	14		22:52	OK 5ul All STDS JJ	
	FC2877UR	A4831	5.0	15		23:35	OK 5ul All STDS JJ	
	FC2509U	A4832	5	16		00:18	OK JJ	
	FC2509U	A4833	5	1		1:02	OK 10ul All STDS JJ	
	FC3148U	A4834	2.0	2	1:2.5		ng rr 1:5	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 054 Page 2 of 4

Date 4/12/91 Instr. A

A-Type PP/VOA
Tune file APEI01
Seq. file AAA
Method file VOAA
ID file IA0197
CB file CA0197
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QV60657

Standards Updated
Date 4/13/91 By [illegible]

Tape # B-00700 Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	FC3147V	A4835	5.0	3		229	OK	
	FC3146 V	A4836	5.0	4			ngrr STD 2nd sur	
	FC3146 V	A4837	5.0	5		3:55	OK 10ul All STDS	
	p-BFB	A4838	1ul	–		2:40	OK 63	
	QC60657 V5	A4839	5	9	QCAL	7:10	OK 5ul All STDS	
	QC60657 V2	A4840	5	10		3:53	OK BLANK	
R	FC2876 V2	A4841	5	11		4:48	OK V2	
R	FC3148 V2	A4842	1	12	1:5	5:32	OK V2	
R	FC3146 V2	A4843	5	13		6:15	OK V2	
	FC3150V2	A4844	5	14			ngrr 1:5	
	FC3149 V2	A4845	.1	15	1:50		ng rr 1st 2 surr out	
	FC3149 V3	A4846	.1	16	1:50	8:38	OK 10ul All STDS	
	QC60657 V5	A4847	5	1		9:21 QCAL	OK 5ul All STDS	
	QC60657 V3	A4848	5	2		10:04	OK BLANK	
	p-BFB	A4849	1ul			11:23	OK 62-47	
	FC2508V3	A4850	5	3		11:59	OK	
	FC2508V5	A4851	5	4		12:42	OK 10ul All STDS	
R	FC3150V3	A4852	1	5	1:5	13:26	OK V2	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 052 Page 2 of 2

Date 4/12/91 Instr. A

A-Type TCLP/UOA
Tune file APEI01
Seq. file JJJ
Method file UOA A
ID file IA0196
CB file CA0196
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QU60654

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

Standards Updated
Date 4/12/91 By [illegible]

Tape # B-00699 Inj. ___ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	QS61452V	A4803	5	9		20:15	OK TCLP BATCH BLANK	
	p-BFB	A4804	1ul	–		5:10	OK 74 ean – 59 ean	
	QC60654US	A4805	5	9	QCAL	5:34	OK 5ul Cal I, II	
	QC60654U2	A4806	5	10		6:17	OK BLANK	
R	FC2525U2	A4807	1	15	1:5	7:06	OK for MEK	
	FC2388U2	A4808	.25	16	1:20	7:49	OK	
	FC2389U2	A4809		1		8:31	OK	
	FC2390U2	A4810		2		9:14	OK	
	FC2391U2	A4811		3		9:57	OK	
	FC2392U2	A4812		4		10:40	OK	
	FC2393U2	A4813		5		11:22	OK	
	FC2394U2	A4814		6		12:05	OK	
	FC2395U2	A4815		7		12:48	OK	
R	QS61452U2	A4816	5	8		13:30	OK TCLP BATCH BLANK	

end of batch

R : redo , P : Aroclor search , + : Plus search

ETC

ENVIRONMENTAL TESTING
AND CERTIFICATION CORP.

Technical Report

for

ALLIED SIGNAL, INC.

P.O. BOX 1053R

MORRISTOWN, NJ 07962

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3145	ALLIED SIGNAL, INC.	ASIMNJTCLP	XE1	910312	1105	

Richard P. Albert

Vice President, General Manager

This Technical Report is an INSITE℠ service generated by LODESTAR℠ Data Management Software.

284 Raritan Center Parkway ■ CN 7808 ■ Edison, New Jersey 08818-7808 ■ 908-225-5600

INTRODUCTION

Environmental Testing and Certification Corp.
284 Raritan Center Parkway, CN 7808
Edison, New Jersey 08818-7808
(201) 225-6700

Analytical Methodology for TCLP (TC)

Analytical procedures and quality assurance protocols for this analysis conform to the requirements described in the Toxicity Characteristic Final Rule (June 29, 1990 Federal Register). Sample extraction procedures for leachate preparation are performed in accordance with Method 1311 as described in the Final Rule; subsequent preparations and analyses are performed following the appropriate procedures in the SW-846 Third Edition of "Test Methods for Evaluating Solid Wastes".

This technical report contains tabulated analytical results and associated matrix spike recoveries for the sample. Note that the results reported have not been corrected for any analytical bias. Corrections may be performed using the formula that follows.

$$X_c = 100\ (X_u\ /\ \%R)$$

Where:

X_c = Bias Corrected Result
X_u = Result of Unspiked Sample
%R = Matrix Spike Recovery

COMMENTS

ETC

COMMENTS FOR SPECIFIC ANALYSES

VOLATILE FRACTION:

FC3145

Intact sample or extract required dilution resulting in elevated MDL's.

ETC CORP.

TABULATED ANALYTICAL RESULTS

ETC

APR 18, 1991
QV60657F

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

TC - Volatile Compounds - GC/MS Analysis (QRC1)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FG3145	ALLIED SIGNAL, INC.	ASIMNJTCLP	XE1	910312	1105	0

Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
	Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
Benzene	1520	50	-	-	ND	50.0	101	410	500	99

ETC

APR 18, 1991

TABLE 2: METHOD PERFORMANCE DATA
Surrogate Recovery Water - GC/MS Data (QR20)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3145	ALLIED SIGNAL, INC.	ASIMNJTCLP	XE1	910312	1105	0

Compound	Amount added ug	% Recovery	IFB EPA Control Limits	
			Lower	Upper
VOLATILE FRACTION (GC/MS)				
Toluene-D8	.250	100	88	110
p-Bromofluorobenzene	.250	102	86	115
1,2-Dichloroethane-D4	.250	111	76	114
ACID FRACTION (GC/MS)				
Phenol-D5	-	-	10	94
2-Fluorophenol	-	-	21	100
2,4,6-Tribromophenol	-	-	10	123
BASE/NEUTRAL FRACTION (GC/MS)				
Nitrobenzene-D5	-	-	35	114
2-Fluorobiphenyl	-	-	43	116
Terphenyl-D14	-	-	33	141
PESTICIDE/PCB FRACTION (GC)				
Dibutylchlorendate	-	-	24**	154**
2,4,5,6-Tetrachloro-m-xylene	-	-	46	185
METHOD 601				
Bromochloromethane	-	-	82	124
METHOD 602				
a,a,a-Trifluorotoluene	-	-	80	120

** Advisory Limits Only

ETC CORP.

GC/MS QUALITY CONTROL DATA

Instrument Performance Check

Tuning and Mass Calibration

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4817 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1419

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.7
75	30.0 - 60.0% of mass 95	56.2
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.4
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	87.5
175	5.0 - 9.0% of mass 174	7.3 (8.3)1
176	Greater than 95.0%, but less than 101.0% of mass 174	85.6 (97.8)1
177	5.0 - 9.0% of mass 176	7.1 (8.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4819	04/12/91	1523
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4821 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1647

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.5
75	30.0 - 60.0% of mass 95	52.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	.9 (1.0)1
174	Greater than 50.0% of mass 95	87.8
175	5.0 - 9.0% of mass 174	7.0 (8.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	88.0 (100.3)1
177	5.0 - 9.0% of mass 176	6.6 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4822	04/12/91	1710
02		QC60657VS	>A4823	04/12/91	1753
03		QC60657VS	>A4824	04/12/91	1835
04		QC60657VS	>A4825	04/12/91	1917
05		QC60657V	>A4827	04/12/91	2042
06		~~FC2877V~~	~~>A4829~~	~~04/12/91~~	~~2208~~
07		FC2877VS	>A4830	04/12/91	2252
08		FC2877VR	>A4831	04/12/91	2335
09		FC2509V	>A4832	04/13/91	0018
10		FC2509VS	>A4833	04/13/91	0102
11		FC3142V	>A4835	04/13/91	0229
12		~~FC3142VS~~	~~>A4836~~	~~04/13/91~~	~~0355~~
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

GT 4/18/91

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4866 BFB Injection Date: 04/15/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 0217

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.1
75	30.0 - 60.0% of mass 95	50.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.3
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	83.6
175	5.0 - 9.0% of mass 174	7.1 (8.4)1
176	Greater than 95.0%, but less than 101.0% of mass 174	79.4 (95.0)1
177	5.0 - 9.0% of mass 176	5.5 (6.9)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4867	04/15/91	0250
02		QC60657V4	>A4868	04/15/91	0334
03		FC3143V4	>A4869	04/15/91	0440
04		FC3143VS	>A4870	04/15/91	0523
05		FC3144V4	>A4871	04/15/91	0606
06		FC3145V4	>A4872	04/15/91	0650
07		~~FC2626V4~~	~~>A4873~~	~~04/15/91~~	~~0733~~
08		FC2630V4	>A4874	~~04/15/91~~	0816
09		FC2631V4	~~>A4875~~	04/15/91	0900
10		~~FC2632V4~~	~~>A4876~~	~~04/15/91~~	~~0943~~
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

BT 4/18/91

FORM V VOA 1/87 Rev.

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: A4804 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 0510

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.0
75	30.0 - 60.0% of mass 95	51.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	.8 (.9)1
174	Greater than 50.0% of mass 95	88.2
175	5.0 - 9.0% of mass 174	7.2 (8.2)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.4 (95.8)1
177	5.0 - 9.0% of mass 176	5.9 (7.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QS61452V2	>A4816	04/12/91	1330
02		QC6065YVS	3A4805	04/12/91	0534
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V VOA

CHAIN OF CUSTODY DOCUMENTATION

Chain of Custody Forms
Laboratory Chronicles
Subcontract

ETC

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/90

No. 90687

Environmental Testing and Certification Corp. • 284 Raritan Center Parkway • Edison, NJ 08818 • 908-225-6700

COMPANY: ALLIED SIGNAL
FACILITY/SITE: DETROIT, MI
PROJECT CONTACT: DARYL QUINN
TELEPHONE NO.: 313 842 4400

ANALYSIS REQUIRED: TCLP (Benzene) all

LEGEND FOR PRESERVATIVE
0 - NONE
1 - HCL
2 - HNO_3
3 - H_2SO_4
4 - Na_2SO_3 + H_2SO_4

ITEM NO.	ETC JOB #	SOURCE CODE	SAMPLE POINT	START DATE YY/MM/DD	START TIME 24 HR Clock	NUMBER OF CONTAINERS	FILT. (Y/N)	PRESERV.	SAMPLER OBSERVATIONS	LAB OBSERVATIONS
1		X	0000000B1	910312	10:30	1				
2	FC3144	X	0000000A1	910312	10:50	1				
3		X	0000000D1	910312	12:00	1				
4	FC3143	X	0000000C1	910312	13:35	1			107 lbs	
5	FC3145	X	0000000E1	910312	11:05	1			5 gal	
6	FC3146	X	0000000E2	910312	15:00	1			5 gal	
7	FC3147	X	0000000A2	910312	16:20	1			5 gal	
8		DAB 4/15/91								
9										

Source Codes:
Well .... (W) Outfall ..... (O)
Soil .... (S) River/Stream .... (R)
Bottom Sediment ..... (B)
Generation Point ..... (G)
Surface Impoundment ..... (I)
Treatment Facility ..... (T)
Leachate Collection Sys ..... (C)
Lake/Ocean ..... (L)
Other ..... (X)
Specify: WASTE TAR SLUDGE

CHAIN OF CUSTODY CHRONICLE

1. Shuttle Opened By: (print) W. E. YANOVITCH Date: 3/12/91 Time: 9:05 AM
Signature: W E Yanovitch Seal #: 194485 Intact: Yes

2. I have received these materials in good condition from the above person
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

3. I have received these materials in good condition from the above person
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

4. Shuttle Sealed By: (print) Rudy Dawson Date 3/14/91 Time: 1:00
Signature Rudolph J. Dawson Seal #: 0194486 Intact: Yes

LAB USE ONLY Opened By: Richard Dix Date: 3/15/91 Time: 2:05 AM
SHUTTLE # 108 TEMP: C SEAL # 194486 COND. intact

REMARKS

3/8/91 Seal # 0194485 KCK

3/14/91 Seal # 0194486 box to ETC Z.B.

SAMPLER'S SIGNATURE: Z. B.

ETC

TCLP PREP LOG (Method 1311) - Volatiles (ZHE)

QC Batch QS61452

Cooper Ind. - Due 4/18

Sample ID	Log Link	Sample Wt (g)	Initial Filtrate	Total Vol (ml)	Fraction
QS61452	BLANK	—	—	400	2TCLP/VOA
FC2384	253671	20.03	No	400	2TCLP/VOA
FC2385	253671	20.02	No	400	
FC2386	253671	20.02	No	400	
FC2387	253671	20.02	No	400	
FC2388	253671	20.03	No	400	
FC2389	253671	20.11	No	400	
FC2390	253671	20.03	No	400	
FC2391	253671	20.02	No	400	
FC2392	253671	20.02	No	400	
FC2393	253671	20.01	No	400	
FC2394	253671	20.05	No	400	
FC2395	253671	20.03	No	400	
FC3143	253741	20.02	No	400	
FC3144	253741	20.07	No	400	3TCPREP/VOA
FC3145	253741	20.02	No	400	
FC3146	253741	20.02	No	400	
FC3147	253741	20.07	No	400	
FC3148	253741	20.02	No	400	
FC3149	253741	20.03	No	400	
FC3150	253741	20.13	No	400	

Set-up K. Walsh 4/6/91

Filtering K. Walsh 4/8/91

Supervisor K. Walsh 4/8/91

Start Time 4:00 PM 4/6/91

Lab Temp 21°C

Tumbler RPM 30

Stop Time 10:00 AM 4/7/91

Comments:

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 053 Page 1 of 4

Date 4/12/91 Instr. A

A-Type TCL8/VOA
Tune file APEI01
Seq. file JAA
Method file VOAA
ID file IA0197
CB file CA0197
Analyst [illegible]
Reviewed by [illegible] Date [illegible]

Batch #'s QU60657

Standard	Conc ppm	Lot No.	Lot Vol.
p-BFB	50	10733	1ul
INT STD & SUR	25	107919	10ul
CAL I	50	107575	2,5,10,15,20
CAL II	50	107977	↓
XVOA	50	10398	↓
EE & Methyl Iodide	50	10303	↓

Standards Updated
Date 4/12/91 By [illegible]

Tape # B-00700 Inj. ___ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	p-BFB	A4817	1ul	—		14:19	OK 62 JJ	
	QC60657VS	A4818	5	9			5 ul All STDS	
	QC60657VS	A4819	5	10		QT	5 ul All STDS	
	QC60657V	A4820	5	11			BLANK	
	p-BFB	A4821	1ul	—		16:47	OK ~~20~~ JJ 61 enh JJ	
	QC60657VS	A4822	5	6			20 ul All STDS	
	QC60657VS	A4823	5	7		CBUID	15 ul All STDS	
	QC60657VS	A4824	5	8		CBCAL	10 ul All STDS	
	QC60657VS	A4825	5	9		VMRG	2 ul All STDS	
	QC60657V	A4826	5	10			BLANK	
	QC60657V	A4827	5	11		20:42	OK BLANK . JJ	
	FC2876V	A4828	1.0	12	1:5		ng rr STD	
	FC2877V	A4829	5.0	13		22:08	OK JJ	
	FC2877VS	A4830	5.0	14		22:52	OK 5ul All STDS JJ	
	FC2877VR	A4831	5.0	15		23:35	OK 5ul All STDS JJ	
	FC2509V	A4832	5	16		00:18	OK JJ	
	FC2509V	A4833	5	1		1:02	OK 10ul All STDS JJ	
	FC3148V	A4834	2.0	2	1:2.5		ng rr 1:5	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 054 Page 2 of 4

Date 4/12/91 Instr. A

A-Type PP/VOA
Tune file APEI01
Seq. file AAA
Method file VOAA
ID file IA0197
CB file CA0197
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QV60657

Standards Updated
Date 4/13/91 By [illegible]

Tape # B-00700 Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	FC3147V	A4835	5.0	3		229	OK	
	FC3146 V	A4836	5.0	4			ngrr str 2nd sur	
	FC3146 V	A4837	5.0	5		3:55	OK 10ul All STDS	
	p-BFB	A4838	1ul	-		2:40	OK 63	
	QC60657 V5	A4839	5	9	QCAL	3:10	OK 5ul All STDS	
	QC60657 V2	A4840	5	10		3:53	OK BLANK	
R	FC2876 V2	A4841	5	11		4:48	OK V2	
R	FC3148 V2	A4842	1	12	1:5	5:32	OK V2	
R	FC3146 V2	A4843	5	13		6:15	OK V2	
	FC3150V2	A4844	5	14			ngrr 1:5	
	FC3149 V2	A4845	.1	15	1:50		ng rr 1st 2 surr out	
	FC3149 V5	A4846	.1	16	1:50	8:38	OK 10ul All STDS	
	QC60657 V5	A4847	5	1		9:21 QCAL	OK 5ul All STDS	
	QC60657 V3	A4848	5	2		10:04	OK BLANK	
	p-BFB	A4849	1ul			11:23	OK 62-47	
	FC2508V3	A4850	5	3		11:59	OK	
	FC2508V5	A4851	5	4		12:42	OK 10ul All STDS	
R	FC3150V3	A4852	1	5	1:5	13:26	OK V2	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department

Date 4/14/91 Instr. A

A-Type PP/VOA
Tune file APEI01
Seq. file AAA
Method file VOAA
ID file IA097
CB file CB097
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QV60657

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

Standards Updated
Date 4/14/91 By [illegible]

Tape # B-00700 Inj. ___ ul

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
R	FC3149U3	A4853	.1	6	1:50	14:09	OK V2	
	FC3143U3	A4854	5	7			ngrr 1:5	
	FC3143U5	A4855	5	8			↓ 10 ul All STDS	
	FC3144U3	A4856	1	9	1:5		ngrr 1:5 2nd 2 sur ↓	
	FC3145U3	A4857	.5	10	1:10		ngrr 1:10 2nd 2 surr ↓	
	FC2475U3	A4858	5	11		17:46	OK	
	FC2475U5	A4859	5	12		18:30	OK 10 ul All STDS	
	QS61458U3	A4860	5	13		19:13	OK TCLP BATCH BLANK	
	FC1972U3	A4861	5	14		19:56	OK	
	FC1976U3	A4862	5	15		20:40	OK	
	FC2625U3	A4863	5	16		21:23	OK	
	QC60657U3	A4864	5	1			OK	
	QC60657U3	A4865	5	2			OK	
	p-BFB	A4866	1ml	—		2:17	OK 61-48	
	QC60651U5	A4867	5	1	QCAL	2:50	OK 5 ul All STDS	
	QC60651U4	A4868	5	2		3:34	OK BLANK	
R	FC3143U4	A4869	1	3	1:5	4:40	OK V2	
R	FC3143U5	A4870	1	4	1:5	5:23	OK V2 10 ul All STD	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 056 Page 4 of 4

Date 4/15/91 Instr. A

A-Type PP/VOA
Tune file APEI01
Seq. file AAA
Method file VOAA
ID file FA0197
CB file CA0197
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QV60657

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

__ Standards Updated
Date 4/15/91 By [illegible]

Tape # B-00500 Inj. __ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
R	FC3144V4	A4871	1	5	1:5	6:06	OK Va	[illegible]
R	FC3145V4	A4872	.5	6	1:10	6:50	OK Va	[illegible]
	FC 2626 V4	A4873	5	7		7:33	OK	[illegible]
	FC 2630 V4	A4874	5	8		8:16	OK	[illegible]
	FC2631 V4	A4875	5	9		9:00	OK	[illegible]
	FC2632 V4	A4876	5	10		9:43	OK	[illegible]

end of batch

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department UJ Page 1 of 2

Date 4/11/91 Instr. A

A-Type TCLP/VOA
Tune file APEI01
Seq. file AAA
Method file VOAA
ID file IA0196
CB file CA0196
Analyst [illegible]
Reviewed by/Date [illegible] 4/13
Batch #'s QU60654

Standard	Conc ppm	Lot No.	Lot Vol.
p-BFB	50	10733	1ml
INT STDS SUR	25	102919	10ml
CAL I	50	107975	2,5,10,15,20
CAL II	50	107977	

Standards Updated
Date 4/11/91 By [illegible]

Tape # B-00699 Inj. ___ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	P
	p-BFB	A4785	1ml	—		7:38	OK 65-49	
	QC 60654 VS	A4786	5	9	QCAL	8:06	OK 5ml Cal I, II	
	QC 60654 VS	A4787	5	10		8:50	OK 5ml Cal I, II	
	QC 60654 V	A4788	5	11		9:33	OK BLANK	
	FC1967 V	A4789	5	11		10:17	OK	
	FC1969 V	A4790	5	12		11:00	OK	
	FC1971 V	A4791	5	13		11:44	OK	
	FC1973 V	A4792	5	14		12:26	OK	
	FC1974 V	A4793	5	15		13:09	OK	
	FC2627 V	A4794	5	16		13:51	OK	
	FC2625 V (SJ 4/12/91)	A4795	5	1		14:34	OK rr/5 MEK	
	FC2384 V	A4796	.25	2	1:20	15:17	OK	
	FC2385 V	A4797	.25	3	1:20	15:59	OK	
	FC2386 V	A4798	.25	4	1:20	16:42	OK	
	FC2387 V	A4799	.25	5	1:20	17:24	OK	
	FC2387 VS	A4800	.25	6	1:20	18:07	OK 5ml Cal I, II	
	FC2387 VR	A4801	.25	7	1:20	18:50	OK 5ml Cal I, II	
	QS61448	A4802	5	8		19:32	OK TCLP BATCH BLANK	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 052 Page 2 of 2

Date 4/11/91 Instr. A

A-Type TCLP/UOA
Tune file APEI01
Seq. file JJJ
Method file UOA A
ID file IA0196
CB file CA0196
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QU60654

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

Standards Updated
Date 4/12/91 By [illegible]

Tape # B-00699 Inj. ___ ul

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	QS61452V	A4803	5	9		20:15	OK TCLP BATCH BLANK	
	p-BFB	A4804	1ul	—		5:10	OK 74 eah — 59 eah	
	QC60654US	A4805	5	9	QCAL	5:34	OK 5ul Cal I, II	
	QC60654U2	A4806	5	10		6:17	OK BLANK	
R	FC2525U2	A4807	1	15	1:5	7:06	OK for MEK	
	FC2388U2	A4808	.25	16	1:20	7:49	OK	
	FC2389U2	A4809		1		8:31	OK	
	FC2390U2	A4810		2		9:14	OK	
	FC2391U2	A4811		3		9:57	OK	
	FC2392U2	A4812		4		10:40	OK	
	FC2393U2	A4813		5		11:22	OK	
	FC2394U2	A4814		6		12:05	OK	
	FC2395U2	A4815		7		12:48	OK	
R	QS61452U2	A4816	5	8		13:30	OK TCLP BATCH BLANK	

End of batch

R : redo , P : Aroclor search , + : Plus search

ETC

ENVIRONMENTAL TESTING
AND CERTIFICATION CORP.

Technical Report

for

ALLIED SIGNAL, INC.

P.O. BOX 1053R

MORRISTOWN, NJ 07962

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3144	ALLIED SIGNAL, INC.	ASIMNJTCLP	XA1	910312	1050	

Richard P. Albert

Vice President, General Manager

This Technical Report is an INSITE℠ service generated by LODESTAR℠ Data Management Software.

284 Raritan Center Parkway ■ CN 7808 ■ Edison, New Jersey 08818-7808 ■ 908-225-5600

INTRODUCTION

Environmental Testing and Certification Corp.
284 Raritan Center Parkway, CN 7808
Edison, New Jersey 08818-7808
(201) 225-6700

Analytical Methodology for TCLP (TC)

Analytical procedures and quality assurance protocols for this analysis conform to the requirements described in the Toxicity Characteristic Final Rule (June 29, 1990 Federal Register). Sample extraction procedures for leachate preparation are performed in accordance with Method 1311 as described in the Final Rule; subsequent preparations and analyses are performed following the appropriate procedures in the SW-846 Third Edition of "Test Methods for Evaluating Solid Wastes".

This technical report contains tabulated analytical results and associated matrix spike recoveries for the sample. Note that the results reported have not been corrected for any analytical bias. Corrections may be performed using the formula that follows.

$$X_c = 100\ (X_u\ /\ \%R)$$

Where:

X_c = Bias Corrected Result
X_u = Result of Unspiked Sample
%R = Matrix Spike Recovery

COMMENTS

ETC

COMMENTS FOR SPECIFIC ANALYSES

VOLATILE FRACTION:

FC3144

Intact sample or extract required dilution resulting in elevated MDL's.

ETC CORP.

TABULATED ANALYTICAL RESULTS

ETC

APR 18, 1991
QV60657F

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

TC - Volatile Compounds - GC/MS Analysis (QRC1)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3144	ALLIED SIGNAL, INC.	ASIMNJTCLP	XA1	910312	1050	0

Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
	Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
Benzene	759	25	-	-	ND	50.0	101	410	500	99

ETC

APR 18, 1991

TABLE 2: METHOD PERFORMANCE DATA
Surrogate Recovery Water - GC/MS Data (QR20)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3144	ALLIED SIGNAL, INC.	ASIMNJTCLP	XA1	910312	1050	0

Compound	Amount added ug	% Recovery	IFB EPA Control Limits Lower	IFB EPA Control Limits Upper
VOLATILE FRACTION (GC/MS)				
Toluene-D8	.250	91	88	110
p-Bromofluorobenzene	.250	90	86	115
1,2-Dichloroethane-D4	.250	108	76	114
ACID FRACTION (GC/MS)				
Phenol-D5	-	-	10	94
2-Fluorophenol	-	-	21	100
2,4,6-Tribromophenol	-	-	10	123
BASE/NEUTRAL FRACTION (GC/MS)				
Nitrobenzene-D5	-	-	35	114
2-Fluorobiphenyl	-	-	43	116
Terphenyl-D14	-	-	33	141
PESTICIDE/PCB FRACTION (GC)				
Dibutylchlorendate	-	-	24**	154**
2,4,5,6-Tetrachloro-m-xylene	-	-	46	185
METHOD 601				
Bromochloromethane	-	-	82	124
METHOD 602				
a,a,a-Trifluorotoluene	-	-	80	120

** Advisory Limits Only

ETC

ETC CORP.

GC/MS QUALITY CONTROL DATA

Instrument Performance Check

Tuning and Mass Calibration

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4817 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1419

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.7
75	30.0 - 60.0% of mass 95	56.2
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.4
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	87.5
175	5.0 - 9.0% of mass 174	7.3 (8.3)1
176	Greater than 95.0%, but less than 101.0% of mass 174	85.6 (97.8)1
177	5.0 - 9.0% of mass 176	7.1 (8.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4819	04/12/91	1523
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4821 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1647

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.5
75	30.0 - 60.0% of mass 95	52.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	.9 (1.0)1
174	Greater than 50.0% of mass 95	87.8
175	5.0 - 9.0% of mass 174	7.0 (8.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	88.0 (100.3)1
177	5.0 - 9.0% of mass 176	6.6 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4822	04/12/91	1710
02		QC60657VS	>A4823	04/12/91	1753
03		QC60657VS	>A4824	04/12/91	1835
04		QC60657VS	>A4825	04/12/91	1917
05		QC60657V	>A4827	04/12/91	2042
06		~~FC2877V~~	~~>A4829~~	~~04/12/91~~	~~2208~~
07		FC2877VS	>A4830	04/12/91	2252
08		FC2877VR	>A4831	04/12/91	2335
09		FC2509V	>A4832	04/13/91	0018
10		FC2509VS	>A4833	04/13/91	0102
11		FC3143V	>A4835	04/13/91	0229
12		~~FC3146VS~~	~~>A4837~~	~~04/13/91~~	~~0355~~
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

JT 4/18/91

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4866 BFB Injection Date: 04/15/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 0217

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.1
75	30.0 - 60.0% of mass 95	50.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.3
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	83.6
175	5.0 - 9.0% of mass 174	7.1 (8.4)1
176	Greater than 95.0%, but less than 101.0% of mass 174	79.4 (95.0)1
177	5.0 - 9.0% of mass 176	5.5 (6.9)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4867	04/15/91	0250
02		QC60657V4	>A4868	04/15/91	0334
03		FC3143V4	>A4869	04/15/91	0440
04		FC3143VS	>A4870	04/15/91	0523
05		FC3144V4	>A4871	04/15/91	0606
06		FC3145V4	>A4872	04/15/91	0650
07		~~FC2626V4~~	~~>A4873~~	~~04/15/91~~	~~0733~~
08		FC2630V4	>A4874	~~04/15/91~~	0816
09		FC2631V4	~~>A4875~~	04/15/91	0900
10		~~FC2632V4~~	~~>A4876~~	~~04/15/91~~	~~0943~~
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

BT 4/18/91

FORM V VOA 1/87 Rev.

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4804 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 0510

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.0
75	30.0 - 60.0% of mass 95	51.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	.8 (.9)1
174	Greater than 50.0% of mass 95	88.2
175	5.0 - 9.0% of mass 174	7.2 (8.2)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.4 (95.8)1
177	5.0 - 9.0% of mass 176	5.9 (7.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QS61452V2	>A4816	04/12/91	1330
02		QC60654VS	344805	04/12/91	0534
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

CHAIN OF CUSTODY DOCUMENTATION

Chain of Custody Forms
Laboratory Chronicles
Subcontract

ETC

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/90

No. 90687

Environmental Testing and Certification Corp. • 284 Raritan Center Parkway • Edison, NJ 08818 • 908-225-6700

COMPANY: ALLIED SIGNAL
FACILITY/SITE: DETROIT, MI
PROJECT CONTACT: DARYL QUINN
TELEPHONE NO: 313 842 4400

ANALYSIS REQUIRED: TCLP (Benzene) all

LEGEND FOR PRESERVATIVE
0 - NONE
1 - HCL
2 - HNO_3
3 - H_2SO_4
4 - Na_2SO_3 + H_2SO_4

ITEM NO.	ETC JOB #	SOURCE CODE	SAMPLE POINT	START DATE YY/MM/DD	START TIME 24 HR Clock	NUMBER OF CONTAINERS	FILT. (Y/N)	PRESERV.	SAMPLER OBSERVATIONS	LAB OBSERVATIONS
1		X	0000000B1	910312	10:30	1				
2	FC3144	X	0000000A1	910312	10:50	1				
3		X	0000000D1	910312	12:00	1				
4	FC3143	X	0000000C1	910312	14:35	1				
5	FC3145	X	0000000E1	910312	11:05	1				
6	FC3146	X	0000000E2	910312	15:00	1				
7	FC3147	X	0000000A2	910312	16:20	1				
8		DAB 4/5/91								
9										

Source Codes:
Well .... (W) Outfall ..... (O)
Soil .... (S) River/Stream .... (R)
Bottom Sediment ..... (B)
Generation Point ..... (G)
Surface Impoundment ..... (I)
Treatment Facility ..... (T)
Leachate Collection Sys ..... (C)
Lake/Ocean ..... (L)
Other ..... (X)
Specify: WASTE TAR SLUDGE

CHAIN OF CUSTODY CHRONICLE

1. Shuttle Opened By: (print) W. E. YANOVITCH Date: 3/12/91 Time: 9:05 AM
Signature: W E Yanovitch Seal #: 194485 Intact: Yes

2. I have received these materials in good condition from the above person
Name: Signature
Date: Time: Remarks:

3. I have received these materials in good condition from the above person
Name: Signature
Date: Time: Remarks:

4. Shuttle Sealed By: (print) Rudy Dawson Date 3/14/91 Time: 1:00
Signature Rudolph J. Dawson Seal # 0194486 Intact Yes

LAB USE ONLY Opened By: Richard Dix Date: 03/15/91 Time: 2:05 pm
SHUTTLE # 100 TEMP: °C SEAL # 194486 COND. intact

REMARKS
3/8/91 Seal # 0194485 KCK
3/14/91 Seal #, box to ETC 0194486 F.B.

SAMPLER'S SIGNATURE: F. B.

ETC

TCLP PREP LOG (Method 1311) - Volatiles (ZHE)

QC Batch QS61452

Cooper Ind. - Due 4/18

Sample ID	Log Link	Sample Wt (g)	Initial Filtrate	Total Vol (ml)	Fraction
QS61452	BLANK	—	—	400	2TCLP/VOA
FC2384	253671	20.03	No	400	2TCLP/VOA
FC2385	253671	20.02	No	400	
FC2386	253671	20.02	No	400	
FC2387	253671	20.02	No	400	
FC2388	253671	20.03	No	400	
FC2389	253671	20.11	No	400	
FC2390	253671	20.03	No	400	
FC2391	253671	20.02	No	400	
FC2392	253671	20.02	No	400	
FC2393	253671	20.01	No	400	
FC2394	253671	20.05	No	400	
FC2395	253671	20.03	No	400	
FC3143	253741	20.02	No	400	
FC3144	253741	20.07	No	400	3TCDRE/VOA
FC3145	253741	20.02	No	400	
FC3146	253741	20.02	No	400	
FC3147	253741	20.07	No	400	
FC3148	253741	20.02	No	400	
FC3149	253741	20.03	No	400	
FC3150	253741	20.13	No	400	

Set-up K. Walsh 4/6/91

Filtering K. Walsh 4/8/91

Supervisor K. Walsh 4/8/91

Start Time 4:00 PM 4/6/91

Lab Temp 21°C

Tumbler RPM 30

Stop Time 10:00 AM 4/7/91

Comments:

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 053 Page 1 of 4

Date 4/12/91 Instr. A

A-Type TCLP/VOA
Tune file APEI01
Seq. file JAA
Method file VOAA
ID file IA0197
CB file CA0197
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QU60657

Standard	Conc ppm	Lot No.	Lot Vol.
p-BFB	50	107722	1ul
INT STD & SUR	25	107919	10ul
CAL I	50	107575	2,5,10,15,20
CAL II	50	107977	↓
VOA	50	10398	↓
EE & Methyl Iodide	50	10307	↓

__ Standards Updated
Date 4/12/91 By [illegible]

Tape # B-00700 Inj. __ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	p-BFB	A4817	1ul	—		14:19	OK 62 JJ	
	QC60657VS	A4818	5	9			5 ul All STDS	
	QC60657VS	A4819	5	10		QT	5 ul All STDS	
	QC60657V	A4820	5	11			BLANK	
	p-BFB	A4821	1ul	—		16:47	OK ~~20~~ JJ 61 enh JJ	
	QC60657VS	A4822	5	6			20 ul All STDS	
	QC60657VS	A4823	5	7		CBVPD	15 ul All STDS	
	QC60657VS	A4824	5	8		CBCAL	10 ul All STDS	
	QC60657VS	A4825	5	9		VSNRG	2 ul All STDS	
	QC60657V	A4826	5	10			BLANK	
	QC60657V	A4827	5	11		20:42	OK BLANK JJ	
	FC2876V	A4828	1.0	12	1:5		ng rr STD	
	FC2877V	A4829	5.0	13		22:08	OK JJ	
	FC2877VS	A4830	5.0	14		22:52	OK 5ul All STDS JJ	
	FC2877VR	A4831	5.0	15		23:35	OK 5ul All STDS JJ	
	FC2509V	A4832	5	16		00:18	OK JJ	
	FC2509V	A4833	5	1		1:02	OK 10ul All STDS JJ	
	FC3148V	A4834	2.0	2	1:2.5		ng rr 1:5	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department

Date 4/12/91 Instr. A

A-Type PP/VOA
Tune file APEI01
Seq. file AAA
Method file VOAA
ID file IA0197
CB file CA0197
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QV60657

__ Standards Updated
Date 4/13/91 By [illegible]

Tape # B-00700 Inj. __ ul

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	FC3147U	A4835	5.0	3		2:29	OK	
	FC3146 U	A4836	5.0	4			ngrr STR 2nd sur	
	FC3146 U	A4837	5.0	5		3:55	OK 10ul All STDS	
	p-BFB	A4838	1ul	–		2:40	OK 63	
	QC60657 U5	A4839	5	9	QCAL	3:10	OK 5ul All STDS	
	QC60657 U2	A4840	5	10		3:53	OK BLANK	
R	FC2876U2	A4841	5	11		4:48	OK U2	
R	FC3148U2	A4842	1	12	1:5	5:32	OK U2	
R	FC3146U2	A4843	5	13		6:15	OK U2	
	FC3150U2	A4844	5	14			ngrr 1:5	
	FC3149U2	A4845	.1	15	1:50		ngrr 1st 2 surr out	
	FC3149 U5	A4846	.1	16	1:50	8:38	OK 10ul All STDS	
	QC60657U5	A4847	5	1		9:21 QCAL	OK 5ul All STDS	
	QC60657U3	A4848	5	2		10:04	OK BLANK	
	p-BFB	A4849	1ul	—		11:23	OK 62-47	
	FC2508U3	A4850	5	3		11:59	OK	
	FC2508U5	A4851	5	4		12:42	OK 10ul All STDS	
R	FC3150U3	A4852	1	5	1:5	13:26	OK U2	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department

Date 4/14/91 Instr. A

A-Type PP/VOA
Tune file APEI01
Seq. file AAA
Method file VOAA
ID file IA097
CB file CA097
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QV60657

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

__ Standards Updated
Date 4/14/91 By [illegible]

Tape # B-00700 Inj. __ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	P
R	FC3149U3	A4853	.1	6	1:50	14:09	OK V2	
	FC3143U3	A4854	5	7			ngrr 1:5	
	FC3143U5	A4855	5	8			↓ 10 ul All STDS	
	FC3144U3	A4856	1	9	1:5		ngrr 1:5 2nd 2 sur ↓	
	FC3145U3	A4857	.5	10	1:10		ngrr 1:10 2nd 2 surr ↓	
	FC2475U3	A4858	5	11		17:46	OK	
	FC2475U5	A4859	5	12		18:30	OK 10 ul All STDS	
	QS61458U3	A4860	5	13		19:13	OK TCLP BATCH BLANK	
	FC1972U3	A4861	5	14		19:56	OK	
	FC1976U3	A4862	5	15		20:40	OK	
	FC2625U3	A4863	5	16		21:23	OK	
	QC60657U3	A4864	5	1			OK	
	QC60657U3	A4865	5	2			OK	
	p-BFB	A4866	1ml	—		2:17	OK 61-48	
	QC60651U5	A4867	5	1	QCAL	2:50	OK 5 ul All STDS	
	QC60651U4	A4868	5	2		3:34	OK BLANK	
R	FC3143U4	A4869	1	3	1:5	4:40	OK V2	
R	FC3143U5	A4870	1	4	1:5	5:23	OK V2 10 ul All STDS	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 056 Page 4 of 4

Date 4/15/91 Instr. A

A-Type PP/VOA
Tune file APEI01
Seq. file AAA
Method file VOAA
ID file FA0197
CB file CA0197
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QV60657

Standards Updated
Date 4/15/91 By [illegible]

Tape # B-00500 Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
R	FC3144V4	A4871	1	5	1:5	6:06	OK Va	
R	FC3145V4	A4872	.5	6	1:10	6:50	OK Va	
	FC 2626V4	A4873	5	7		7:33	OK	
	FC 2630V4	A4874	5	8		8:16	OK	
	FC2631V4	A4875	5	9		9:00	OK	
	FC2632V4	A4876	5	10		9:43	OK	

end of batch

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department UJ : Page 1 of 2

Date 4/11/91 Instr. A

A-Type TCLP/VOA
Tune file APEI01
Seq. file AAA
Method file VOAA
ID file IA0196
CB file CA0196
Analyst [signature]
Reviewed by/Date [signature] 4/8

Batch #'s QU60654

Standard	Conc ppm	Lot No.	Lot Vol.
p-BFB	50	10733	1ml
INT STD SW SVR	25	107919	10ml
CAL I	50	107975	2,5,10,15,20
CAL II	50	107977	

__ Standards Updated
Date 4/11/91 By [signature]

Tape # D-00699 Inj. __ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	p-BFB	A4785	1ml	—		7:38	OK 65-49	
	QC 60654 VS	A4786	5	9	QCAL	8:06	OK 5ml CalI,II	
	QC 60654 VS	A4787	5	10		8:50	OK 5ml CalI,II	
	QC 60654 V	A4788	5	11		9:33	OK BLANK	
	FC1967 V	A4789	5	11		10:17	OK	
	FC1969 V	A4790	5	12		11:00	OK	
	FC1971 V	A4791	5	13		11:44	OK	
	FC1973 V	A4792	5	14		12:26	OK	
	FC1974 V	A4793	5	15		13:09	OK	
	FC2627 V	A4794	5	16		13:51	OK	
	FC2625 V (SJ 4/12/91)	A4795	5	1		14:34	OK rr/5 MEK	
	FC2384 V	A4796	.25	2	1:20	15:17	OK	
	FC2385 V	A4797	.25	3	1:20	15:59	OK	
	FC2386 V	A4798	.25	4	1:20	16:42	OK	
	FC2387 V	A4799	.25	5	1:20	17:24	OK	
	FC2387 VS	A4800	.25	6	1:20	18:07	OK 5ml CalI,II	
	FC2387 VR	A4801	.25	7	1:20	18:50	OK 5ml CalI,II	
	QS61448	A4802	5	8		19:32	OK TCLP BATCH BLANK	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 052 Page 2 of 2

Date 4/11/91 Instr. A

A-Type TCLP/UOA
Tune file APEI01
Seq. file JJJ
Method file UOA4
ID file IA0196
CB file CA0196
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QU60654

Standards Updated
Date 4/12/91 By [illegible]

Tape # B-00699 Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	P
	QS61452V	A4803	5	9		20:15	OK TCLP BATCH BLANK	
	p-BFB	A4804	1ul	—		5:10	OK 74 ech — 59 ech	
	QC60654US	A4805	5	9	QCAL	5:34	OK 5ul Cal I, II	
	QC60654U2	A4806	5	10		6:17	OK BLANK	
R	FC2525U2	A4807	1	15	1:5	7:06	OK for MEK	
	FC2388U2	A4808	.25	16	1:20	7:49	OK	
	FC2389U2	A4809		1		8:31	OK	
	FC2390U2	A4810		2		9:14	OK	
	FC2391U2	A4811		3		9:57	OK	
	FC2392U2	A4812		4		10:40	OK	
	FC2393U2	A4813		5		11:22	OK	
	FC2394U2	A4814		6		12:05	OK	
	FC2395U2	A4815		7		12:48	OK	
R	QS61452U2	A4816	5	8		13:30	OK TCLP BATCH BLANK	

End of batch

R : redo , P : Aroclor search , + : Plus search

ETC

ENVIRONMENTAL TESTING
AND CERTIFICATION CORP.

Technical Report

for

ALLIED SIGNAL, INC.

P.O. BOX 1053R

MORRISTOWN, NJ 07962

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3143	ALLIED SIGNAL, INC.	ASIMNJTCLP	XC1	910312	1135	

Richard P. Albert

Vice President, General Manager

This Technical Report is an INSITE℠ service generated by LODESTAR℠ Data Management Software.

284 Raritan Center Parkway ■ CN 7808 ■ Edison, New Jersey 08818-7808 ■ 908-225-5600

INTRODUCTION

Environmental Testing and Certification Corp.
284 Raritan Center Parkway, CN 7808
Edison, New Jersey 08818-7808
(201) 225-6700

Analytical Methodology for TCLP (TC)

Analytical procedures and quality assurance protocols for this analysis conform to the requirements described in the Toxicity Characteristic Final Rule (June 29, 1990 Federal Register). Sample extraction procedures for leachate preparation are performed in accordance with Method 1311 as described in the Final Rule; subsequent preparations and analyses are performed following the appropriate procedures in the SW-846 Third Edition of "Test Methods for Evaluating Solid Wastes".

This technical report contains tabulated analytical results and associated matrix spike recoveries for the sample. Note that the results reported have not been corrected for any analytical bias. Corrections may be performed using the formula that follows.

$$X_c = 100\ (X_u\ /\ \%R)$$

Where:

X_c = Bias Corrected Result
X_u = Result of Unspiked Sample
%R = Matrix Spike Recovery

COMMENTS

ETC

COMMENTS FOR SPECIFIC ANALYSES

VOLATILE FRACTION:

FC3143

Intact sample or extract required dilution resulting in elevated MDL's.

ETC CORP.

TABULATED ANALYTICAL RESULTS

ETC

APR 18, 1991
QV60657F

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

TC - Volatile Compounds - GC/MS Analysis (QRC1)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3143	ALLIED SIGNAL, INC	ASIMNJTCLP	XCI	910312	1135	0

Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
	Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
Benzene	410	25	-	-	ND	50.0	101	410	500	99

ETC

APR 18, 1991

TABLE 2: METHOD PERFORMANCE DATA
Surrogate Recovery Water - GC/MS Data (QR20)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC3143	ALLIED SIGNAL, INC.	ASIMNJTCLP	XCI	910312	1135	0

Compound	Amount added ug	% Recovery	IFB EPA Control Limits Lower	IFB EPA Control Limits Upper
VOLATILE FRACTION (GC/MS)				
Toluene-D8	.250	98	88	110
p-Bromofluorobenzene	.250	99	86	115
1,2-Dichloroethane-D4	.250	101	76	114
ACID FRACTION (GC/MS)				
Phenol-D5	-	-	10	94
2-Fluorophenol	-	-	21	100
2,4,6-Tribromophenol	-	-	10	123
BASE/NEUTRAL FRACTION (GC/MS)				
Nitrobenzene-D5	-	-	35	114
2-Fluorobiphenyl	-	-	43	116
Terphenyl-D14	-	-	33	141
PESTICIDE/PCB FRACTION (GC)				
Dibutylchlorendate	-	-	24**	154**
2,4,5,6-Tetrachloro-m-xylene	-	-	46	185
METHOD 601				
Bromochloromethane	-	-	82	124
METHOD 602				
a,a,a-Trifluorotoluene	-	-	80	120

** Advisory Limits Only

ETC

ETC CORP.

GC/MS QUALITY CONTROL DATA

Instrument Performance Check

Tuning and Mass Calibration

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4817 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1419

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.7
75	30.0 - 60.0% of mass 95	56.2
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.4
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	87.5
175	5.0 - 9.0% of mass 174	7.3 (8.3)1
176	Greater than 95.0%, but less than 101.0% of mass 174	85.6 (97.8)1
177	5.0 - 9.0% of mass 176	7.1 (8.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4819	04/12/91	1523
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4821 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1647

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.5
75	30.0 - 60.0% of mass 95	52.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	.9 (1.0)1
174	Greater than 50.0% of mass 95	87.8
175	5.0 - 9.0% of mass 174	7.0 (8.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	88.0 (100.3)1
177	5.0 - 9.0% of mass 176	6.6 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4822	04/12/91	1710
02		QC60657VS	>A4823	04/12/91	1753
03		QC60657VS	>A4824	04/12/91	1835
04		QC60657VS	>A4825	04/12/91	1917
05		QC60657V	>A4827	04/12/91	2042
06		~~FC2877V~~	~~>A4829~~	~~04/12/91~~	~~2208~~
07		FC2877VS	>A4830	04/12/91	2252
08		FC2877VR	>A4831	04/12/91	2335
09		FC2509V	>A4832	04/13/91	0018
10		FC2509VS	>A4833	04/13/91	0102
11		FC3143V	>A4835	04/13/91	0229
12		~~FC3146VS~~	~~>A4837~~	~~04/13/91~~	~~0355~~
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

GT 4/12/91

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4866 BFB Injection Date: 04/15/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 0217

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Cap

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.1
75	30.0 - 60.0% of mass 95	50.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.3
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	83.6
175	5.0 - 9.0% of mass 174	7.1 (8.4)1
176	Greater than 95.0%, but less than 101.0% of mass 174	79.4 (95.0)1
177	5.0 - 9.0% of mass 176	5.5 (6.9)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60657VS	>A4867	04/15/91	0250
02		QC60657V4	>A4868	04/15/91	0334
03		FC3143V4	>A4869	04/15/91	0440
04		FC3143VS	>A4870	04/15/91	0523
05		FC3144V4	>A4871	04/15/91	0606
06		FC3145V4	>A4872	04/15/91	0650
07		~~FC2626V4~~	~~>A4873~~	~~04/15/91~~	~~0733~~
08		FC2630V4	>A4874	~~04/15/91~~	0816
09		FC2631V4	>A4875	04/15/91	0900
10		~~FC2632V4~~	~~>A4876~~	~~04/15/91~~	~~0943~~
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

BT 4/18/91

FORM V VOA 1/87 Rev.

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4804 BFB Injection Date: 04/12/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 0510

Matrix: (soil/water) Water Level: (low/med) LOW Column: (pack/cap) Pack.

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.0
75	30.0 - 60.0% of mass 95	51.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	.8 (.9)1
174	Greater than 50.0% of mass 95	88.2
175	5.0 - 9.0% of mass 174	7.2 (8.2)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.4 (95.8)1
177	5.0 - 9.0% of mass 176	5.9 (7.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QS61452V2	>A4816	04/12/91	1330
02		QC60654VS	>A4805	04/12/91	0534
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V VOA

CHAIN OF CUSTODY DOCUMENTATION

Chain of Custody Forms
Laboratory Chronicles
Subcontract

ETC

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/90

No. 90687

Environmental Testing and Certification Corp. • 284 Raritan Center Parkway • Edison, NJ 08818 • 908-225-6700

COMPANY: ALLIED SIGNAL
FACILITY/SITE: DETROIT, MI
PROJECT CONTACT: DARYL QUINN
TELEPHONE NO: 313 842 4400

FILT. (Y/N)
PRESERV.
ANALYSIS REQUIRED: TCLP (Benzene) all

LEGEND FOR PRESERVATIVE
0 - NONE
1 - HCL
2 - HNO_3
3 - H_2SO_4
4 - Na_2SO_3 + H_2SO_4

ITEM NO.	ETC JOB #	SOURCE CODE	SAMPLE POINT	START DATE YY/MM/DD	START TIME 24 HR CLOCK	NUMBER OF CONTAINERS	SAMPLER OBSERVATIONS	LAB OBSERVATIONS
1		X	0000000B1	910312	1030	1		
2	FC3144	X	00000000A1	910312	1050	1		
3		X	00000000D1	910312	12:00	1		
4	FC3143	X	00000000C1	910312	13:35	1	10 [illegible]	
5	FC3145	X	00000000E1	910312	11:05	1	5 [illegible]	
6	FC3146	X	00000000E2	910312	15:00	1	4 [illegible]	
7	FC3147	X	00000000A2	910312	16:20	1		
8		DAB 4/15/91						
9								

Source Codes:
Well .... (W) Outfall ..... (O)
Soil .... (S) River/Stream .... (R)
Bottom Sediment ..... (B)
Generation Point ..... (G)
Surface Impoundment ..... (I)
Treatment Facility ..... (T)
Leachate Collection Sys ..... (C)
Lake/Ocean ..... (L)
Other ..... (X)
Specify WASTE TAR SLUDGE

CHAIN OF CUSTODY CHRONICLE

1. Shuttle Opened By: (print) W. E. YANOVITCH Date: 3/12/91 Time: 9:05 AM
Signature: W E Yanovitch Seal #: 194485 Intact: Yes

2. I have received these materials in good condition from the above person
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

3. I have received these materials in good condition from the above person
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

4. Shuttle Sealed By: (print) Rudy Dawson Date: 3/14/91 Time: 1:00
Signature: Rudolph J. Dawson Seal #: 0194486 Intact: Yes

LAB USE ONLY Opened By: Richard Diaz Date: 03/15/91 Time: 2:05 PM
SHUTTLE # 100 TEMP: C SEAL # 194486 COND. intact

REMARKS

3/8/91 Seal # 0194485 KCK

3/14/91 Seal #, box to ETC 0194486 F.B.

SAMPLER'S SIGNATURE: F. B.

ETC

TCLP PREP LOG (Method 1311) - Volatiles (ZHE)

QC Batch QS61452

Cooper Ind. - Due 4/18

Sample ID	Log Link	Sample Wt (g)	Initial Filtrate	Total Vol (ml)	Fraction
QS61452	BLANK	—	—	400	2 TCLP/VOA
FC2384	253671	20.03	No	400	2 TCLP/VOA
FC2385	253671	20.02	No	400	
FC2386	253671	20.02	No	400	
FC2387	253671	20.02	No	400	
FC2388	253671	20.03	No	400	
FC2389	253671	20.11	No	400	
FC2390	253671	20.03	No	400	
FC2391	253671	20.02	No	400	
FC2392	253671	20.02	No	400	
FC2393	253671	20.01	No	400	
FC2394	253671	20.05	No	400	
FC2395	253671	20.03	No	400	
FC3143	253741	20.02	No	400	
FC3144	253741	20.07	No	400	3 TCLP/VOA
FC3145	253741	20.02	No	400	
FC3146	253741	20.02	No	400	
FC3147	253741	20.07	No	400	
FC3148	253741	20.02	No	400	
FC3149	253741	20.03	No	400	
FC3150	253741	20.13	No	400	

Set-up K. Waldy 4/6/91

Filtering K. Waldy 4/8/91

Supervisor K. Waldron 4/8/91

Start Time 4:00 PM 4/6/91

Lab Temp 21°C

Tumbler RPM 30

Stop Time 10:00 AM 4/7/91

Comments:

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 053 Page 1 of 4

Date 4/12/91 Instr. A

A-Type TCLP/VOA
Tune file APEI01
Seq. file JAA
Method file VOAA
ID file IA0197
CB file CA0197
Analyst [illegible]
Reviewed by [illegible] Date [illegible]

Batch #'s QU60657

Standards Updated
Date 4/12/91 By [illegible]

Tape # B-00700 Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
p-BFB	50	10733	1ul
INT STD OSUV	25	107919	10ul
CALI	50	107575	2,5,10,15,20
CALII	50	107977	↓
XVOA	50	10398	
EE & Methyl Iodide	50	10303	

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	p-BFB	A4817	1ul	—		14:19	OK 62 JJ	
	QC60657VS	A4818	5	9			5 ul All STDS	
	QC60657VS	A4819	5	10		QT	5 ul All STDS	
	QC60657V	A4820	5	11			BLANK	
	p-BFB	A4821	1ul	—		16:47	OK ~~20~~ JJ 61 enh JJ	
	QC60657VS	A4822	5	6			20 ul All STDS	
	QC60657VS	A4823	5	7		CBUID	15 ul All STDS	
	QC60657VS	A4824	5	8		CBCAL	10 ul All STDS	
	QC60657VS	A4825	5	9		USMRG	2 ul All STDS	
	QC60657V	A4826	5	10			BLANK	
	QC60657V	A4827	5	11		20:42	OK BLANK JJ	
	FC2876V	A4828	1.0	12	1:5		ng rr STD	
	FC2877V	A4829	5.0	13		22:08	OK JJ	
	FC2877VS	A4830	5.0	14		22:52	OK 5ul All STDS JJ	
	FC2877VR	A4831	5.0	15		23:35	OK 5ul All STDS JJ	
	FC2509V	A4832	5	16		00:18	OK JJ	
	FC2509V	A4833	5	1		1:02	OK 10ul All STDS JJ	
	FC3148V	A4834	2.0	2	1:2.5		ng rr 1:5	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 054 Page 2 of 4

Date 4/12/91 Instr. A

A-Type PP/UOA
Tune file APEI01
Seq. file AAA
Method file UOAA
ID file IA0197
CB file CA0197
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QU60657

Standards Updated
Date 4/13/91 By [illegible]

Tape # B-00700 Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	FC3147U	A4835	5.0	3		2:29	OK	
	FC3146 U	A4836	5.0	4			ngrr str 2nd sur	
	FC3146 U	A4837	5.0	5		3:55	OK 10ul All STDS	
	p-BFB	A4838	1ul	-		2:40	OK 63	
	QC60657 U5	A4839	5	9	QCAL	7:10	OK 5ul All STDS	
	QC60657 U2	A4840	5	10		3:53	OK BLANK	
R	FC2876 U2	A4841	5	11		4:48	OK U2	
R	FC3148 U2	A4842	1	12	1:5	5:32	OK U2	
R	FC3146 U2	A4843	5	13		6:15	OK U2	
	FC3150U2	A4844	5	14			ngrr 1:5	
	FC3149 U2	A4845	.1	15	1:50		ngrr 1st 2 surr out	
	FC3149 U5	A4846	.1	16	1:50	8:38	OK 10ul All STDS	
	QC60657 U5	A4847	5	1		9:21 QCAL	OK 5ul All STDS	
	QC60657 U3	A4848	5	2		10:04	OK BLANK	
	p-BFB	A4849	1ul	—		11:23	OK 62-47	
	FC2508U3	A4850	5	3		11:59	OK	
	FC2508U5	A4851	5	4		12:42	OK 10ul All STDS	
R	FC3150U3	A4852	1	5	1:5	13:26	OK U2	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 055 Page 3 of 4

Date 4/14/91 Instr. A

A-Type PP/UOA
Tune file APEI01
Seq. file AAA
Method file UOAA
ID file IA097
CB file CA097
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QU60657

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

__ Standards Updated
Date 4/14/91 By [illegible]

Tape # B-00700 Inj. __ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	P
R	FC3149U3	A4853	.1	6	1:50	14:09	OK v2	
	FC3143U3	A4854	5	7			ngrr 1:5	
	FC3143U5	A4855	5	8			↓ 10 ul All STDS	
	FC3144U3	A4856	1	9	1:5		ngrr 1:5 2nd 2 sur ↓	
	FC3145U3	A4857	.5	10	1:10		ngrr 1:10 2nd 2 surr ↓	
	FC2475U3	A4858	5	11		17:46	OK	
	FC2475U5	A4859	5	12		18:30	OK 10 ul All STDS	
	QS61458U3	A4860	5	13		19:13	OK TCLP BATCH BLANK	
	FC1972U3	A4861	5	14		19:56	OK	
	FC1976U3	A4862	5	15		20:40	OK	
	FC2625U3	A4863	5	16		21:23	OK	
	QC60657U3	A4864	5	1			OK	
	QC60657U3	A4865	5	2			OK	
	p-BFB	A4866	1ml	—		2:17	OK 61-48	
	QC60651U5	A4867	5	1	QCAL	2:50	OK 5 ul All STDS	
	QC60651U4	A4868	5	2		3:34	OK BLANK	
R	FC3143U4	A4869	1	3	1:5	4:40	OK v2	
R	FC3147U5	A4870	1	4	1:5	5:23	OK v2 10 ul All STD	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 056 Page 4 of 4

Date 4/15/91 Instr. A

A-Type PP/VOA
Tune file AFEI01
Seq. file AAA
Method file VOAA
ID file FA0197
CB file CA0197
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QV60657

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

__ Standards Updated
Date 4/15/91 By [illegible]

Tape # B-00500 Inj. __ ul

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
R	FC3144V4	A4871	1	5	1:5	6:06	OK Va	
R	FC3145V4	A4872	.5	6	1:10	6:50	OK Va	
	FC 2626 V4	A4873	5	7		7:33	OK	
	FC 2630 V4	A4874	5	8		8:16	OK	
	FC 2631 V4	A4875	5	9		9:00	OK	
	FC2632 V4	A4876	5	10		9:43	OK	

end of batch

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department UJ Page 1 of 2

Date 4/11/91 Instr. A

A-Type TCLP/VOA
Tune file APEI01
Seq. file AAA
Method file VOAA
ID file IA0196
CB file CA0196
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QU60654

Standard	Conc ppm	Lot No.	Lot Vol.
p-BFB	50	10733	1ml
INT STD/SUR SUR	25	107999	1ml
CAL I	50	107975	2,5,10,15,20
CAL II	50	107977	L

Standards Updated
Date 4/11/91 By [illegible]

Tape # B-00699 Inj. ___ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	p-BFB	A4785	1ml	—		7:38	OK 65-49	
	QC60654 VS	A4786	5	9	QCAL	8:06	OK 5ml Cal I, II	
	QC60654 VS	A4787	5	10		8:50	OK 5ml Cal I, II	
	QC60654 V	A4788	5	11		9:33	OK BLANK	
	FC1967 V	A4789	5	11		10:17	OK	
	FC1969 V	A4790	5	12		11:00	OK	
	FC1971 V	A4791	5	13		11:44	OK	
	FC1973 V	A4792	5	14		12:26	OK	
	FC1974 V	A4793	5	15		13:09	OK	
	FC2627 V	A4794	5	16		13:51	OK	
	FC2825 V (SH 4/12/91)	A4795	5	1		14:34	OK rr/5 MEK	
	FC2384 V	A4796	.25	2	1:20	15:17	OK	
	FC2385 V	A4797	.25	3	1:20	15:59	OK	
	FC2386 V	A4798	.25	4	1:20	16:42	OK	
	FC2387 V	A4799	.25	5	1:20	17:24	OK	
	FC2387 VS	A4800	.25	6	1:20	18:07	OK 5ml Cal I, II	
	FC2387 VR	A4801	.25	7	1:20	18:50	OK 5ml Cal I, II	
	QS61448	A4802	5	8		19:32	OK TCLP BATCH BLANK	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 052 Page 2 of 2

Date 4/11/91 Instr. A

A-Type TCLP/UOA
Tune file APEI01
Seq. file JJJ
Method file UOA A
ID file IA0196
CB file CA0196
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QU60654

Standard	Conc ppm	Lot No.	Lot Vol.
SEE PAGE 1			

Standards Updated
Date 4/12/91 By [illegible]

Tape # B-00699 Inj. ___ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	P
	QS61452V	A4803	5	9		20:15	OK TCLP BATCH BLANK	
	p-BFB	A4804	1ul	–		5:10	OK 74 eah – 59 eah	
	QC60654US	A4805	5	9	QCAL	5:34	OK 5ul Cal I, II	
	QC60654U2	A4806	5	10		6:17	OK BLANK	
R	FC2525U2	A4807	1	15	1:5	7:06	OK for MEK	
	FC2388U2	A4808	.25	16	1:20	7:49	OK	
	FC2389U2	A4809		1		8:31	OK	
	FC2390U2	A4810		2		9:14	OK	
	FC2391U2	A4811		3		9:57	OK	
	FC2392U2	A4812		4		10:40	OK	
	FC2393U2	A4813		5		11:22	OK	
	FC2394U2	A4814		6		12:05	OK	
	FC2395U2	A4815		7		12:48	OK	
R	QS61452U2	A4816	5	8		13:30	OK TCLP BATCH BLANK	

End of batch

R : redo , P : Aroclor search , + : Plus search

ETC

ENVIRONMENTAL TESTING
AND CERTIFICATION CORP.

Technical Report

for

ALLIED SIGNAL, INC.

P.O. BOX 1053R

MORRISTOWN, NJ 07962

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC2301	ALLIED SIGNAL, INC.	ASIMNJTCLP	XB3	910313	1000	

Richard P. Albert

Vice President, General Manager

This Technical Report is an INSITE℠ service generated by LODESTAR℠ Data Management Software.

284 Raritan Center Parkway ■ CN 7808 ■ Edison, New Jersey 08818-7808 ■ 908-225-5600

INTRODUCTION

Environmental Testing and Certification Corp.
284 Raritan Center Parkway, CN 7808
Edison, New Jersey 08818-7808
(201) 225-6700

Analytical Methodology for TCLP (TC)

Analytical procedures and quality assurance protocols for this analysis conform to the requirements described in the Toxicity Characteristic Final Rule (June 29, 1990 Federal Register). Sample extraction procedures for leachate preparation are performed in accordance with Method 1311 as described in the Final Rule; subsequent preparations and analyses are performed following the appropriate procedures in the SW-846 Third Edition of "Test Methods for Evaluating Solid Wastes".

This technical report contains tabulated analytical results and associated matrix spike recoveries for the sample. Note that the results reported have not been corrected for any analytical bias. Corrections may be performed using the formula that follows.

$$X_c = 100\ (X_u\ /\ \%R)$$

Where:

X_c = Bias Corrected Result
X_u = Result of Unspiked Sample
%R = Matrix Spike Recovery

COMMENTS

COMMENTS FOR SPECIFIC ANALYSES

VOLATILE FRACTION:

FC2301

Intact sample or extract required dilution resulting in elevated MDL's.

ETC CORP.

TABULATED ANALYTICAL RESULTS

ETC

APR 5, 1991
QV60637

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

TC - Volatile Compounds - GC/MS Analysis (QRC1)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC2301	ALLIED SIGNAL, INC.	ASIMNJTCLP	XB3	910313	1000	0

Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
	Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
Benzene	1420	130	-	-	ND	50.0	102	9.58	100	100

ETC

APR 5, 1991

TABLE 2: METHOD PERFORMANCE DATA
Surrogate Recovery Water - GC/MS Data (QR20)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC2301	ALLIED SIGNAL, INC.	ASIMNJTCLP	XB3	910313	1000	0

Compound	Amount added ug	% Recovery	IFB EPA Control Limits	
			Lower	Upper
VOLATILE FRACTION (GC/MS)				
Toluene-D8	.250	96	88	110
p-Bromofluorobenzene	.250	98	86	115
1,2-Dichloroethane-D4	.250	106	76	114
ACID FRACTION (GC/MS)				
Phenol-D5	-	-	10	94
2-Fluorophenol	-	-	21	100
2,4,6-Tribromophenol	-	-	10	123
BASE/NEUTRAL FRACTION (GC/MS)				
Nitrobenzene-D5	-	-	35	114
2-Fluorobiphenyl	-	-	43	116
Terphenyl-D14	-	-	33	141
PESTICIDE/PCB FRACTION (GC)				
Dibutylchlorendate	-	-	24**	154**
2,4,5,6-Tetrachloro-m-xylene	-	-	46	185
METHOD 601				
Bromochloromethane	-	-	82	124
METHOD 602				
a,a,a-Trifluorotoluene	-	-	80	120

** Advisory Limits Only

ETC CORP.

GC/MS QUALITY CONTROL DATA

Instrument Performance Check

Tuning and Mass Calibration

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4463 BFB Injection Date: 03/19/91

Instrument ID: GC/MS/A/B_ BFB Injection Time: 1427

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.5
75	30.0 - 60.0% of mass 95	52.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.7
173	Less than 2.0% of mass 174	1.5 (1.7)1
174	Greater than 50.0% of mass 95	86.3
175	5.0 - 9.0% of mass 174	6.9 (7.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.9 (98.3)1
177	5.0 - 9.0% of mass 176	6.4 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60630VS	>A4470	03/19/91	1934
02		QC60630VS	>A4471	03/19/91	2018
03		QC60630VS	>A4472	03/19/91	2102
04		QC60630VS	>A4473	03/19/91	2146
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4480 BFB Injection Date: 03/20/91

Instrument ID: GC/MS/A/B_ BFB Injection Time: 1007

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.8
75	30.0 - 60.0% of mass 95	51.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	1.5 (1.9)1
174	Greater than 50.0% of mass 95	82.0
175	5.0 - 9.0% of mass 174	6.3 (7.6)1
176	Greater than 95.0%, but less than 101.0% of mass 174	81.3 (99.1)1
177	5.0 - 9.0% of mass 176	6.0 (7.4)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60630VS	>A4481	03/20/91	1041
02		QC60630V	>A4483	03/20/91	1245
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4587 BFB Injection Date: 03/26/91

Instrument ID: GC/MS/A/B_ BFB Injection Time: 1002

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.6
75	30.0 - 60.0% of mass 95	49.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	80.3
175	5.0 - 9.0% of mass 174	6.7 (8.3)1
176	Greater than 95.0%, but less than 101.0% of mass 174	79.6 (99.1)1
177	5.0 - 9.0% of mass 176	5.5 (7.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60639V4	>A4589	03/26/91	1110
02		QC60630VS	>A4590	03/26/91	1200
03		FC2301V4	>A4592	03/26/91	1342
04	AD	~~FC2294V4~~ FC2299V4	>A4594	03/26/91	1509
05	4/1/91	FC2299VS	>A4595	03/26/91	1553
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

CHAIN OF CUSTODY DOCUMENTATION

Chain of Custody Forms
Laboratory Chronicles
Subcontract

ETC

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/90

No. 90688

Environmental Testing and Certification Corp. • 284 Raritan Center Parkway • Edison, NJ 08818 • 908-225-6700

COMPANY: ALLIED SIGNAL
FACILITY/SITE: DETROIT, MI
PROJECT CONTACT: DARYL QUINN
TELEPHONE NO.: (313) 842-4400

ANALYSIS REQUIRED: TCLP (Benzene all samples)

LEGEND FOR PRESERVATIVE
0 - NONE
1 - HCL
2 - HNO_3
3 - H_2SO_4
4 - Na_2SO_3 + H_2SO_4

ITEM NO.	ETC JOB #	SOURCE CODE	SAMPLE POINT	START DATE YY/MM/DD	START TIME	NUMBER OF CONTAINERS	FILT. (Y/N)	PRESERV.	SAMPLER OBSERVATIONS	LAB OBSERVATIONS
1	FC2296	X	B2	910312	13:45	1				
2	FC2298	X	D2	910313	12:30	1				
3		X	E2	910313	14:05	1				
4		X	C3	910313	10:20	1				
5	FC2301	X	B3	910313	10:00	1				
6	FC2299	X	D3	910313	16:15	1				
7		X	E3	910313	14:45	1				
8	DAB 3/20/91									
9										

Source Codes:
Well .... (W) Outfall ..... (O)
Soil .... (S) River/Stream .... (R)
Bottom Sediment ..... (B)
Generation Point ..... (G)
Surface Impoundment ..... (I)
Treatment Facility ..... (T)
Leachate Collection Sys ..... (C)
Lake/Ocean ..... (L)
Other ..... X ..... (X)
Specify Waste Tar Sludge

Log if needed for be provided

CHAIN OF CUSTODY CHRONICLE

1. Shuttle Opened By: (print) Rudolph Dawson Date: 3/12/91 Time: 9:05 AM
Signature: Rudolph J. Dawson Seal #: 0194487 Intact: Yes

2. I have received these materials in good condition from the above person.
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

3. I have received these materials in good condition from the above person.
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

4. Shuttle Sealed By: (print) Rudy Dawson Date: 3/14/91 Time: 3:25 pm
Signature Rudolph J. Dawson Seal #: 0194484 Intact: Yes

LAB USE ONLY Opened By: Richard Daly Date: 03/15/91 Time: 2:00pm
SHUTTLE # 4419 TEMP. °C ——— SEAL # 194484 COND. Intact

REMARKS
3/8/91 Seal # 0194487 KCK

SAMPLER'S SIGNATURE
Rudolph Dawson 3/14/91

ETC

TCLP PREP LOG (Method 1311) - Volatiles (ZHE)

Batch QS 61403

Sample ID	Log Link	Sample Wt (g)	Initial Filtrate	Total Vol.	Fraction
FC2155	253595	20.04	No	400 ML	3TCPREP/VOA
FC2156	253595	20.01	No	400 ML	3TCPREP/VOA
FC5133	253596	20.05	No	400 ML	3TCLP/VOA
QS61403	BLANK	—	—	400 ML	TCLP/BLANK
FC1603	253520	20.07	No	400 ML	3TCLPREP/VOA (REDO)
FC2295	253615	20.12	NO	400 ML	3TCLPREP/VOA
FC2292	253615	20.18	No	400 ML	3TCLPREP/VOA
FC2296	253615	20.12	No	400 ML	3TCLPREP/VOA
FC2298	253615	20.01	No	400 ML	3TCLPREP/VOA
FC2301	253615	20.03	No	400 ML	3TCLPREP/VOA
FC2299	253615	20.08	No	400 ML	3TCLPREP/VOA
FC2240	253611	20.01	No	400 ML	2TCP REP/VOA

Set-up Moyes Collefson 3/20/91

Filtering Moyes Collefson 3/21/91

Supervisor K. Walsh 3/20/91

Start Time 1:00 PM

Lab Temp 19 °C

Tumbler RPM 30

Stop Time 7:00 AM

Comments:

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 031 Page 1 of 8

Date 3/20/91 Instr. A

A-Type TCLP/VOA
Tune file APE001
Seq. file MJA
Method file VOAA
ID file DA0193
CB file CB0193
Analyst [illegible]
Reviewed by [illegible] Date [illegible] 3/28/91

Batch #'s QV60630

Standard	Conc ppm	Lot No.	Lot Vol.
P-BFB	50	9871	full
Int std & surr	25	10571	10
Cal I	50	10716	2,5,10,15 &
Cal II	50	10717	
xVOA	50	0348	
Ethyl Ether	50	10303	

Standards Updated
Date 3/20/91 By MJB

Tape # _____ Inj. ___ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
			full	mlg 3/20/91				
	P-BFB	>A4480	5ml	–		10:07	OK 103	
	QC 60630 VS	>A4469	5ml	13			NG 20	
	QC 60630 VS	>A4470		14			15	
	QC 60630 VS	>A4471		15			~~NG~~ mlg 3/20/91 10	
	QC 60630 VS	>A4472		16			5	
	QC 60630 VS	>A4473		17			2	
	QC 60630 VS	>A4481	5ml	8		10:41	20 ul stds	
	QC 60630 V	>A4482		9			NG	
	QC 60630 V	>A4483	5ml	9		12:45	OK blank	
	FC1454 V	>A4484	5ml	8			Rerun same	
	FC1603 V	>A4485		9			NG Rerun 1:10. for confirm	
R	FC1691 V	>A4486	.100	10	1:50		Resequenced	
	FC1584 V	>A4487	5ml	11			mjb 3/20/91	
	FC1584 VS	>A4488		12				
	QS61364	>A4489		13				
	QS61383	>A4490	.500	14	1:10			
	FC2003	>A4491		15				
R	FC454	>A4492	5ml	16				

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 032 Page 2 of 8

Date 3/21/91 Instr. A

A-Type TCLP/VOA
Tune file APE501
Seq. file MJA
Method file VOAA
ID file CA0193
CB file CA0193
Analyst [signature]
Reviewed by/Date [signature] Date 3/28/91

Batch #'s QV60630

Standards Updated
Date 3/20/91 By MJB

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
8260 Std 1			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	P
	~~FC1603~~							
R	BLK	>A4493	5ml	1	1:10			
	Pos blK	>A4494	5ml	2			Not Run	
	Pos. blK	>A4495		3				
	Pos. blK	>A4496		4				
	Pos. blK	>A4497		5				
	Pos. blK	>A4498		6				
	Pos. blK	>A4499		7				
	System blK	>A4500	5ml	16			~~run before~~ [illegible] 3/20/91	
	System blK	>A4501	5ml	1			OK	
	FC1691 ✓	>A4502	100	10	1:50	18:03	OK for QV60624	
	FC1584 ✓	>A4503	5ml	11			Rerun 1:20. Redo	
	FC1584 VS	>A4504		12				
	QS61364 ✓	>A4505		13			Rerun poss. carryover	
	QS61383 ✓	>A4506	.500	14	1:10		Redo	
	FC2003 ✓	>A4507	5ml	15			Rerun std.	
R	FC1454 ✓	>A4508		16			Rerun std.	
	Pos. blK	>A4509		2			42.06	
	Pos. blK	>A4510		3			48	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 033 Page 3 of 8

Date 3/22/91 Instr. A

A-Type TCLP/VOA
Tune file APE301
Seq. file MJA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [illegible]
Reviewed by [illegible] Date 3/28/91

Batch #'s QV60630

Standards Updated
Date 3/20/91 By MJM

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
Surfg			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	Pos blk	>A4511	5ml	4			33	
		>A4512		5			34	
		>A4513		6			22	
		>A4514		7			22	
		>A4515		9			51	
	P-BFB	>A4516	1ul	-		9:46	OK 100 each	
	QC 60630 V5	>A4517	5ml	13	(QCAL)		OK	
	QC60630 V2	>A4518		14			OK	
R	FC1454 V2	>A4519	5ml	15		12:06	OK	
R	QS101403 V2	>A4520		16			OK for TC/TCLP TCLP BLK	
P	FC1603 V2	>A4521		1		13:35	OK	
	Pos blk	>A4522	5ml	1			steam cleaning	
		>A4523		2			5ml H_2O	
		>A4524		3			1ml MeOH	
		>A4526		4				
		>A4527		5				
		>A4528		6				
		>A4529		7				

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 034 Page 4 of 4

Date 3/22/91 Instr. A

A-Type TCLP/VOA
Tune file APE30
Seq. file MJA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [signature]
Reviewed by [signature] Date 3/28/91
Batch #'s QV60630

Standards Updated
Date 3/21/91 By MJB

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
SW8261			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	Pos blk	>A4530	5ml	8			Steam clean 5ml H_2O	
		>A4531		9			1ml MeOH	
		>A4532		10				
		>A4533		11				
		>A4534		12				
		>A4535		13				
		>A4536		14				
		>A4537		15				
		>A4538		16				
	P-BFB	>A4538	1ul	-				
	QC60630 V	>A4539	5ml	2			NL	
	BLK	>A4540		3				
	BLK	>A4541		4				
	BLK	>A4542		5				
	QC60630VS	>A4543	5ml	13			NL	
	QC60630VS	>A4544		14				
	QC60630VS	>A4545	5ml	16				
	Dos. blk	>A4546		1				

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 035 Page 5 of 5 3/26/

Date 3/24/91 Instr. A

A-Type TCLP/VOA
Tune file A4E501
Seq. file MJA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [illegible]
Reviewed by [illegible] Date 3/25/91
Batch #'s QV6063C

Standard	Conc ppm	Lot No.	Lot Vol.
Std 1			

Standards Updated
Date 3/20/91 By

Tape # Inj. ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	Pos. blk	>A4547		2			17 ng Chlorobenzene	
		>A4548		3			13	
		>A4549		4			8	
		>A4550		5			8	
		>A4551		6			8	
		>A4552		7			8	
		>A4553		8			0	
		>A4554		9			0	
		>A4555		10			0	
		>A4556		11			0	
		>A4557		12			0	
		>A4558		13			12	
		>A4559		14			0	
		>A4560		15			7	
		>A4561		16			0	
	p-BFB	>A4562	1ul	—		23:54	OK >4 ent	
	POS B/ANIC	A4563	5	2			30 NG	
		A4564	5	3			31	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 036 Page 6 of X 3/26/91

Date 3/25/91 Instr. A

A-Type TIR/VOA
Tune file APEIOV
Seq. file VOA
Method file VOAA
ID file 1A0193
CB file CA0193
Analyst [illegible]
Reviewed by/Date [illegible] 3/28/91
Batch #'s QV60630

Standards Updated
Date 3/21/91 By MJD

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
[illegible]			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	* P
	POSBLANK	A4565	5	4			16.62	
		A4566	5	5			19.83	
		A4567	5	6			12	
		A4568	5	7			16	
		A4569	5	13			OK	
		A4570	5	15			OK	
	P-BFB	>A4571	1ul	-		8:42	OK 79	
	QC60630 VS	>A4572	5ml	8	(QCAL)		OK	
	QC60630 V3	>A4573	↓	9			OK	
R	GS61364	>A4574	50	1		11:15	OK TCLP BLK	
	FC2296 V3	>A4575		2		12:00	OK	
	FC2296 VS	>A4576		3		12:44	OK } to report to QV60636	
	FC2298 V3	>A4577		4		13:29	OK	
	FC2292 V	>A4578		5		14:14	OK	
	FC2292 VS	>A4579	↓	6		14:59	OK } to report to QV60637	
	FC2295 V	>A4580	1.0	7		15:43	OK rerun 1:25 for C20	
	FC2155 V	>A4581	50	8		16:28	OK 2nd surr out due to matrix	
	FC2155 VS	>A4582	↓	9		17:13	} to report to QV60638	

R : redo , P : Aroclor search , * : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 037 Page 7 of 8

Date 3/25/91 Instr. A

A-Type TCLP/VOA
Tune file APE101
Seq. file MJA
Method file VOA
ID file 7A0193
CB file CA0193
Analyst [illegible]
Reviewed by/Date [illegible] 3/28/91

Batch #'s QV60630

Standard	Conc ppm	Lot No.	Lot Vol.
~~Sel pg 1~~			

Standards Updated
Date 3/26/91 By MJB

Tape # _____ Inj. ___ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	P
	FC5133 V3	>A4583	1.0	10			Rerun to conf. poss carryover	
	FC2299 V3	>A4584	5ml	11			~~OK~~ [illegible] 3/27/91	
	FC2299 VS	>A4585	↓	12			~~OK~~ ↓	
	FC2301 V3	>A4586	1.0	13			Rerun 1:25	
	D-BFB	>A4587	1ml	—		10:02		
	QC60630 VS	>A4588	5ml	14			NG	
	QC60630 V4	>A4589	↓	15		11:10	OK	
	QC60630 VS	>A4590	5ml	16	(QC4)	12:00	OK	
R	FC5133 V4	>A4591	1.0	1	1:5	12:59	OK	
R	FC2301 V4	>A4592	.200	2	1:25	13:42	ok to report to QV60639	
R	FC2295 V4	>A4593	.200	3	1:25	14:26	ok for >A4580.	
	FC2299 V	>A4594	5ml	4		15:09	ok } to report to	
	FC2299 VS	>A4595		5		15:53	OK } QV60639	
	FC2156 V	>A4596		8		16:36	OK }	
	FC2156 VS	>A4597		9		17:21	OK } to report to QV60640	
	FC2240 V4	>A4598		10		18:05	OK }	
	FC2240 VS	>A4599		11		18:48	OK } to report to QV60641	
	FC2296 VR	>A4600	↓	12		19:31	OK	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 038 Page 8 of 8

Date 3/26/91 Instr. A

A-Type TC/UHA
Tune file APE101
Seq. file MTHA
Method file VOA'A
ID file IAO93
CB file CAO193
Analyst [illegible]
Reviewed by/Date A. Dini 3/28/91

Batch #'s QV60630

Standard	Conc ppm	Lot No.	Lot Vol.
See pg 1			

Standards Updated
Date 3/26/91 By MJB

Tape # _____ Inj. ___ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	P
	BLANK							
	~~FC2168 V4~~	>A4601	5ml	13		20:15	OK	
(12)	FC2003 V4	>A4602	↓	14		20:54	OK	
	DS61407	>A4603	↓	15			TCLP BLK	
	p-DFB	>A4604	1ml	—		8:42	OK 62	
	QC60630US	>A4605	5	15			NG 5ml ALL STDS	
	QC60630US	>A4606	5	16			BLANK	
	QC60630US	>A4607	5	15			5ml ALL STDS	
	QC60630US	>A4608	5	15			↓ 5ml ALL STDS	

R : redo , P : Aroclor search , + : Plus search

ETC

ENVIRONMENTAL TESTING
AND CERTIFICATION CORP.

Technical Report

for

ALLIED SIGNAL, INC.

P.O. BOX 1053R

MORRISTOWN, NJ 07962

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC2299	ALLIED SIGNAL, INC.	ASIMNJTCLP	XD3	910313	1645	

Richard P. Albert

Vice President, General Manager

This Technical Report is an INSITE℠ service generated by LODESTAR℠ Data Management Software.

284 Raritan Center Parkway ■ CN 7808 ■ Edison, New Jersey 08818-7808 ■ 908-225-5600

INTRODUCTION

Environmental Testing and Certification Corp.
284 Raritan Center Parkway, CN 7808
Edison, New Jersey 08818-7808
(201) 225-6700

Analytical Methodology for TCLP (TC)

Analytical procedures and quality assurance protocols for this analysis conform to the requirements described in the Toxicity Characteristic Final Rule (June 29, 1990 Federal Register). Sample extraction procedures for leachate preparation are performed in accordance with Method 1311 as described in the Final Rule; subsequent preparations and analyses are performed following the appropriate procedures in the SW-846 Third Edition of "Test Methods for Evaluating Solid Wastes".

This technical report contains tabulated analytical results and associated matrix spike recoveries for the sample. Note that the results reported have not been corrected for any analytical bias. Corrections may be performed using the formula that follows.

$$X_c = 100\ (X_u\ /\ \%R)$$

Where:

X_c = Bias Corrected Result
X_u = Result of Unspiked Sample
%R = Matrix Spike Recovery

ETC CORP.

TABULATED ANALYTICAL RESULTS

ETC

APR 5, 1991
QV60637

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

TC - Volatile Compounds - GC/MS Analysis (QRC1)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC2299	ALLIED SIGNAL, INC.	ASIMNJTCLP	XD3	910313	1645	0

Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
	Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
Benzene	9.58	5.0	-	-	ND	50.0	102	9.58	100	100

ETC

APR 5, 1991

TABLE 2: METHOD PERFORMANCE DATA
Surrogate Recovery Water - GC/MS Data (QR20)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC2299	ALLIED SIGNAL, INC.	ASIMNJTCLP	XD3	910313	1645	0

Compound	Amount added ug	% Recovery	IFB EPA Control Limits Lower	IFB EPA Control Limits Upper
VOLATILE FRACTION (GC/MS)				
Toluene-D8	.250	96	88	110
p-Bromofluorobenzene	.250	98	86	115
1,2-Dichloroethane-D4	.250	102	76	114
ACID FRACTION (GC/MS)				
Phenol-D5	-	-	10	94
2-Fluorophenol	-	-	21	100
2,4,6-Tribromophenol	-	-	10	123
BASE/NEUTRAL FRACTION (GC/MS)				
Nitrobenzene-D5	-	-	35	114
2-Fluorobiphenyl	-	-	43	116
Terphenyl-D14	-	-	33	141
PESTICIDE/PCB FRACTION (GC)				
Dibutylchlorendate	-	-	24**	154**
2,4,5,6-Tetrachloro-m-xylene	-	-	46	185
METHOD 601				
Bromochloromethane	-	-	82	124
METHOD 602				
a,a,a-Trifluorotoluene	-	-	80	120

** Advisory Limits Only

ETC CORP.

GC/MS QUALITY CONTROL DATA

Instrument Performance Check

Tuning and Mass Calibration

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4463 BFB Injection Date: 03/19/91

Instrument ID: GC/MS/A/B_ BFB Injection Time: 1427

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.5
75	30.0 - 60.0% of mass 95	52.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.7
173	Less than 2.0% of mass 174	1.5 (1.7)1
174	Greater than 50.0% of mass 95	86.3
175	5.0 - 9.0% of mass 174	6.9 (7.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.9 (98.3)1
177	5.0 - 9.0% of mass 176	6.4 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60630VS	>A4470	03/19/91	1934
02		QC60630VS	>A4471	03/19/91	2018
03		QC60630VS	>A4472	03/19/91	2102
04		QC60630VS	>A4473	03/19/91	2146
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4480 BFB Injection Date: 03/20/91

Instrument ID: GC/MS/A/B_ BFB Injection Time: 1007

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.8
75	30.0 - 60.0% of mass 95	51.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	1.5 (1.9)1
174	Greater than 50.0% of mass 95	82.0
175	5.0 - 9.0% of mass 174	6.3 (7.6)1
176	Greater than 95.0%, but less than 101.0% of mass 174	81.3 (99.1)1
177	5.0 - 9.0% of mass 176	6.0 (7.4)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60630VS	>A4481	03/20/91	1041
02		QC60630V	>A4483	03/20/91	1245
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4587 BFB Injection Date: 03/26/91

Instrument ID: GC/MS/A/B_ BFB Injection Time: 1002

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.6
75	30.0 - 60.0% of mass 95	49.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	80.3
175	5.0 - 9.0% of mass 174	6.7 (8.3)1
176	Greater than 95.0%, but less than 101.0% of mass 174	79.6 (99.1)1
177	5.0 - 9.0% of mass 176	5.5 (7.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60639V4	>A4589	03/26/91	1110
02		QC60630VS	>A4590	03/26/91	1200
03		FC2301V4	>A4592	03/26/91	1342
04	AD	~~FC2294V4~~ FC2299V4	>A4594	03/26/91	1509
05	4/1/1	FC2299VS	>A4595	03/26/91	1553
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

CHAIN OF CUSTODY DOCUMENTATION

Chain of Custody Forms
Laboratory Chronicles
Subcontract

ETC

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/90

No. 90688

Environmental Testing and Certification Corp. • 284 Raritan Center Parkway • Edison, NJ 08818 • 908-225-6700

COMPANY: ALLIED SIGNAL
FACILITY/SITE: DETROIT, MI
PROJECT CONTACT: DARYL QUINN
TELEPHONE NO.: (313) 842-4400

FILT. (Y/N)
PRESERV.
ANALYSIS REQUIRED: TCLP (Benzene all samples)

LEGEND FOR PRESERVATIVE
0 - NONE
1 - HCL
2 - HNO_3
3 - H_2SO_4
4 - Na_2SO_3 + H_2SO_4

ITEM NO	ETC JOB #	SOURCE CODE	SAMPLE POINT	START DATE YY/MM/DD	START TIME	NUMBER OF CONTAINERS	SAMPLER OBSERVATIONS	LAB OBSERVATIONS
1	FC2296	X	B2	910312	13:45	1		
2	FC2298	X	D2	910313	12:30	1		
3		X	E2	910313	11:05	1		
4		X	C3	910313	10:20	1		
5	FC2301	X	B3	910313	10:00	1		
6	FC2299	X	D3	910313	16:45	1		
7		X	E3	910313	14:45	1		
8	DAB 3/20/91							
9								

Source Codes:
Well ..... (W) Outfall ..... (O)
Soil ..... (S) River/Stream ..... (R)
Bottom Sediment ..... (B)
Generation Point ..... (G)
Surface Impoundment ..... (I)
Treatment Facility ..... (T)
Leachate Collection Sys ..... (C)
Lake/Ocean ..... (L)
Other ..... X ..... (X)
Specify: Waste Tar Sludge

See log for needed info not provided

CHAIN OF CUSTODY CHRONICLE

1. Shuttle Opened By: (print) Rudolph Dawson Date: 3/12/91 Time: 9:25 AM
Signature: Rudolph J. Dawson Seal #: 0194487 Intact: Yes

2. I have received these materials in good condition from the above person.
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

3. I have received these materials in good condition from the above person.
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

4. Shuttle Sealed By: (print) Rudy Dawson Date: 3/14/91 Time: 3:25 pm
Signature: Rudolph J. Dawson Seal #: 0194484 Intact: Yes

LAB USE ONLY Opened By: Richard Daly Date: 03/15/91 Time: 2:00 pm
SHUTTLE # 4419 TEMP. °C — SEAL # 194484 COND. Intact

REMARKS
3/8/91 Seal # 0194487 KCK

SAMPLER'S SIGNATURE
Rudolph Dawson 3/14/91

LAB COPY

ETC

TCLP PREP LOG (Method 1311) - Volatiles (ZHE)

Batch QS 61403

Sample ID	Log Link	Sample Wt (g)	Initial Filtrate	Total Vol.	Fraction
FC2155	253595	20.04	No	400 ML	3TCPREP/VOA
FC2156	253595	20.01	No	400 ML	3TCPREP/VOA
FC5133	253596	20.05	No	400 ML	3TCLP/VOA
QS61403	BLANK	—	—	400 ML	TCLP/BLANK
FC1603	253520	20.07	No	400 ML	3TCLPREP/VOA (REDO)
FC2295	253615	20.12	NO	400 ML	3TCLPREP/VOA
FC2292	253615	20.18	No	400 ML	3TCLPREP/VOA
FC2296	253615	20.12	No	400 ML	3TCLPREP/VOA
FC2298	253615	20.01	No	400 ML	3TCLPREP/VOA
FC2301	253615	20.03	No	400 ML	3TCLPREP/VOA
FC2299	253615	20.08	No	400 ML	3TCLPREP/VOA
FC2240	253611	20.01	No	400 ML	2TCP REP/VOA

Set-up Maryann Collefox 3/20/91

Filtering Maryann Collefox 3/21/91

Supervisor K. Walsh 3/20/91

Start Time 1:00 PM

Lab Temp 19 °C

Tumbler RPM 30

Stop Time 7:00 AM

Comments:

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 031 Page 1 of 8

Date 3/20/91 Instr. A

A-Type TCLP/VOA
Tune file APE101
Seq. file MTA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [illegible]
Reviewed by [illegible] Date [illegible] 3/28/91

Batch #'s QV60630

Standards Updated
Date 3/20/91 By MJB

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
P-BFB	50	9871	1ml
Int std & surr	25	10571	10
Cal I	50	10716	2,5,10,15 8
Cal II	50	10717	
XVOA	50	10398	
Ethyl Ether	50	10303	

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
			5ml	mjb 3/20/91				
	P-BFB	>A4480	5ml	–		10:07	OK 103	
	QC 60630 VS	>A4469	5ml	13			NG 20	
	QC 60630 VS	>A4470		14			15	
	QC60630 VS	>A4471		15			~~NG~~ mjb 3/20/91 10	
	QC60630 VS	>A4472		16			5	
	QC60630 VS	>A4473		17			2	
	QC60630 VS	>A4481	5ml	8		10:41	20 ul stds	
	QC60630 V	>A4482		9			NG	
	QC60630 V	>A4483	5ml	9		12:45	OK blank	
	FC1454 V	>A4484	5ml	8			Rerun same	
	FC1603 V	>A4485		9			NG Rerun 1:10. for confirm	
R	FC1691 V	>A4486	.100	10	1:50		Resequenced	
	FC1584 V	>A4487	5ml	11			mjb 3/20/91	
	FC1584 VS	>A4488		12				
	QS61364	>A4489		13				
	QS61383	>A4490	.500	14	1:10			
	FC2003	>A4491		15				
R	FC454	>A4492	5ml	16				

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 032 Page 2 of 8

Date 3/21/91 Instr. A

A-Type TCLP/VOA
Tune file APE501
Seq. file MJA
Method file VOA
ID file CA0193
CB file CA0193
Analyst [illegible]
Reviewed by/Date [illegible] 3/28/91
Batch #'s QV60630

Standards Updated
Date 3/20/91 By MJB

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
[illegible]			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	~~FC1603~~							
(12)	~~BLK~~	>A4493	.5ml	1	1:10			
	Pos. blK	>A4494	5ml	2			Not Run	
	Pos. blK	>A4495		3				
	Pos. blK	>A4496		4				
	Pos. blK	>A4497		5				
	Pos. blK	>A4498		6				
	Pos. blK	>A4499		7				
	System blK	>A4500	5ml	16			~~run before~~ [illegible] 3/20/91	
	System blK	>A4501	5ml	1			OK	
	FC1691 ✓	>A4502	.100	10	1:50	18:03	OK for QV60624	
	FC1584 ✓	>A4503	5ml	11			Rerun 1:20. Redo	
	FC1584 VS	>A4504		12				
	QS61364 ✓	>A4505		13			Rerun poss. carryover	
	QS61383 ✓	>A4506	.500	14	1:10		Redo	
	FC2003 ✓	>A4507	5ml	15			Rerun str.	
(R)	FC1454 ✓	>A4508		16			Rerun str.	
	Pos. blK	>A4509		2			42.06	
	Pos. blK	>A4510		3			48	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 033 Page 3 of 8

Date 3/22/91 Instr. A

A-Type TCLP/VOA
Tune file APE501
Seq. file MJA
Method file VOA
ID file IA0193
CB file CA0193
Analyst [illegible]
Reviewed by [illegible] Date 3/28/91

Batch #'s QV60630

Standards Updated
Date 3/20/91 By MJM

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
Seafg 1			

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	Pos blk	>A4511	5ml	4			33	
		>A4512		5			34	
		>A4513		6			22	
		>A4514		7			22	
		>A4515		9			51	
	P-BFB	>A4516	1ml	-		9:46	OK 100 each	
	QC 60630 V5	>A4517	5ml	13	(QCAL)		OK	
	QC60630 V2	>A4518		14			OK	
(R)	FC1454 V2	>A4519	5ml	15		12:06	OK	
(R)	QS601403 V2	>A4520		16			OK for TC/TCLP TCLP BLK	
(P)	FC1603 V2	>A4521		1		13:35	OK	
	Pos blk	>A4522	5ml	1			steam cleaning	
		>A4523		2			5ml H_2O	
		>A4524		3			1ml MeOH	
		>A4526		4				
		>A4527		5				
		>A4528		6				
		>A4529		7				

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 034 Page 4 of 4

Date 3/22/91 Instr. A

A-Type TCLP/VOA
Tune file APE30
Seq. file MJA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [signature]
Reviewed by [signature] Date 3/28/91

Batch #'s QV60630

Standards Updated
Date 3/21/91 By MJB

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
SW846 1			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	P
	Pos blk	>A4530	5ml	8			Steam Clean 5ml H_2O	
		>A4531		9			1ml MeOH	
		>A4532		10				
		>A4533		11				
		>A4534		12				
		>A4535		13				
		>A4536		14				
		>A4537		15				
		>A4538		16				
	P-BFB	>A4538	1ul	-				
	QC60630V	>A4539	5ml	2			NL	
	BLK	>A4540		3				
	BLK	>A4541		4				
	BLK	>A4542		5				
	QC60630VS	>A4543	5ml	13			NL	
	QC60630V3	>A4544		14				
	QC60630VS	>A4545	5ml	16				
	Pos. blk	>A4546		1				

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 035 Page 5 of 5 3/26/91

Date 3/24/91 Instr. A

A-Type TCLP/VOA
Tune file AKEI01
Seq. file MJA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [illegible]
Reviewed by [illegible] Date 3/28/91
Batch #'s QV6063

Standard	Conc ppm	Lot No.	Lot Vol.
Surg 1			

__ Standards Updated
Date 3/20/91 By

Tape # Inj. ul

IR	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+P
	Pos. blk	>A4547		2			17 ng Chlorobenzene	
		>A4548		3			13	
		>A4549		4			8	
		>A4550		5			8	
		>A4551		6			8	
		>A4552		7			8	
		>A4553		8			0	
		>A4554		9			0	
		>A4555		10			0	
		>A4556		11			0	
		>A4557		12			0	
		>A4558		13			12	
		>A4559		14			0	
		>A4560		15			7	
		>A4561		16			0	
	p-BFB	>A4562	1ul	—		23:54	OK >4 ent	
	POS B/ANIC	A4563	5	2			30 NG	
		A4564	5	3			31	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 036 Page 6 of 8 3/26/91

Date 3/25/91 Instr. A

A-Type TCL/VOA
Tune file APE10V
Seq. file MJA
Method file MAA
ID file IA0193
CB file CA0193
Analyst [signature]
Reviewed by/Date [signature] 3/28/91
Batch #'s QV60630

Standards Updated
Date 3/21/91 By MJB

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
SEE GC			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	POS BLANK	A4565	5	4			16.62	
		A4566	5	5			19.83	
		A4567	5	6			12	
		A4568	5	7			16	
		A4569	5	13			OK	
		A4570	5	15			OK	
	P-BFB	>A4571	1ul	-		8:42	OK 79	
	QC60630 VS	>A4572	5ml	8	(QCAL)		OK	
	QC60630 V3	>A4573	↓	9			OK	
R	GS61364	>A4574	50	1		11:15	OK TCLP BLK	
	FC2296 V3	>A4575		2		12:00	OK	
	FC2296 VS	>A4576		3		12:44	OK } to report to QV60636	
	FC2298 V3	>A4577		4		13:29	OK	
	FC2292 V	>A4578		5		14:14	OK	
	FC2292 VS	>A4579	↓	6		14:59	OK } to report to QV60637	
	FC2295 V	>A4580	1.0	7		15:43	OK rerun 1:25 for C20	
	FC2155 V	>A4581	50	8		16:28	OK 2nd surr out due to matrix	
	FC2155 VS	>A4582	↓	9		17:13	} to report to QV60638	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 037 Page 7 of 8

Date 3/25/91 Instr. A

A-Type TCLP/VOA
Tune file APE101
Seq. file MJA
Method file VOA
ID file IA0893
CB file CA0193
Analyst [illegible]
Reviewed by/Date [illegible] 3/28/91
Batch #'s QV60630

Standards Updated
Date 3/26/91 By MJB

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
See pg 1			

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	FC5133 V3	>A4583	1.0	10			Rerun to conf. poss carryover	
	FC2299 V3	>A4584	5ml	11			OK [illegible] 3/29/91	
	FC2299 VS	>A4585	↓	12			OK ↓	
	FC2301 V3	>A4586	1.0	13			Rerun 1:25	
	D-BFB	>A4587	1ul	—		10:02		
	QC60630 VS	>A4588	5ml	14			NG	
	QC60630 V4	>A4589	↓	15		11:10	OK	
	QC60630 VS	>A4590	5ml	16	(QCAG)	12:00	OK	
R	FC5133 V4 (B AD 3/28/91)	>A4591	1.0	1	1:5	12:59	OK	
R	FC2301 V4	>A4592	.200	2	1:25	13:42	ok to report to QV60639	
R	FC2295 V4	>A4593	.200	3	1:25	14:26	ok for >A4580.	
	FC2299 V	>A4594	5ml	4		15:09	ok, to report to QV60639	
	FC2299 VS	>A4595		5		15:53	ok	
	FC2156 V	>A4596		8		16:36	OK, to report to QV60640	
	FC2156 VS	>A4597		9		17:21	OK	
	FC2240 V4	>A4598		10		18:05	OK, to report to QV60641	
	FC2240 VS	>A4599		11		18:48	OK	
	FC2296 VR	>A4600	↓	12		19:31	OK	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 038 Page 8 of 8

Date 3/26/91 Instr. A

A-Type TC/UPA
Tune file APE101
Seq. file UTAA
Method file VOAA
ID file IAO93
CB file CAO193
Analyst [illegible]
Reviewed by/Date A. Dui 3/28/91

Batch #'s QV60630

Standard	Conc ppm	Lot No.	Lot Vol.
SCL 8/91			

__ Standards Updated
Date 3/26/91 By MJB

Tape # _____ Inj. __ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	BLANK							
	~~FC2168 V4~~	>A4601	5ml	13		20:15	OK	
(12)	FC2003 V4	>A4602	↓	14		20:54	OK	
	DS61407	>A4603	↓	15			TCLP BLK	
	p-DFB	>A4604	1ul	—		8:42	OK 62	
	QC60630US	>A4605	5	15			NG 5ul ALL STDS	
	QC60630US	>A4606	5	16			BLANK	
	QC60630US	>A4607	5	15			5ul ALL STDS	
	QC60630US	>A4608	5	15			5ul ALL STDS	

R : redo , P : Aroclor search , + : Plus search

ETC

ENVIRONMENTAL TESTING
AND CERTIFICATION CORP.

Technical Report

for

ALLIED SIGNAL, INC.

P.O. BOX 1053R

MORRISTOWN, NJ 07962

Chain of Custody Data Required for ETC Data Management Summary Reports						
FC2298	ALLIED SIGNAL, INC.	ASIMNJTCLP	XD2		910313	1230
ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours

Richard P. Albert

Vice President, General Manager

This Technical Report is an INSITE℠ service generated by LODESTAR℠ Data Management Software.

284 Raritan Center Parkway ■ CN 7808 ■ Edison, New Jersey 08818-7808 ■ 908-225-5600

INTRODUCTION

Environmental Testing and Certification Corp.
284 Raritan Center Parkway, CN 7808
Edison, New Jersey 08818-7808
(201) 225-6700

Analytical Methodology for TCLP (TC)

Analytical procedures and quality assurance protocols for this analysis conform to the requirements described in the Toxicity Characteristic Final Rule (June 29, 1990 Federal Register). Sample extraction procedures for leachate preparation are performed in accordance with Method 1311 as described in the Final Rule; subsequent preparations and analyses are performed following the appropriate procedures in the SW-846 Third Edition of "Test Methods for Evaluating Solid Wastes".

This technical report contains tabulated analytical results and associated matrix spike recoveries for the sample. Note that the results reported have not been corrected for any analytical bias. Corrections may be performed using the formula that follows.

$$X_c = 100\ (X_u\ /\ \%R)$$

Where:

X_c = Bias Corrected Result
X_u = Result of Unspiked Sample
%R = Matrix Spike Recovery

ETC CORP.

TABULATED ANALYTICAL RESULTS

ETC

APR 5, 1991
QV60637

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

TC - Volatile Compounds - GC/MS Analysis (QRC1)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC2298	ALLIED SIGNAL, INC.	ASIMNJTCLP	XD2	910313	1230	0

Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
	Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen Added ug/l	% Recov
Benzene	156	5.0	-	-	ND	50.0	102	52.1	100	108

ETC

APR 5, 1991

TABLE 2: METHOD PERFORMANCE DATA
Surrogate Recovery Water - GC/MS Data (QR20)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC2298	ALLIED SIGNAL, INC.	ASIMNJTCLP	XD2	910313	1230	0

Compound	Amount added ug	% Recovery	IFB EPA Control Limits	
			Lower	Upper
VOLATILE FRACTION (GC/MS)				
Toluene-D8	.250	103	88	110
p-Bromofluorobenzene	.250	97	86	115
1,2-Dichloroethane-D4	.250	96	76	114
ACID FRACTION (GC/MS)				
Phenol-D5	-	-	10	94
2-Fluorophenol	-	-	21	100
2,4,6-Tribromophenol	-	-	10	123
BASE/NEUTRAL FRACTION (GC/MS)				
Nitrobenzene-D5	-	-	35	114
2-Fluorobiphenyl	-	-	43	116
Terphenyl-D14	-	-	33	141
PESTICIDE/PCB FRACTION (GC)				
Dibutylchlorendate	-	-	24**	154**
2,4,5,6-Tetrachloro-m-xylene	-	-	46	185
METHOD 601				
Bromochloromethane	-	-	82	124
METHOD 602				
a,a,a-Trifluorotoluene	-	-	80	120

** Advisory Limits Only

ETC CORP.

GC/MS QUALITY CONTROL DATA

Instrument Performance Check

Tuning and Mass Calibration

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4463 BFB Injection Date: 03/19/91

Instrument ID: GC/MS A/B_ BFB Injection Time: 1427

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.5
75	30.0 - 60.0% of mass 95	52.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.7
173	Less than 2.0% of mass 174	1.5 (1.7)1
174	Greater than 50.0% of mass 95	86.3
175	5.0 - 9.0% of mass 174	6.9 (7.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.9 (98.3)1
177	5.0 - 9.0% of mass 176	6.4 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60630VS	>A4470	03/19/91	1934
02		QC60630VS	>A4471	03/19/91	2018
03		QC60630VS	>A4472	03/19/91	2102
04		QC60630VS	>A4473	03/19/91	2146
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4480 BFB Injection Date: 03/20/91

Instrument ID: GC/MS/A/B_ BFB Injection Time: 1007

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.8
75	30.0 - 60.0% of mass 95	51.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	1.5 (1.9)1
174	Greater than 50.0% of mass 95	82.0
175	5.0 - 9.0% of mass 174	6.3 (7.6)1
176	Greater than 95.0%, but less than 101.0% of mass 174	81.3 (99.1)1
177	5.0 - 9.0% of mass 176	6.0 (7.4)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60630VS	>A4481	03/20/91	1041
02		QC60630V	>A4483	03/20/91	1245
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4571 BFB Injection Date: 03/25/91

Instrument ID: GC/MS/A/B_ BFB Injection Time: 0842

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.9
75	30.0 - 60.0% of mass 95	57.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	90.3
175	5.0 - 9.0% of mass 174	7.2 (7.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	87.3 (96.6)1
177	5.0 - 9.0% of mass 176	6.6 (7.6)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60630VS	>A4572	03/25/91	0916
02		QC60636V3	>A4573	03/25/91	1000
03		FC2296V3	>A4575	03/25/91	1200
04		FC2296VS	>A4576	03/25/91	1244
05		FC2298V3	>A4577	03/25/91	1329
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

CHAIN OF CUSTODY DOCUMENTATION

Chain of Custody Forms
Laboratory Chronicles
Subcontract

ETC

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/90

No. 90688

Environmental Testing and Certification Corp. • 284 Raritan Center Parkway • Edison, NJ 08818 • 908-225-6700

COMPANY: ALLIED SIGNAL
FACILITY/SITE: DETROIT, MI
PROJECT CONTACT: DARYL QUINN
TELEPHONE NO.: (313) 842-4400

FILT. (Y/N)
PRESERV.
ANALYSIS REQUIRED: TCLP (Benzene all samples)

LEGEND FOR PRESERVATIVE
0 - NONE
1 - HCL
2 - HNO_3
3 - H_2SO_4
4 - $Na_2SO_3 + H_2SO_4$

ITEM NO.	ETC JOB #	SOURCE CODE	SAMPLE POINT	START DATE YY/MM/DD	START TIME	NUMBER OF CONTAINERS	SAMPLER OBSERVATIONS	LAB OBSERVATIONS
1	FC2296	X	B2	910312	13:45	1		
2	FC2298	X	D2	910313	12:30	1		
3		X	E2	910313	14:05	1		
4		X	C3	910313	10:20	1		
5	FC2301	X	B3	910313	10:00	1		
6	FC2299	X	D3	910313	16:00	1		
7		X	E3	910313	14:45	1		
8	DAB 3/20/91							
9								

Source Codes:
Well ..... (W) Outfall ..... (O)
Soil ..... (S) River/Stream ..... (R)
Bottom Sediment ..... (B)
Generation Point ..... (G)
Surface Impoundment ..... (I)
Treatment Facility ..... (T)
Leachate Collection Sys ..... (C)
Lake/Ocean ..... (L)
Other ..... X ..... (X)
Specify: Waste Tar Sludge

by lab if needed
due to provided

CHAIN OF CUSTODY CHRONICLE

1. Shuttle Opened By: (print) Rudolph Dawson Date: 3/12/91 Time: 9:05 AM
Signature: Rudolph J. Dawson Seal #: 0194487 Intact: Yes

2. I have received these materials in good condition from the above person.
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

3. I have received these materials in good condition from the above person.
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

4. Shuttle Sealed By: (print) Rudy Dawson Date: 3/14/91 Time: 3:25 pm
Signature: Rudolph J. Dawson Seal #: 0194484 Intact: Yes

LAB USE ONLY Opened By: Richard Daigle Date: 03/15/91 Time: 2:00 pm
SHUTTLE # 4410 TEMP. °C ____ SEAL # 194484 COND. Intact

REMARKS
3/8/91 Seal # 0194487 KCK

SAMPLER'S SIGNATURE
Rudolph Dawson 3/14/91

ETC

TCLP PREP LOG (Method 1311) - Volatiles (ZHE)

Batch QS 61403

Sample ID	Log Link	Sample Wt (g)	Initial Filtrate	Total Vol.	Fraction
FC2155	253595	20.04	No	400 ML	3TCPREP/VOA
FC2156	253595	20.01	No	400 ML	3TCPREP/VOA
FC5133	253596	20.05	No	400 ML	3TCLP/VOA
QS61403	BLANK	—	—	400 ML	TCLP/BLANK
FC1603	253520	20.07	No	400 ML	3TCLPREP/VOA (REDO)
FC2295	253615	20.12	NO	400 ML	3TCLPREP/VOA
FC2292	253615	20.18	No	400 ML	3TCLPREP/VOA
FC2296	253615	20.12	No	400 ML	3TCLPREP/VOA
FC2298	253615	20.01	No	400 ML	3TCLPREP/VOA
FC2301	253615	20.03	No	400 ML	3TCLPREP/VOA
FC2299	253615	20.08	No	400 ML	3TCLPREP/VOA
FC2240	253611	20.01	No	400 ML	2TCP REP/VOA

Set-up Moyes Collefox 3/20/91

Filtering Moyes Collefox 3/21/91

Supervisor K. Walden 3/20/91

Start Time 1:00 PM

Lab Temp 19 °C

Tumbler RPM 30

Stop Time 7:00 AM

Comments:

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 031 Page 1 of 6 AD 3/20/91

Date 3/20/91 Instr. A

A-Type TCLP/VOA
Tune file APE01
Seq. file MT4
Method file VOA4
ID file IA0193
CB file CA0193
Analyst [signature]
Reviewed by [signature] Date 3/28/91

Batch #'s QV60630

Standards Updated
Date 3/20/91 By MJB

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
P-BFB	50	9871	1ml
Int std & surr	25	10571	10
Cal I	50	10716	2,5,10,15,20
Cal II	50	10717	
VOA	50	10318	
Ethyl Ether	50	10303	

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
			5ml	mjb 3/20/91				
	P-BFB	>A4480	5ml	–		10:07	OK 103	
	QC 60630 VS	>A4469	5ml	13			NG 20	
	QC 60630 VS	>A4470		14			15	
	QC 60630 VS	>A4471		15		CBLKD CBLK CBPK OK	~~NG~~ mjb 3/20/91 10	
	QC 60630 VS	>A4472		16			5	
	QC 60630 VS	>A4473		17			2	
	QC 60630 VS	>A4481	5ml	8		10:41	20 ul stds	
	QC 60630 V	>A4482		9			NG	
	QC 60630 V	>A4483	5ml	9		12:45	OK blank	
	FC1454 V	>A4484	5ml	8			Rerun same	
	FC1603 V	>A4485		9			NG Rerun 1:10. for confirm. meas OK	
R	FC1691 V	>A4486	.100	10	1:50		Resequenced mjb 3/20/91	
	FC1584 V	>A4487	5ml	11				
	FC1584 VS	>A4488		12				
	QS61364	>A4489		13				
	QS61383	>A4490	.500	14	1:10			
	FC2003	>A4491		15				
R	FC454	>A4492	5ml	16				

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 032 Page 2 of 8 6

3/24/91

Date 3/21/91 Instr. A

A-Type TCLP/VOA
Tune file AFE501
Seq. file MJA
Method file VOAA
ID file CA0193
CB file CA0193
Analyst [illegible]
Reviewed by/Date [illegible] 3/28/91
Batch #'s QV60630

Standard	Conc ppm	Lot No.	Lot Vol.
[illegible]			

__ Standards Updated
Date 3/20/91 By MJA

Tape # _____ Inj. __ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
(R)	~~FC1603~~ ~~BLK~~	>A4493	.5ml	1	1:10			
	Pos. blK	>A4494	5ml	2			Not Run	
	Pos. blK	>A4495		3				
	Pos. blK	>A4496		4				
	Pos. blK	>A4497		5				
	Pos. blK	>A4498		6				
	Pos. blK	>A4499		7				
	System blK	>A4500	5ml	16			~~run before~~ Unjb 3/20/91	
	System blK	>A4501	5ml	1			OK	
	FC1691 ✓	>A4502	.100	10	1:50	18:03	OK for QV60624	
	FC1584 ✓	>A4503	5ml	11			Rerun 1:20. Redo	
	FC1584 VS	>A4504		12				
	QS61364 ✓	>A4505		13			Rerun poss. carryover	
	QS61383 ✓	>A4506	.500	14	1:10		Redo	
	FC2003 ✓	>A4507	5ml	15			Rerun std.	
(R)	FC1454 ✓	>A4508		16			Rerun std.	
	Pos. blK	>A4509		2			42.06	
	Pos. blK	>A4510		3			48	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 033 Page 3 of 8 AD

Date 3/22/91 Instr. A

A-Type TCLP/VOA
Tune file APE501
Seq. file MJA
Method file VOA4
ID file IA0193
CB file CA0193
Analyst [illegible]
Reviewed by [illegible] Date 3/28/91

Batch #'s QV60630

Standards Updated
Date 3/20/91 By MJM

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
See fg 1			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	* P
	Pos blk	>A4511	5ml	4			33	
		>A4512		5			34	
		>A4513		6			22	
		>A4514		7			22	
		>A4515		9			51	
	P-BFB	>A4516	1ul	-		9:46	OK 100 each	
	QC 60630 V5	>A4517	5ml	13	(QCAL)		OK	
	QC60630 V2	>A4518		14			OK	
R	FC1454 1/2	>A4519	5ml	15		12:06	OK	
P	QS161403 1/2	>A4520		16			OK for TC/TCLP TCLP BLK	
P	FC1603 1/2	>A4521		1		13:35	OK	
	Pos blk	>A4522	5ml	1			steam cleaning	
		>A4523		2			5ml H_2O	
		>A4524		3			1ml MeOH	
		>A4526		4				
		>A4527		5				
		>A4528		6				
		>A4529		7				

R : redo , P : Aroclor search , * : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 034 Page 2 of 4 AD 369

Date 3/22/91 Instr. A

A-Type TCLP/VOA
Tune file APEIO
Seq. file MJA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [signature]
Reviewed by/Date [signature] 3/28/91

Batch #'s QV60630

Standard	Conc ppm	Lot No.	Lot Vol.
SW8261			

Standards Updated
Date 3/21/91 By MJB

Tape # _____ Inj. ___ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	Pos blk	>A4530	5ml	8			Steam Clean 5ml H_2O	
		>A4531		9			1ml MeOH	
		>A4532		10				
		>A4533		11				
		>A4534		12				
		>A4535		13				
		>A4536		14				
		>A4537		15				
		>A4538		16				
	P-BFB	>A4538	1ul	-				
	QC60630 V	>A4539	5ml	2			NL	
	BLK	>A4540		3				
	BLK	>A4541		4				
	BLK	>A4542		5				
	QC60630VS	>A4543	5ml	13			NL	
	QC60630V3	>A4544		14				
	QC60630VS	>A4545	5ml	16				
	Pos. blk	>A4546		1				

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 035 Page 5 of 5

Date 3/24/91 Instr. A

A-Type TCLP/VOA
Tune file AKEF01
Seq. file MOA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [illegible]
Reviewed by [illegible] Date 3/28/91

Batch #'s QV60630

Standard	Conc ppm	Lot No.	Lot Vol.
Std 1			

Standards Updated
Date 3/20/91 By

Tape # Inj. ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	Pos. blk	>A4547		2			17 ng Chlorobenzene	
		>A4548		3			13	
		>A4549		4			8	
		>A4550		5			8	
		>A4551		6			8	
		>A4552		7			8	
		>A4553		8			0	
		>A4554		9			0	
		>A4555		10			0	
		>A4556		11			0	
		>A4557		12			0	
		>A4558		13			12	
		>A4559		14			0	
		>A4560		15			7	
		>A4561		16			0	
	p-BFB	>A4562	1ul	—		23:54	OK >4 ent	
	POS B/AMK	A4563	5	2			30 NG	
	↓	A4564	5	3			31	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 036 Page 6 of X

Date 3/25/91 Instr. A

A-Type TIR/VOA
Tune file APEJOU
Seq. file VOA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [illegible]
Reviewed by/Date [illegible] 3/28/91

Batch #'s QV60630

Standards Updated
Date 3/21/91 By MSD

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
[illegible]			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	POSBLANK	A4565	5	4			16.62	
		A4566	5	5			19.83	
		A4567	5	6			12	
		A4568	5	7			16	
		A4569	5	13			OK	
		A4570	5	15			OK	
	P-BFB	>A4571	1ul	-		8:42	OK 79	
	QC60630 VS	>A4572	5ml	8	(QCAL)		OK	
	QC60630 V3	>A4573	↓	9			OK	
R	GS61364	>A4574	50	1		11:15	OK TCLP BLK	
	FC2296 V3	>A4575		2		12:00	OK	
	FC2296 VS	>A4576		3		12:44	OK } to report to QV60636	
	FC2298 V3	>A4577		4		13:29	OK	
	FC2292 V	>A4578		5		14:14	OK	
	FC2292 VS	>A4579	↓	6		14:59	OK } to report to QV60637	
	FC2295 V	>A4580	1.0	7		15:43	OK rerun 1:25 for C20	
	FC2155 V	>A4581	50	8		16:28	OK 2nd surr out due to matrix	
	FC2155 VS	>A4582	↓	9		17:13	} to report to QV60638	

R : redo , P : Aroclor search , + : Plus search

ETC

ENVIRONMENTAL TESTING
AND CERTIFICATION CORP.

Technical Report

for

ALLIED SIGNAL, INC.

P.O. BOX 1053R

MORRISTOWN, NJ 07962

Chain of Custody Data Required for ETC Data Management Summary Reports						
FC2296	ALLIED SIGNAL, INC.	ASIMNJTCLP	XB2	910312	1345	
ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours

Richard P. Albert

Vice President, General Manager

This Technical Report is an INSITE℠ service generated by LODESTAR℠ Data Management Software.

INTRODUCTION

Environmental Testing and Certification Corp.
284 Raritan Center Parkway, CN 7808
Edison, New Jersey 08818-7808
(201) 225-6700

Analytical Methodology for TCLP (TC)

Analytical procedures and quality assurance protocols for this analysis conform to the requirements described in the Toxicity Characteristic Final Rule (June 29, 1990 Federal Register). Sample extraction procedures for leachate preparation are performed in accordance with Method 1311 as described in the Final Rule; subsequent preparations and analyses are performed following the appropriate procedures in the SW-846 Third Edition of "Test Methods for Evaluating Solid Wastes".

This technical report contains tabulated analytical results and associated matrix spike recoveries for the sample. Note that the results reported have not been corrected for any analytical bias. Corrections may be performed using the formula that follows.

$$X_c = 100\ (X_u\ /\ \%R)$$

Where:

X_c = Bias Corrected Result
X_u = Result of Unspiked Sample
%R = Matrix Spike Recovery

ETC CORP.

TABULATED ANALYTICAL RESULTS

ETC

APR 5, 1991
QV60637

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

TC - Volatile Compounds - GC/MS Analysis (QRC1)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC2296	ALLIED SIGNAL, INC	ASIMNJTCLP	XB2	910312	1345	0

Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
	Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
Benzene	52.1	5.0	-	-	ND	50.0	102	52.1	100	108

ETC

APR 5, 1991

TABLE 2: METHOD PERFORMANCE DATA
Surrogate Recovery Water - GC/MS Data (QR20)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC2296	ALLIED SIGNAL, INC	ASIMNJTCLP	XB2	910312	1345	0

Compound	Amount added ug	% Recovery	IFB EPA Control Limits Lower	IFB EPA Control Limits Upper
VOLATILE FRACTION (GC/MS)				
Toluene-D8	.250	104	88	110
p-Bromofluorobenzene	.250	103	86	115
1,2-Dichloroethane-D4	.250	107	76	114
ACID FRACTION (GC/MS)				
Phenol-D5	-	-	10	94
2-Fluorophenol	-	-	21	100
2,4,6-Tribromophenol	-	-	10	123
BASE/NEUTRAL FRACTION (GC/MS)				
Nitrobenzene-D5	-	-	35	114
2-Fluorobiphenyl	-	-	43	116
Terphenyl-D14	-	-	33	141
PESTICIDE/PCB FRACTION (GC)				
Dibutylchlorendate	-	-	24**	154**
2,4,5,6-Tetrachloro-m-xylene	-	-	46	185
METHOD 601				
Bromochloromethane	-	-	82	124
METHOD 602				
a,a,a-Trifluorotoluene	-	-	80	120

** Advisory Limits Only

ETC CORP.

GC/MS QUALITY CONTROL DATA

Instrument Performance Check

Tuning and Mass Calibration

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4463 BFB Injection Date: 03/19/91

Instrument ID: GC/MS/A/B_ BFB Injection Time: 1427

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.5
75	30.0 - 60.0% of mass 95	52.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.7
173	Less than 2.0% of mass 174	1.5 (1.7)1
174	Greater than 50.0% of mass 95	86.3
175	5.0 - 9.0% of mass 174	6.9 (7.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.9 (98.3)1
177	5.0 - 9.0% of mass 176	6.4 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60630VS	>A4470	03/19/91	1934
02		QC60630VS	>A4471	03/19/91	2018
03		QC60630VS	>A4472	03/19/91	2102
04		QC60630VS	>A4473	03/19/91	2146
05					
06					
07					
08					
09					
10					
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13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4480 BFB Injection Date: 03/20/91

Instrument ID: GC/MS/A/B_ BFB Injection Time: 1007

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.8
75	30.0 - 60.0% of mass 95	51.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	1.5 (1.9)1
174	Greater than 50.0% of mass 95	82.0
175	5.0 - 9.0% of mass 174	6.3 (7.6)1
176	Greater than 95.0%, but less than 101.0% of mass 174	81.3 (99.1)1
177	5.0 - 9.0% of mass 176	6.0 (7.4)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60630VS	>A4481	03/20/91	1041
02		QC60630V	>A4483	03/20/91	1245
03					
04					
05					
06					
07					
08					
09					
10					
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12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4571 BFB Injection Date: 03/25/91

Instrument ID: GC/MS/A/B_ BFB Injection Time: 0842

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.9
75	30.0 - 60.0% of mass 95	57.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	90.3
175	5.0 - 9.0% of mass 174	7.2 (7.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	87.3 (96.6)1
177	5.0 - 9.0% of mass 176	6.6 (7.6)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60630VS	>A4572	03/25/91	0916
02		QC60636V3	>A4573	03/25/91	1000
03		FC2296V3	>A4575	03/25/91	1200
04		FC2296VS	>A4576	03/25/91	1244
05		FC2298V3	>A4577	03/25/91	1329
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

CHAIN OF CUSTODY DOCUMENTATION

Chain of Custody Forms
Laboratory Chronicles
Subcontract

ETC

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/90

No. 90688

Environmental Testing and Certification Corp. • 284 Raritan Center Parkway • Edison, NJ 08818 • 908-225-6700

COMPANY: Allied Signal
FACILITY/SITE: Detroit, MI
PROJECT CONTACT: Daryl Quinn
TELEPHONE NO.: (313) 842-4400

ANALYSIS REQUIRED: TCLP (Benzene all samples)

LEGEND FOR PRESERVATIVE
0 - NONE
1 - HCL
2 - HNO_3
3 - H_2SO_4
4 - Na_2SO_3 + H_2SO_4

ITEM NO.	ETC JOB #	SOURCE CODE	SAMPLE POINT	START DATE YY/MM/DD	START TIME	NUMBER OF CONTAINERS	FILT. (Y/N)	PRESERV.	SAMPLER OBSERVATIONS	LAB OBSERVATIONS
1	FC2296	X	B 2	910312	13:45	1				
2	FC2298	X	D 2	910313	12:30	1				
3		X	E 2	910313	11:05	1				
4		X	C 3	910313	10:20	1				
5	FC2301	X	B 3	910313	10:00	1				
6	FC2299	X	D 3	910313	16:40	1				
7		X	E 3	910313	14:45	1				
8	DAB 3/20/91									
9										

Source Codes:
Well ... (W) Outfall ... (O)
Soil ... (S) River/Stream ... (R)
Bottom Sediment ... (B)
Generation Point ... (G)
Surface Impoundment ... (I)
Treatment Facility ... (T)
Leachate Collection Sys ... (C)
Lake/Ocean ... (L)
Other ... X ... (X)
Specify: Waste Tar Sludge

Log If needed
Sec be provided

CHAIN OF CUSTODY CHRONICLE

1. Shuttle Opened By: (print) Rudolph Dawson Date: 3/12/91 Time: 9:25 AM
Signature: Rudolph J. Dawson Seal #: 0194487 Intact: Yes

2. I have received these materials in good condition from the above person.
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

3. I have received these materials in good condition from the above person.
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

4. Shuttle Sealed By: (print) Rudy Dawson Date: 3/14/91 Time: 3:25 pm
Signature: Rudolph J. Dawson Seal #: 0194484 Intact: Yes

LAB USE ONLY Opened By: Richard Dry Date: 03/15/91 Time: 2:00 pm
SHUTTLE # 4410 TEMP. °C ——— SEAL # 194484 COND. Intact

REMARKS
3/8/91 Seal # 0194487 KCK

SAMPLER'S SIGNATURE
Rudolph Dawson 3/14/91

ETC

TCLP PREP LOG (Method 1311) - Volatiles (ZHE)

Batch QS 61403

Sample ID	Log Link	Sample Wt (g)	Initial Filtrate	Total Vol.	Fraction
FC2155	253595	20.04	No	400 ML	3TCPREP/VOA
FC2156	253595	20.01	No	400 ML	3TCPREP/VOA
FC5133	253596	20.05	No	400 ML	3TCLP/VOA
QS61403	BLANK	—	—	400 ML	TCLP/BLANK
FC1603	253520	20.07	No	400 ML	3TCLPREP/VOA (REDO)
FC2295	253615	20.12	NO	400 ML	3TCLPREP/VOA
FC2292	253615	20.18	No	400 ML	3TCLPREP/VOA
FC2296	253615	20.12	No	400 ML	3TCLPREP/VOA
FC2298	253615	20.01	No	400 ML	3TCLPREP/VOA
FC2301	253615	20.03	No	400 ML	3TCLPREP/VOA
FC2299	253615	20.08	No	400 ML	3TCLPREP/VOA
FC2240	253611	20.01	No	400 ML	2TCPREP/VOA

Set-up Moyes Collefox 3/20/91

Filtering Moyes Collefox 3/21/91

Supervisor K. Walden 3/20/91

Start Time 1:00 PM

Lab Temp 19 °C

Tumbler RPM 30

Stop Time 7:00 AM

Comments:

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 031 Page 1 of 6 AD 3/20/91

Date 3/20/91 Instr. A

A-Type TCLP/VOA
Tune file APE001
Seq. file MJA
Method file VOAA
ID file DA0193
CB file CA0193
Analyst [illegible]
Reviewed by [illegible] Date 3/28/91

Batch #'s QV60630

Standards Updated
Date 3/20/91 By MJB

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
P-BFB	50	9871	full
Int std & surr	25	10571	10
Cal I	50	10716	2,5,10,15,20
Cal II	50	10717	
VOA	50	0348	
Ethyl Ether	50	10303	

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
			full	mjb 3/20/91				
	P-BFB	>A4480	5ml	–		10:07	OK 103	
	QC 60630 VS	>A4469	5ml	13			NG 20	
	QC 60630 VS	>A4470		14			15	
	QC 60630 VS	>A4471		15			~~NG~~ mjb 3/20/91 10	
	QC 60630 VS	>A4472		16			5	
	QC 60630 VS	>A4473		17			2	
	QC 60630 VS	>A4481	5ml	8		10:41	20 ul stds	
	QC 60630 V	>A4482		9			NG	
	QC 60630 V	>A4483	5ml	9		12:45	OK blank	
	FC1454 V	>A4484	5ml	8			Rerun same	
	FC1603 V	>A4485		9			NG Rerun 1:10. Y needs dilt for confirm	
R	FC1691 V	>A4486	.100	10	1:50		Resequenced	
	FC1584 V	>A4487	5ml	11			mjb 3/20/91	
	FC1584 VS	>A4488		12				
	QS61364	>A4489		13				
	QS61383	>A4490	.500	14	1:10			
	FC2003	>A4491		15				
R	FC1454	>A4492	5ml	16				

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 032 Page 2 of 6

Date 3/21/91 Instr. A

A-Type TCLP/VOA
Tune file AFE501
Seq. file MJA
Method file VOAA
ID file CA0193
CB file CA0193
Analyst [signature]
Reviewed by/Date [signature] 3/28/91
Batch #'s QV60630

Standards Updated
Date 3/20/91 By MJB

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
~~Std Mix 1~~			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	P
(12)	~~FC1603~~ ~~BLK~~	>A4493	.5ml	1	1:10			
	Pos blK	>A4494	5ml	2			Not Run	
	Pos. blK	>A4495		3				
	Pos. blK	>A4496		4				
	Pos. blK	>A4497		5				
	Pos. blK	>A4498		6				
	Pos. blK	>A4499		7				
	System blK	>A4500	5ml	16			~~run before~~ [illegible] 3/20/91	
	System blK	>A4501	5ml	1			OK	
	FC1691 ✓	>A4502	.100	10	1:50	18:03	OK for QV60624	
	FC1584 ✓	>A4503	5ml	11			Rerun 1:20. Redo	
	FC1584 VS	>A4504		12				
	QS61364 ✓	>A4505		13			Rerun poss. carryover	
	QS61383 ✓	>A4506	.500	14	1:10		Redo	
	FC2003 ✓	>A4507	5ml	15			Rerun std.	
(12)	FC1454 ✓	>A4508		16			Rerun std.	
	Pos. blK	>A4509		2			42.06	
	Pos. blK	>A4510		3			48	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 033 Page 3 of 3 AD

Date 3/22/91 Instr. A

A-Type TCLP/VOA
Tune file APE101
Seq. file MJA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [illegible]
Reviewed by [illegible] Date 3/28/91

Batch #'s QV60630

Standards Updated
Date 3/20/91 By MJA

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
Seafg			

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	Pos blk	>A4511	5ml	4			33	
		>A4512		5			34	
		>A4513		6			22	
		>A4514		7			22	
		>A4515		9			51	
	P-BFB	>A4516	1ul	-		9:46	OK 100 each	
	QC 60630 V5	>A4517	5ml	13	(QCAL)		OK	
	QC60630 V2	>A4518		14			OK	
R	FC1454 1/2	>A4519	5ml	15		12:06	OK	
R	QS101403 1/2	>A4520		16			OK for TC/TCLP TCLP BLK	
R	FC1603 1/2	>A4521		1		13:35	OK	
	Pos blk	>A4522	5ml	1			steam cleaning	
		>A4523		2			5ml H_2O	
		>A4524		3			1ml MeOH	
		>A4526		4				
		>A4527		5				
		>A4528		6				
		>A4529		7				

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 034 Page 4 of 4 AD 364

Date 3/22/91 Instr. A

A-Type TCLP/VOA
Tune file APEIO
Seq. file MJA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [signature]
Reviewed by Date Ann Dain 3/28/91

Batch #'s QV60630

Standard	Conc ppm	Lot No.	Lot Vol.
SW8261			

Standards Updated
Date 3/21/91 By MJB

Tape # _____ Inj. ___ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	Pos blk	>A4530	5ml	8			Steam clean 5ml H_2O	
		>A4531		9			1ml MeOH	
		>A4532		10				
		>A4533		11				
		>A4534		12				
		>A4535		13				
		>A4536		14				
		>A4537		15				
		>A4538		16				
	P-BFB	>A4538	1ul	-				
	QC60630 ✓	>A4539	5ml	2			NG	
	BLK	>A4540		3				
	BLK	>A4541		4				
	BLK	>A4542		5				
	QC60630VS	>A4543	5ml	13			NG	
	QC60630V3	>A4544		14				
	QC60630V5	>A4545	5ml	16				
	Pos. blk	>A4546		1				

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 035 Page 5 of 5

Date 2/24/91 Instr. A

A-Type TCLP/VOA
Tune file AREF01
Seq. file MJA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [illegible]
Reviewed by [illegible] Date 3/28/91

Batch #'s QV60630

__ Standards Updated
Date 3/20/91 By

Tape # Inj. ul

Standard	Conc ppm	Lot No.	Lot Vol.
See fig 1			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	Pos. blk	>A4547		2			17 ng Chlorobenzene	
		>A4548		3			13	
		>A4549		4			8	
		>A4550		5			8	
		>A4551		6			8	
		>A4552		7			8	
		>A4553		8			0	
		>A4554		9			0	
		>A4555		10			0	
		>A4556		11			0	
		>A4557		12			0	
		>A4558		13			12	
		>A4559		14			0	
		>A4560		15			7	
		>A4561		16			0	
	p-BFB	>A4562	1ul	—		23:54	OK >4 each	
	POS B1ANIC	A4563	5	2			30 NG	
	↓	A4564	5	3			31	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 036 Page 6 of 8 3/26/91

Date 3/25/91 Instr. A

A-Type TIR/VOA
Tune file APE30V
Seq. file MJA
Method file VOA
ID file A0193
CB file A0193
Analyst [signature]
Reviewed by [signature] Date 3/28/91

Batch #'s QV60630

Standard	Conc ppm	Lot No.	Lot Vol.
SEE GC			

Standards Updated
Date 3/21/91 By MJD

Tape # _____ Inj. ___ ul

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	POS BLANK	A4565	5	4			16.62	
		A4566	5	5			19.83	
		A4567	5	6			12	
		A4568	5	7			16	
		A4569	5	13			OK	
		A4570	5	15			OK	
	P-BFB	>A4571	1ul	-		8:42	OK 79	
	QC60630 VS	>A4572	5ml	8	(QCAL)		OK	
	QC60630 V3	>A4573	↓	9			OK	
R	GS61364	>A4574	50	1		11:15	OK TCLP BLK	
	FC2296 V3	>A4575		2		12:00	OK	
	FC2296 VS	>A4576		3		12:44	OK } to report to QV60636	
	FC2298 V3	>A4577		4		13:29	OK	
	FC2292 V	>A4578		5		14:14	OK	
	FC2292 VS	>A4579	↓	6		14:59	OK } to report to QV60637	
	FC2295 V	>A4580	1.0	7		15:43	OK rerun 1:25 for C2d	
	FC2155 V	>A4581	50	8		16:28	OK 2nd surr out due to matrix	
	FC2155 VS	>A4582	↓	9		17:13	} to report to QV60638	

R : redo , P : Aroclor search , + : Plus search

ETC

ENVIRONMENTAL TESTING
AND CERTIFICATION CORP.

Technical Report

for

ALLIED SIGNAL, INC.

P.O. BOX 1053R

MORRISTOWN, NJ 07962

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC2295	ALLIED SIGNAL, INC.	ASIMNJTCLP	XB1	910312	1200	

Richard P. Albert

Vice President, General Manager

This Technical Report is an INSITE℠ service generated by LODESTAR℠ Data Management Software.

284 Raritan Center Parkway ■ CN 7808 ■ Edison, New Jersey 08818-7808 ■ 908-225-5600

INTRODUCTION

Environmental Testing and Certification Corp.
284 Raritan Center Parkway, CN 7808
Edison, New Jersey 08818-7808
(201) 225-6700

Analytical Methodology for TCLP (TC)

Analytical procedures and quality assurance protocols for this analysis conform to the requirements described in the Toxicity Characteristic Final Rule (June 29, 1990 Federal Register). Sample extraction procedures for leachate preparation are performed in accordance with Method 1311 as described in the Final Rule; subsequent preparations and analyses are performed following the appropriate procedures in the SW-846 Third Edition of "Test Methods for Evaluating Solid Wastes".

This technical report contains tabulated analytical results and associated matrix spike recoveries for the sample. Note that the results reported have not been corrected for any analytical bias. Corrections may be performed using the formula that follows.

$$X_c = 100\ (X_u\ /\ \%R)$$

Where:

X_c = Bias Corrected Result
X_u = Result of Unspiked Sample
%R = Matrix Spike Recovery

COMMENTS

COMMENTS FOR SPECIFIC ANALYSES

VOLATILE FRACTION:

FC2295

Intact sample or extract required dilution resulting in elevated MDL's.

ETC CORP.

TABULATED ANALYTICAL RESULTS

ETC

APR 5, 1991
QV60637

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

TC - Volatile Compounds - GC/MS Analysis (QRC1)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC2295	ALLIED SIGNAL, INC.	ASIMNJTCLP	XB1	910312	1200	0

Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
	Sample Concen ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen Added ug/l	% Recov
Benzene	1120	25	-	-	ND	50.0	102	83.2	100	111

ETC

APR 5, 1991

TABLE 2: METHOD PERFORMANCE DATA
Surrogate Recovery Water - GC/MS Data (QR20)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC2295	ALLIED SIGNAL, INC.	ASIMNJTCLP	XB1	910312	1200	0

Compound	Amount added ug	% Recovery	IFB EPA Control Limits Lower	IFB EPA Control Limits Upper
VOLATILE FRACTION (GC/MS)				
Toluene-D8	.250	103	88	110
p-Bromofluorobenzene	.250	96	86	115
1,2-Dichloroethane-D4	.250	94	76	114
ACID FRACTION (GC/MS)				
Phenol-D5	-	-	10	94
2-Fluorophenol	-	-	21	100
2,4,6-Tribromophenol	-	-	10	123
BASE/NEUTRAL FRACTION (GC/MS)				
Nitrobenzene-D5	-	-	35	114
2-Fluorobiphenyl	-	-	43	116
Terphenyl-D14	-	-	33	141
PESTICIDE/PCB FRACTION (GC)				
Dibutylchlorendate	-	-	24**	154**
2,4,5,6-Tetrachloro-m-xylene	-	-	46	185
METHOD 601				
Bromochloromethane	-	-	82	124
METHOD 602				
a,a,a-Trifluorotoluene	-	-	80	120

** Advisory Limits Only

ETC CORP.

GC/MS QUALITY CONTROL DATA

Instrument Performance Check

Tuning and Mass Calibration

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4463 BFB Injection Date: 03/19/91

Instrument ID: GC/MS/A/B_ BFB Injection Time: 1427

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.5
75	30.0 - 60.0% of mass 95	52.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.7
173	Less than 2.0% of mass 174	1.5 (1.7)1
174	Greater than 50.0% of mass 95	86.3
175	5.0 - 9.0% of mass 174	6.9 (7.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.9 (98.3)1
177	5.0 - 9.0% of mass 176	6.4 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60630VS	>A4470	03/19/91	1934
02		QC60630VS	>A4471	03/19/91	2018
03		QC60630VS	>A4472	03/19/91	2102
04		QC60630VS	>A4473	03/19/91	2146
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4480 BFB Injection Date: 03/20/91

Instrument ID: GC/MS/A/B_ BFB Injection Time: 1007

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.8
75	30.0 - 60.0% of mass 95	51.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	1.5 (1.9)1
174	Greater than 50.0% of mass 95	82.0
175	5.0 - 9.0% of mass 174	6.3 (7.6)1
176	Greater than 95.0%, but less than 101.0% of mass 174	81.3 (99.1)1
177	5.0 - 9.0% of mass 176	6.0 (7.4)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60630VS	>A4481	03/20/91	1041
02		QC60630V	>A4483	03/20/91	1245
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4571 BFB Injection Date: 03/25/91

Instrument ID: GC/MS/A/B_ BFB Injection Time: 0842

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.9
75	30.0 - 60.0% of mass 95	57.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	90.3
175	5.0 - 9.0% of mass 174	7.2 (7.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	87.3 (96.6)1
177	5.0 - 9.0% of mass 176	6.6 (7.6)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60630VS	>A4572	03/25/91	0916
02		QC60637V3	>A4573	03/25/91	1000
03		FC2292V3	>A4578	03/25/91	1414
04		FC2292VS	>A4579	03/25/91	1459
05		FC2295V3	>A4580	03/25/91	1543
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CHAIN OF CUSTODY DOCUMENTATION

Chain of Custody Forms
Laboratory Chronicles
Subcontract

ETC

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/90

No. 90687

Environmental Testing and Certification Corp. • 284 Raritan Center Parkway • Edison, NJ 08818 • 908-225-6700

COMPANY: ALLIED SIGNAL
FACILITY/SITE: DETROIT, MI
PROJECT CONTACT: DARYL QUINN
TELEPHONE NO.: 313 842 4400

ANALYSIS REQUIRED: TCLP (Benzene) all

LEGEND FOR PRESERVATIVE
0 - NONE
1 - HCL
2 - HNO_3
3 - H_2SO_4
4 - Na_2SO_3 + H_2SO_4

ITEM NO	ETC JOB #	SOURCE CODE	SAMPLE POINT	START DATE YY/MM/DD	START TIME 24 HR Clock	NUMBER OF CONTAINERS	FILT. (Y/N)	PRESERV.	SAMPLER OBSERVATIONS	LAB OBSERVATIONS
1	FC2295	X	0000000B1	910312	10:30	1				
2		X	0000000A1	910312	10:50	1				
3	FC2292	X	0000000D1	910312	12:00	1				
4		X	0000000C1	910312	11:35 #B	1				
5		X	0000000E1	910312	11:05	1				
6		X	0000000E2	910312	15:00	1				
7		X	0000000A2	910312	16:20	1				
8	SAB 3/20/91									
9										

Source Codes:
Well .... (W) Outfall ..... (O)
Soil .... (S) River/Stream .... (R)
Bottom Sediment ..... (B)
Generation Point ..... (G)
Surface Impoundment ..... (I)
Treatment Facility ..... (T)
Leachate Collection Sys ..... (C)
Lake/Ocean ..... (L)
Other ..... (X)
Specify: WASTE TAR SLUDGE

CHAIN OF CUSTODY CHRONICLE

1. Shuttle Opened By: (print) W. E. YANOVITCH Date: 3/12/91 Time: 9:05 AM
Signature: W E Yanovitch Seal #: 194485 Intact: Yes

2. I have received these materials in good condition from the above person.
Name: Signature
Date: Time: Remarks:

3. I have received these materials in good condition from the above person.
Name: Signature
Date: Time: Remarks:

4. Shuttle Sealed By: (print) Rudy Dawson Date: 3/14/91 Time: 1:00
Signature: Rudolph J. Dawson Seal #: 0194486 Intact: Yes

LAB USE ONLY Opened By: Richard Diaz Date: 03/15/91 Time: 2:05 pm
SHUTTLE # 108 TEMP. °C SEAL # 194486 COND. intact

REMARKS
3/8/91 Seal # 0194485 KCK
3/14/91 Seal #, box to ETC 0194486 F.B.

SAMPLER'S SIGNATURE: F. B.

ETC

TCLP PREP LOG (Method 1311) - Volatiles (ZHE)

Batch QS 61403

Sample ID	Log Link	Sample Wt (g)	Initial Filtrate	Total Vol.	Fraction
FC2155	253595	20.04	No	400 ML	3TCPREP/UCA
FC21560	253595	20.01	No	400 ML	3TCPREP/UCA
FC5133	253596	20.05	No	400 ML	3TCLP/UCA
QS61403	BLANK	—	—	400 ML	TCLP/BLANK
FC1603	253520	20.07	No	400 ML	3TCLPREP/UCA (REDO)
FC2295	253615	20.12	NO	400 ML	3TCLPREP/UCA
FC2292	253615	20.18	No	400 ML	3TCLPREP/UCA
FC2296	253615	20.12	No	400 ML	3TCLPREP/UCA
FC2298	253615	20.01	No	400 ML	3TCLPREP/UCA
FC2301	253615	20.03	No	400 ML	3TCLPREP/UCA
FC2299	253615	20.08	No	400 ML	3TCLPREP/UCA
FC2240	253611	20.01	No	400 ML	2TCP REP/UCA

Set-up Myers Collefox 3/20/91

Filtering Myers Collefox 3/21/91

Supervisor K. Wilson 3/20/91

Start Time 1:00 PM

Lab Temp 19 °C

Tumbler RPM 30

Stop Time 7:00 AM

Comments:

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 031 Page 1 of 86

Date 3/20/91 Instr. A

A-Type TCLP/VOA
Tune file APE001
Seq. file MTA
Method file VOA4
ID file IA0193
CB file CA0193
Analyst [illegible]
Reviewed by [illegible] Date 3/28/91

Batch #'s QV60630

Standard	Conc ppm	Lot No.	Lot Vol.
P-BFB	50	9871	1ml
Int std & surr	25	10571	10
Cal I	50	10716	2,5,10,15,20
Cal II	50	10717	
VOA	50	0398	
Ethyl Ether	50	10303	

__ Standards Updated
Date 3/20/91 By MJB

Tape # _____ Inj. __ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	P
			5ml	1				
	P-BFB	>A4480	5ml	–		10:07	OK 103	
	QC 60630 VS	>A4469	5ml	13			NG 20	
	QC 60630 VS	>A4470		14			15	
	QC 60630 VS	>A4471		15			~~NG~~ 10	
	QC 60630 VS	>A4472		16			5	
	QC 60630 VS	>A4473		17			2	
	QC 60630 VS	>A4481	5ml	8		10:41	20 ul stds	
	QC 60630 V	>A4482		9			NG	
	QC 60630 V	>A4483	5ml	9		12:45	OK blank	
	FC1454 V	>A4484	5ml	8			Rerun same	
	FC1603 V	>A4485		9			NG Rerun 1:10. for confirm	
R	FC1691 V	>A4486	.100	10	1:50		Resequenced	
	FC1584 V	>A4487	5ml	11				
	FC1584 VS	>A4488		12				
	QS61364	>A4489		13				
	QS61383	>A4490	.500	14	1:10			
	FC2003	>A4491		15				
R	FC454	>A4492	5ml	16				

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 032 Page 2 of 8

AD 3/29/91

Date 3/21/91 Instr. A

A-Type TCLP/VOA
Tune file APGE01
Seq. file MJA
Method file VOAA
ID file CA0193
CB file CA0193
Analyst [signature]
Reviewed by/Date [signature] 3/28/91
Batch #'s QV60630

Standards Updated
Date 3/20/91 By MJB

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
~~3006 ug/L~~			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	P
	~~FC1603~~							
R	BLK	>A4493	.5ml	1	1:10			
	Pos blK	>A4494	5ml	2			Not Run	
	Pos. blK	>A4495		3				
	Pos. blK	>A4496		4				
	Pos. blK	>A4497		5				
	Pos. blK	>A4498		6				
	Pos. blK	>A4499		7				
	System blK	>A4500	5ml	16			~~run before~~ MJB 3/20/91	
	System blK	>A4501	5ml	1			OK	
	FC1691 ✓	>A4502	.100	10	1:50	18:03	OK for QV60624	
	FC1584 ✓	>A4503	5ml	11			Rerun 1:20. Redo	
	FC1584 VS	>A4504		12				
	QS61364 ✓	>A4505		13			Rerun poss. carryover	
	QS61383 ✓	>A4506	.500	14	1:10		Redo	
	FC2003 ✓	>A4507	5ml	15			Rerun std.	
R	FC1454 ✓	>A4508		16			Rerun std.	
	Pos. blK	>A4509		2			42.06	
	Pos. blK	>A4510		3			48	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 033 Page 3 of 8

AD 3/24/91

Date 3/22/91 Instr. A

A-Type TCLP/VOA
Tune file APE301
Seq. file MJA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [illegible]
Reviewed by/Date [illegible] 3/28/91

Batch #'s QV60630

Standard	Conc ppm	Lot No.	Lot Vol.
Sen fg			

Standards Updated
Date 3/20/91 By MJA

Tape # _____ Inj. ___ ul

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	Pos blk	>A4511	5ml	4			33	
		>A4512		5			34	
		>A4513		6			22	
		>A4514		7			22	
		>A4515		9			51	
	P-BFB	>A4516	1ml	-		9:46	OK 100 each	
	QC 60630 V5	>A4517	5ml	13	(QCAL)		OK	
	QC60630 V2	>A4518		14			OK	
R	FC1454 V2	>A4519	5ml	15		12:06	OK	
R	QS161403 V2	>A4520		16			OK for TC/TCLP TCLP BLK	
P	FC1603 V2	>A4521		1		13:35	OK	
	Pos blk	>A4522	5ml	1			steam cleaning	
		>A4523		2			5ml H_2O	
		>A4524		3			1ml MeOH	
		>A4526		4				
		>A4527		5				
		>A4528		6				
		>A4529		7				

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 034 Page 4 of 4 AD 3/29/91

Date 3/22/91 Instr. A

A-Type TCLP/VOA
Tune file APE50
Seq. file MJA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [signature]
Reviewed by [signature] Date 3/28/91

Batch #'s QV60630

Standards Updated
Date 3/21/91 By MJB

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
SW8271			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	Pos blk	>A4530	5ml	8			Steam clean 5ml H_2O 1ml MeOH	
		>A4531		9				
		>A4532		10				
		>A4533		11				
		>A4534		12				
		>A4535		13				
		>A4536		14				
		>A4537		15				
		>A4538		16				
	P-BFB	>A4538	1ul	-				
	QC60630 V	>A4539	5ml	2			NL	
	BLK	>A4540		3				
	BLK	>A4541		4				
	BLK	>A4542		5				
	QC60630VS	>A4543	5ml	13			NL	
	QC60630V3	>A4544		14				
	QC60630VS	>A4545	5ml	16				
	Pos. blk	>A4546		1				

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 035 Page 5 of 5 3/26/91

3/29/91

Date 3/24/91 Instr. A

A-Type TCLP/VOA
Tune file AKEF01
Seq. file MJA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [illegible]
Reviewed by [illegible] Date 3/28/91

Batch #'s QV60630

Standards Updated
Date 3/20/91 By

Tape # Inj. ul

Standard	Conc ppm	Lot No.	Lot Vol.
Std 1			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	Pos. blk	>A4547		2			17 ng Chlorobenzene	
		>A4548		3			13	
		>A4549		4			8	
		>A4550		5			8	
		>A4551		6			8	
		>A4552		7			8	
		>A4553		8			0	
		>A4554		9			0	
		>A4555		10			0	
		>A4556		11			0	
		>A4557		12			0	
		>A4558		13			12	
		>A4559		14			0	
		>A4560		15			7	
		>A4561		16			0	
	p-BFB	>A4562	1ml	—		23:54	OK >4 each	
	POS B1ANK	A4563	5	2			30 NG	
		A4564	5	3			31	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 036 Page 6 of 6 3/26/91

3/29/91

Date 3/25/91 Instr. A

A-Type TIR/VOA
Tune file APE30V
Seq. file MJA
Method file WAA
ID file IA0193
CB file CA0193
Analyst [illegible]
Reviewed by/Date [illegible] 3/28/91
Batch #'s QV60630

Standard	Conc ppm	Lot No.	Lot Vol.
SUR-C			

Standards Updated
Date 3/21/91 By MJB

Tape # _____ Inj. ___ ul

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	P
	POS BLANK	A4565	5	4			16.62	
		A4566	5	5			19.83	
		A4567	5	6			12	
		A4568	5	7			16	
		A4569	5	13			OK	
		A4570	5	15			OK	
	P-BFB	>A4571	1ul	-		8:42	OK 79	
	QC60630 VS	>A4572	5ml	8	(QCAL)		OK	
	QC60630 V3	>A4573		9			OK	
R	GS61364	>A4574	50	1		11:15	OK TCLP BLK	
	FC2296 V3	>A4575		2		12:00	OK	
	FC2296 VS	>A4576		3		12:44	OK } to report to QV60636	
	FC2298 V3	>A4577		4		13:29	OK	
	FC2292 V	>A4578		5		14:14	OK	
	FC2292 VS	>A4579		6		14:59	OK } to report to QV60637	
	FC2295 V	>A4580	1.0	7		15:43	OK rerun 1:25 for C20	
	FC2155 V	>A4581	50	8		16:28	OK 2nd surr out due to matrix	
	FC2155 VS	>A4582		9		17:13	} to report to QV60638	

R : redo , P : Aroclor search , + : Plus search

ETC

ENVIRONMENTAL TESTING
AND CERTIFICATION CORP.

Technical Report

for

ALLIED SIGNAL, INC.

P.O. BOX 1053R

MORRISTOWN, NJ 07962

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC2292	ALLIED SIGNAL, INC	ASIMNJTCLP	XD1	910312	1030	

Richard P. Albert

Vice President, General Manager

This Technical Report is an INSITE℠ service generated by LODESTAR℠ Data Management Software.

284 Raritan Center Parkway ■ CN 7808 ■ Edison, New Jersey 08818-7808 ■ 908-225-5600

INTRODUCTION

Environmental Testing and Certification Corp.
284 Raritan Center Parkway, CN 7808
Edison, New Jersey 08818-7808
(201) 225-6700

Analytical Methodology for TCLP (TC)

Analytical procedures and quality assurance protocols for this analysis conform to the requirements described in the Toxicity Characteristic Final Rule (June 29, 1990 Federal Register). Sample extraction procedures for leachate preparation are performed in accordance with Method 1311 as described in the Final Rule; subsequent preparations and analyses are performed following the appropriate procedures in the SW-846 Third Edition of "Test Methods for Evaluating Solid Wastes".

This technical report contains tabulated analytical results and associated matrix spike recoveries for the sample. Note that the results reported have not been corrected for any analytical bias. Corrections may be performed using the formula that follows.

$$X_c = 100\ (X_u\ /\ \%R)$$

Where:

X_c = Bias Corrected Result
X_u = Result of Unspiked Sample
%R = Matrix Spike Recovery

ETC CORP.

TABULATED ANALYTICAL RESULTS

ETC

APR 5, 1991
QV60637

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

TC - Volatile Compounds - GC/MS Analysis (QRC1)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC2292	ALLIED SIGNAL, INC.	ASIMNJTCLP	XD1	910312	1030	0

Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
	Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
Benzene	83.2	5.0	-	-	ND	50.0	102	83.2	100	111

ETC

APR 5, 1991

TABLE 2: METHOD PERFORMANCE DATA
Surrogate Recovery Water - GC/MS Data (QR20)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC2292	ALLIED SIGNAL, INC	ASIMNJTCLP	XD1	910312	1030	0

Compound	Amount added ug	% Recovery	IFB EPA Control Limits Lower	IFB EPA Control Limits Upper
VOLATILE FRACTION (GC/MS)				
Toluene-D8	.250	103	88	110
p-Bromofluorobenzene	.250	95	86	115
1,2-Dichloroethane-D4	.250	93	76	114
ACID FRACTION (GC/MS)				
Phenol-D5	-	-	10	94
2-Fluorophenol	-	-	21	100
2,4,6-Tribromophenol	-	-	10	123
BASE/NEUTRAL FRACTION (GC/MS)				
Nitrobenzene-D5	-	-	35	114
2-Fluorobiphenyl	-	-	43	116
Terphenyl-D14	-	-	33	141
PESTICIDE/PCB FRACTION (GC)				
Dibutylchlorendate	-	-	24**	154**
2,4,5,6-Tetrachloro-m-xylene	-	-	46	185
METHOD 601				
Bromochloromethane	-	-	82	124
METHOD 602				
a,a,a-Trifluorotoluene	-	-	80	120

** Advisory Limits Only

ETC CORP.

GC/MS QUALITY CONTROL DATA

Instrument Performance Check

Tuning and Mass Calibration

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4463 BFB Injection Date: 03/19/91

Instrument ID: GC/MS/A/B_ BFB Injection Time: 1427

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.5
75	30.0 - 60.0% of mass 95	52.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.7
173	Less than 2.0% of mass 174	1.5 (1.7)1
174	Greater than 50.0% of mass 95	86.3
175	5.0 - 9.0% of mass 174	6.9 (7.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.9 (98.3)1
177	5.0 - 9.0% of mass 176	6.4 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60630VS	>A4470	03/19/91	1934
02		QC60630VS	>A4471	03/19/91	2018
03		QC60630VS	>A4472	03/19/91	2102
04		QC60630VS	>A4473	03/19/91	2146
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4480 BFB Injection Date: 03/20/91

Instrument ID: GC/MS/A/B_ BFB Injection Time: 1007

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.8
75	30.0 - 60.0% of mass 95	51.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	1.5 (1.9)1
174	Greater than 50.0% of mass 95	82.0
175	5.0 - 9.0% of mass 174	6.3 (7.6)1
176	Greater than 95.0%, but less than 101.0% of mass 174	81.3 (99.1)1
177	5.0 - 9.0% of mass 176	6.0 (7.4)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60630VS	>A4481	03/20/91	1041
02		QC60630V	>A4483	03/20/91	1245
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4571 BFB Injection Date: 03/25/91

Instrument ID: GC/MS/A/B_ BFB Injection Time: 0842

Matrix: (soil/water) _____ Level: (low/med) LOW Column: (pack/cap) _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.9
75	30.0 - 60.0% of mass 95	57.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	90.3
175	5.0 - 9.0% of mass 174	7.2 (7.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	87.3 (96.6)1
177	5.0 - 9.0% of mass 176	6.6 (7.6)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60630VS	>A4572	03/25/91	0916
02		QC60637V3	>A4573	03/25/91	1000
03		FC2292V3	>A4578	03/25/91	1414
04		FC2292VS	>A4579	03/25/91	1459
05		FC2295V3	>A4580	03/25/91	1543
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

CHAIN OF CUSTODY DOCUMENTATION

Chain of Custody Forms
Laboratory Chronicles
Subcontract

ETC

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/90

No. 90687

Environmental Testing and Certification Corp. • 284 Raritan Center Parkway • Edison, NJ 08818 • 908-225-6700

COMPANY: ALLIED SIGNAL
FACILITY/SITE: DETROIT, MI
PROJECT CONTACT: DARYL QUINN
TELEPHONE NO.: 313 842 4400

FILT. (Y/N)
PRESERV.
ANALYSIS REQUIRED: TCLP (Benzene) all

LEGEND FOR PRESERVATIVE
0 - NONE
1 - HCL
2 - HNO_3
3 - H_2SO_4
4 - Na_2SO_3 + H_2SO_4

ITEM NO.	ETC JOB #	SOURCE CODE	SAMPLE POINT	START DATE YY/MM/DD	START TIME 24 HR Clock	NUMBER OF CONTAINERS	SAMPLER OBSERVATIONS	LAB OBSERVATIONS
1	FC2295	X	0000000B1	910312	10:30	1		
2		X	0000000A1	910312	10:50	1		
3	FC2292	X	0000000D1	910312	12:00	1		
4		X	0000000C1	910312	14:35	1	10 drums	
5		X	0000000E1	910312	11:05	1	5 drums	
6		X	0000000E2	910312	15:00	1	5 drums	
7		X	0000000A2	910312	16:20	1		
8	3/20/91							
9								

Source Codes:
Well ....(W) Outfall ..... (O)
Soil .... (S) River/Stream ....(R)
Bottom Sediment .....(B)
Generation Point .....(G)
Surface Impoundment ..... (I)
Treatment Facility .....(T)
Leachate Collection Sys ..... (C)
Lake/Ocean ..... (L)
Other ..... (X)
Specify WASTE TAR SLUDGE

CHAIN OF CUSTODY CHRONICLE

1. Shuttle Opened By: (print) W. E. YANOVITCH Date: 3/12/91 Time: 9:05 AM
Signature: W E Yanovitch Seal #: 194485 Intact: Yes

2. I have received these materials in good condition from the above person.
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

3. I have received these materials in good condition from the above person.
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

4. Shuttle Sealed By: (print) Rudy Dawson Date: 3/14/91 Time: 1:00
Signature Rudolph J. Dawson Seal #: 0194486 Intact: Yes

LAB USE ONLY Opened By: Richard Diaz Date: 03/15/91 Time: 2:05 PM
SHUTTLE # 100 TEMP. °C _____ SEAL # 194486 COND. intact

REMARKS
3/8/91 Seal # 0194485 KCK
3/14/91 Seal #, box to ETC 0194486 F.B.

SAMPLER'S SIGNATURE: F. Bo

ETC

TCLP PREP LOG (Method 1311) - Volatiles (ZHE)

Batch QS 61403

Sample ID	Log Link	Sample Wt (g)	Initial Filtrate	Total Vol.	Fraction
FC2155	253595	20.04	No	400 ML	3TCPREP/VOA
FC2156	253595	20.01	No	400 ML	3TCPREP/VOA
FC5133	253596	20.05	No	400 ML	2TCLP/VOA
QS61403	BLANK	—	—	400 ML	TCLP/BLANK
FC1603	253520	20.07	No	400 ML	3TCLPREP/VOA (REDO)
FC2295	253615	20.12	NO	400 ML	3TCLPREP/VOA
FC2292	253615	20.18	No	400 ML	3TCLPREP/VOA
FC2296	253615	20.12	No	400 ML	3TCLPREP/VOA
FC2298	253615	20.01	No	400 ML	3TCLPREP/VOA
FC2301	253615	20.03	No	400 ML	3TCLPREP/VOA
FC2299	253615	20.08	No	400 ML	3TCLPREP/VOA
FC2240	253611	20.01	No	400 ML	2TCP REP/VOA

Set-up Moyes Collefox 3/20/91

Filtering Moyes Collefox 3/21/91

Supervisor K. Walsh 3/20/91

Start Time 1:00 PM

Lab Temp 19 °C

Tumbler RPM 30

Stop Time 7:00 AM

Comments:

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 031 Page 1 of 86

Date 3/20/91 Instr. A

A-Type TCLP/VOA
Tune file APE101
Seq. file MTA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [signature]
Reviewed by [signature] Date 3/28/91

Batch #'s QV60630

Standard	Conc ppm	Lot No.	Lot Vol.
P-BFB	50	9871	1ml
Intstd & surr	25	10571	10
Cal I	50	10716	2,5,10,15
Cal II	50	10717	
xVOA	50	0398	
Ethyl Ether	50	10303	

Standards Updated
Date 3/20/91 By MJB

Tape # _____ Inj. ___ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	P
			1ml	mjb 3/20/91				
	P-BFB	>A4480	5ml	–		10:07	OK 103	
	QC 60630 VS	>A4469	5ml	13			NG 20	
	QC 60630 VS	>A4470		14			15	
	QC 60630 VS	>A4471		15			NG mjb 3/20/91 10	
	QC 60630 VS	>A4472		16			5	
	QC 60630 VS	>A4473		17			2	
	QC 60630 VS	>A4481	5ml	8		10:41	20 ul stds	
	QC 60630 V	>A4482		9			NG	
	QC 60630 V	>A4483	5ml	9		12:45	OK blank	
	FC1454 ✓	>A4484	5ml	8			Rerun same	
	FC1603 ✓	>A4485		9			NG Rerun 1:10. Confirm	
R	FC1691 V	>A4486	.100	10	1:50		Resequenced	
	FC1584 V	>A4487	5ml	11			mjb 3/20/91	
	FC1584 VS	>A4488		12				
	QS61364	>A4489		13				
	QS61383	>A4490	.500	14	1:10			
	FC2003	>A4491		15				
R	FC454	>A4492	5ml	16				

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 032 Page 2 of 6

AD 3/29/91

Date 3/21/91 Instr. A

A-Type TCLP/VOA
Tune file APE501
Seq. file MJA
Method file VOAA
ID file CA0193
CB file CA0193
Analyst [signature]
Reviewed by/Date [signature] 3/28/91
Batch #'s QV60630

Standards Updated
Date 3/20/91 By MJB

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
Stdgc 1			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	P
	~~FC1603~~							
(R)	~~BLK~~	>A4493	.5ml	1	1:10			
	Pos blK	>A4494	5ml	2			Not Run	
	Pos. blK	>A4495		3				
	Pos. blK	>A4496		4				
	Pos. blK	>A4497		5				
	Pos. blK	>A4498		6				
	Pos. blK	>A4499		7				
	System blK	>A4500	5ml	16			~~run before~~ [illegible] 3/20/91	
	System blK	>A4501	5ml	1			OK	
	FC1691 ✓	>A4502	.100	10	1:50	18:03	OK for QV60624	
	FC1584 ✓	>A4503	5ml	11			Rerun 1:20. Redo	
	FC1584 VS	>A4504		12				
	QS61364 ✓	>A4505		13			Rerun poss. carryover	
	QS61383 ✓	>A4506	.500	14	1:10		Redo	
	FC2003 ✓	>A4507	5ml	15			Rerun str.	
(R)	FC1454 ✓	>A4508		16			Rerun str.	
	Pos. blK	>A4509		2			42.06	
	Pos. blK	>A4510		3			48	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 033 Page 3 of 8

AD 3/24/91

Date 3/22/91 Instr. A

A-Type TCLP/VOA
Tune file APE301
Seq. file MJA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [illegible]
Reviewed by Date [illegible] 3/28/91
Batch #'s QV60630

Standards Updated
Date 3/20/91 By MJM

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
See fig 1			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	Pos blk	>A4511	5ml	4			33	
		>A4512		5			34	
		>A4513		6			22	
		>A4514		7			22	
		>A4515		9			51	
	P-BFB	>A4516	1ml	-		9:46	OK 100 each	
	QC 60630 V5	>A4517	5ml	13	(QCAL)		OK	
	QC60630 V2	>A4518		14			OK	
R	FC1454 V2	>A4519	5ml	15		12:06	OK	
R	QS101403 V2	>A4520		16			OK for TC/TCLP TCLP BLK	
P	FC1603 V2	>A4521		1		13:35	OK	
	Pos blk	>A4522	5ml	1			steam cleaning	
		>A4523		2			5ml H_2O	
		>A4524		3			1ml MeOH	
		>A4526		4				
		>A4527		5				
		>A4528		6				
		>A4529		7				

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 034 Page 4 of 4 AD 3/29/91

Date 3/22/91 Instr. A

A-Type TCLP/VOA
Tune file APE10
Seq. file MOA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [signature]
Reviewed by/Date [signature] 3/28/91

Batch #'s QV60630

Standards Updated
Date 3/21/91 By MJB

Tape # _____ Inj. ___ ul

Standard	Conc ppm	Lot No.	Lot Vol.
SW8261			

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	Pos blk	>A4530	5ml	8			Steam clean 5ml H_2O 1ml MeOH	
		>A4531		9				
		>A4532		10				
		>A4533		11				
		>A4534		12				
		>A4535		13				
		>A4536		14				
		>A4537		15				
		>A4538		16				
	P-BFB	>A4538	1ul	-				
	QC60630V	>A4539	5ml	2			NG	
	BLK	>A4540		3				
	BLK	>A4541		4				
	BLK	>A4542		5				
	QC60630VS	>A4543	5ml	13			NG	
	QC60630V3	>A4544		14				
	QC60630VS	>A4545	5ml	16				
	Pos. blk	>A4546		1				

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 035 Page 5 of 5 3/26/91

3/29/91

Date 3/24/91 Instr. A

A-Type TCLP/VOA
Tune file AREF01
Seq. file MJA
Method file VOAA
ID file IA0193
CB file CA0193
Analyst [illegible]
Reviewed by [illegible] Date 3/28/91
Batch #'s QV60630

Standard	Conc ppm	Lot No.	Lot Vol.
See fr 1			

Standards Updated
Date 3/20/91 By

Tape # Inj. ul

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	Pos. blk	>A4547		2			17 ng Chlorobenzene	
		>A4548		3			13	
		>A4549		4			8	
		>A4550		5			8	
		>A4551		6			8	
		>A4552		7			8	
		>A4553		8			0	
		>A4554		9			0	
		>A4555		10			0	
		>A4556		11			0	
		>A4557		12			0	
		>A4558		13			12	
		>A4559		14			0	
		>A4560		15			7	
		>A4561		16			0	
	p-BFB	>A4562	1ml	—		23:54	OK >4 each	
	POS B1ANK	A4563	5	2			30 NG	
		A4564	5	3			31	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 036 Page 6 of 6 3/26/91 3/29/91

Date 3/25/91 Instr. A

A-Type TIR/VOA
Tune file APE10V
Seq. file MJA
Method file MAA
ID file 1A0193
CB file CA0193
Analyst [illegible]
Reviewed by/Date [illegible] 3/28/91
Batch #'s QV60630

Standard	Conc ppm	Lot No.	Lot Vol.
surr std			

Standards Updated
Date 3/21/91 By MJD

Tape # _____ Inj. ___ ul

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	POS BLANK	A4565	5	4			16.62	
		A4566	5	5			19.83	
		A4567	5	6			12	
		A4568	5	7			16	
		A4569	5	13			OK	
		A4570	5	15			OK	
	P-BFB	>A4571	1ul	–		8:42	OK 79	
	QC60630 VS	>A4572	5ml	8	(QCAL)		OK	
	QC60630 V3	>A4573		9			OK	
(R)	GS61364	>A4574	5g	1		11:15	OK TCLP BLK	
	FC2296 V3	>A4575		2		12:00	OK	
	FC2296 VS	>A4576		3		12:44	OK } to report to QV60636	
	FC2298 V3	>A4577		4		13:29	OK	
	FC2292 V	>A4578		5		14:14	OK	
	FC2292 VS	>A4579		6		14:59	OK } to report to QV60637	
	FC2295 V	>A4580	1.0	7		15:43	OK rerun 1:25 for C20	
	FC2155 V	>A4581	5g	8		16:28	OK 2nd surr out due to matrix	
	FC2155 VS	>A4582		9		17:13	} to report to QV60638	

R : redo , P : Aroclor search , + : Plus search

ETC

ENVIRONMENTAL TESTING
AND CERTIFICATION CORP.

Technical Report

for

ALLIED SIGNAL, INC.

P.O. BOX 1053R

MORRISTOWN, NJ 07962-1053

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC1699	ALLIED SIGNAL, INC.	ASIMNJTCLP	XTARCOMP	910312	1030	

Richard P. Albert

Vice President, General Manager

This Technical Report is an INSITE℠ service generated by LODESTAR℠ Data Management Software.

284 Raritan Center Parkway ■ CN 7808 ■ Edison, New Jersey 08818-7808 ■ 908-225-5600

INTRODUCTION

Environmental Testing and Certification Corp.
284 Raritan Center Parkway, CN 7808
Edison, New Jersey 08818-7808
(201) 225-6700

Analytical Methodology for TCLP (TC)

Analytical procedures and quality assurance protocols for this analysis conform to the requirements described in the Toxicity Characteristic Final Rule (June 29, 1990 Federal Register). Sample extraction procedures for leachate preparation are performed in accordance with Method 1311 as described in the Final Rule; subsequent preparations and analyses are performed following the appropriate procedures in the SW-846 Third Edition of "Test Methods for Evaluating Solid Wastes".

This technical report contains tabulated analytical results and associated matrix spike recoveries for the sample. Note that the results reported have not been corrected for any analytical bias. Corrections may be performed using the formula that follows.

$$X_c = 100\ (X_u\ /\ \%R)$$

Where:

X_c = Bias Corrected Result
X_u = Result of Unspiked Sample
%R = Matrix Spike Recovery

COMMENTS

COMMENTS FOR SPECIFIC ANALYSES

VOLATILE FRACTION:

FC1699

Intact sample or extract required dilution resulting in elevated MDL's.

ETC CORP.

TABULATED ANALYTICAL RESULTS

ETC

MAR 20, 1991
QV60629

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

TC - Volatile Compounds - GC/MS Analysis (QRC1)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC1699	ALLIED SIGNAL, INC.	ASIMNJTCLP	XTARCOMP	910312	1030	0

Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
	Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
Benzene	630	25	-	-	ND	50.0	99	630	500	97

ETC

MAR 20, 1991

TABLE 2: METHOD PERFORMANCE DATA
Surrogate Recovery Water - GC/MS Data (QR20)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
FC1699	ALLIED SIGNAL, INC.	ASIMNJTCLP	XTARCOMP	910312	1030	0

Compound	Amount added ug	% Recovery	IFB EPA Control Limits	
			Lower	Upper
VOLATILE FRACTION (GC/MS)				
Toluene-D8	.250	98	88	110
p-Bromofluorobenzene	.250	101	86	115
1,2-Dichloroethane-D4	.250	97	76	114
ACID FRACTION (GC/MS)				
Phenol-D5	-	-	10	94
2-Fluorophenol	-	-	21	100
2,4,6-Tribromophenol	-	-	10	123
BASE/NEUTRAL FRACTION (GC/MS)				
Nitrobenzene-D5	-	-	35	114
2-Fluorobiphenyl	-	-	43	116
Terphenyl-D14	-	-	33	141
PESTICIDE/PCB FRACTION (GC)				
Dibutylchlorendate	-	-	24**	154**
2,4,5,6-Tetrachloro-m-xylene	-	-	46	185
METHOD 601				
Bromochloromethane	-	-	82	124
METHOD 602				
a,a,a-Trifluorotoluene	-	-	80	120

** Advisory Limits Only

ETC CORP.

GC/MS QUALITY CONTROL DATA

Instrument Performance Check

Tuning and Mass Calibration

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4423 BFB Injection Date: 03/15/91

Instrument ID: GC/MS A/B A BFB Injection Time: 1708

Matrix: (soil/water) H2O Level: (low/med) LOW Column: (pack/cap) pack

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.1
75	30.0 - 60.0% of mass 95	55.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	87.6
175	5.0 - 9.0% of mass 174	7.4 (8.4)1
176	Greater than 95.0%, but less than 101.0% of mass 174	85.3 (97.4)1
177	5.0 - 9.0% of mass 176	6.3 (7.4)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60624VS	>A4424	03/15/91	1738
02		QC60624VS	>A4425	03/15/91	1823
03		QC60624VS	>A4426	03/15/91	1907
04		QC60629VS	>A4427	03/15/91	1952
05		QC60624VS	>A4428	03/15/91	2036
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4459 BFB Injection Date: 03/19/91

Instrument ID: GC/MS A/B A BFB Injection Time: 1114

Matrix: (soil/water) H2O Level: (low/med) LOW Column: (pack/cap) Fused

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.7
75	30.0 - 60.0% of mass 95	48.8
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	82.7
175	5.0 - 9.0% of mass 174	6.2 (7.5)1
176	Greater than 95.0%, but less than 101.0% of mass 174	81.3 (98.2)1
177	5.0 - 9.0% of mass 176	5.3 (6.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		QC60629V	>A4461	03/19/91	1246
02		QC60624VS	>A4462	03/19/91	1331
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V VOA 1/87 Rev.

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ETC Corp. Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.:

Lab File ID: >A4463 BFB Injection Date: 03/19/91

Instrument ID: GC/MS A/B A BFB Injection Time: 1427

Matrix: (soil/water) H_2O Level: (low/med) LOW Column: (pack/cap) pack

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.5
75	30.0 - 60.0% of mass 95	52.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.7
173	Less than 2.0% of mass 174	1.5 (1.7)1
174	Greater than 50.0% of mass 95	86.3
175	5.0 - 9.0% of mass 174	6.9 (7.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.9 (98.3)1
177	5.0 - 9.0% of mass 176	6.4 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		FC1699V	>A4464	03/19/91	1509
02		FC1699VS	>A4465	03/19/91	1553
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

CHAIN OF CUSTODY DOCUMENTATION

Chain of Custody Forms
Laboratory Chronicles
Subcontract

ETC

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/90

No. 90687

Environmental Testing and Certification Corp. • 284 Raritan Center Parkway • Edison, NJ 08818 • 908-225-6700

COMPANY: ALLIED SIGNAL
FACILITY/SITE: DETROIT, MI
PROJECT CONTACT: DARYL QUINN
TELEPHONE NO.: 313 842 4400

ANALYSIS REQUIRED: TCLP (Benzene) all

LEGEND FOR PRESERVATIVE
0 - NONE
1 - HCL
2 - HNO_3
3 - H_2SO_4
4 - Na_2SO_3 + H_2SO_4

ITEM NO.	ETC JOB #	SOURCE CODE	SAMPLE POINT	START DATE YY/MM/DD	START TIME 24 HR Clock	NUMBER OF CONTAINERS	FILT. (Y/N)	PRESERV.	SAMPLER OBSERVATIONS	LAB OBSERVATIONS
1	FC1699	X	0000000B1	910312	1030	1				
2		X	0000000A1	910312	1050	1				
3		X	0000000D1	910312	12:00	1				
4		X	0000000C1	910312	14:35	1				
5		X	0000000E1	910312	11:05	1				
6		X	0000000E2	910312	15:00	1				
7		X	0000000A2	910312	16:20	1				
8										
9										

Source Codes:
Well .... (W) Outfall ..... (O)
Soil .... (S) River/Stream .... (R)
Bottom Sediment ..... (B)
Generation Point ..... (G)
Surface Impoundment ..... (I)
Treatment Facility ..... (T)
Leachate Collection Sys ..... (C)
Lake/Ocean ..... (L)
Other ..... (X)
Specify WASTE TAR SLUDGE

10 glass
5 glass
4 glass

CHAIN OF CUSTODY CHRONICLE

1. Shuttle Opened By: (print) W. E. YANOVITCH Date: 3/12/91 Time: 9:05 AM
Signature: W E Yanovitch Seal #: 194485 Intact: Yes

2. I have received these materials in good condition from the above person
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

3. I have received these materials in good condition from the above person
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

4. Shuttle Sealed By: (print) Rudy Dawson Date: 3/14/91 Time: 1:00
Signature Rudolph J. Dawson Seal #: 0194486 Intact: Yes

LAB USE ONLY Opened By: Richard Diaz Date: 03/15/91 Time: 2:05 pm
SHUTTLE # 100 TEMP. °C _____ SEAL # 194486 COND. intact

REMARKS
3/8/91 Seal # 0194485 KCK
3/14/91 Seal #, box to ETC 0194486 F.B.

SAMPLER'S SIGNATURE: F. B.

LAB COPY

ETC

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/90

No. 90688

Environmental Testing and Certification Corp. • 284 Raritan Center Parkway • Edison, NJ 08818 • 908-225-6700

COMPANY: ALLIED SIGNAL
FACILITY/SITE: DETROIT, MI
PROJECT CONTACT: DARYL QUINN
TELEPHONE NO.: (313) 842-4400

FILT. (Y/N)
PRESERV.
ANALYSIS REQUIRED: TCLP (Benzene all samples)

LEGEND FOR PRESERVATIVE
0 - NONE
1 - HCL
2 - HNO_3
3 - H_2SO_4
4 - Na_2SO_3 + H_2SO_4

ITEM NO.	ETC JOB #	SOURCE CODE	SAMPLE POINT	START DATE YY/MM/DD	START TIME	NUMBER OF CONTAINERS	SAMPLER OBSERVATIONS	LAB OBSERVATIONS
1	FC1699	X	B2	910312	13:45	1		
2		X	D2	910313	12:30	1		
3		X	C2	910313	14:05	1		
4		X	C3	910313	10:20	1		
5		X	B3	910313	10:00	1		
6		X	D3	910313	16:15	1		
7		X	E3	910313	14:45	1		
8								
9								

Source Codes:
Well .... (W) Outfall ..... (O)
Soil .... (S) River/Stream .... (R)
Bottom Sediment ..... (B)
Generation Point ..... (G)
Surface Impoundment ..... (I)
Treatment Facility ..... (T)
Leachate Collection Sys ..... (C)
Lake/Ocean ..... (L)
Other ..... X ..... (X)
Specify: Waste Tar Sludge

1 box of Tyvek needed for 1 box provided

CHAIN OF CUSTODY CHRONICLE

1. Shuttle Opened By: (print) Rudolph Dawson Date: 3/12/91 Time: 9:05 AM
Signature: Rudolph J. Dawson Seal #: 0194787 Intact: Yes

2. I have received these materials in good condition from the above person
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

3. I have received these materials in good condition from the above person.
Name: _____ Signature _____
Date: _____ Time: _____ Remarks: _____

4. Shuttle Sealed By: (print) Rudy Dawson Date: 3/14/91 Time: 3:25 pm
Signature: Rudolph J. Dawson Seal #: 0194484 Intact: Yes

LAB USE ONLY Opened By: Richard Dry Date: 03/15/91 Time: 2:00pm
SHUTTLE # 4418 TEMP. °C ——— SEAL # 194484 COND. Intact

REMARKS: 3/8/91 Seal # 0194487 KCK

SAMPLER'S SIGNATURE: Rudolph J. Dawson 3/14/91

ETC

TCLP PREP LOG (Method 1311) - Volatiles (ZHE)

QC Batch QS61383 Hold 3/22

Sample ID	Log Link	Sample Wt (g)	Initial Filtrate	Total Vol.	Fraction
FC1584 ✓	253555	20.04	No	400 ML	3TC PREP/VOA
FC2003	253561	20.07	No	400 ML	2TCLP/VOA
FC 1603	253520	20.05	No	400 ML	3TCLPREP/VOA (REDO)
FC1453 ✓	253533	20.06	No	400 ML	3TCPREP/VOA (REDO)
QS61383	BLANK	—	—	400 ML	TCLP/BLANK
FC1699 ✓	253592	20.08	No	400 ML	TCLP/VOA

Set-up Mary Pallister 3/15/91

Filtering Mary Pallister 3/18/91

Supervisor K. Waldron 3/15/91

Start Time 1:00 PM.

Lab Temp 18°C

Tumbler RPM 30

Stop Time 7:00 AM

Comments:

ETC Corp. LABORATORY CHRONICLE : GC-MS Department

Date 3/15/91 Instr. A

Type TCLP/VOA
Tune file APEI01
Seq. file MIA
Method file VOAA
ID file JA0191, JA0192
CB file CA0191, CA0192
Analyst [illegible]
Reviewed by Date [illegible]
Batch #'s QV60624

Standard	Conc ppm	Lot No.	Lot Vol.
P-BFB	50	9871	1ml
Cal I	↓	10716	2,5,10,15,20
Cal II	↓	10717	↓
Int-std & Surr	25	10571	10ml

Standards Updated
Date 3/16/91 By MJB

Tape # _____ Inj. ___ ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	P-BFB	>A4413	1ml				OK 100	
	QC60624 VS	>A4414	5ml	11			NG 20 ml stds	
	QC60624 VS	>A4415 18 MB 3/15/91		12		CBUPD CBCAL	15	
	QC60624 VS	>A4416 19		13		QT	10	
	QC60624 VS	>A4417 20		14			5	
	QC60624 VS	>A4418 21		15			2	
	QC60624 V	>A4419 22		16			blk Δ'ED TRAP	
	P-BFB	>A4423	1ml			17:08	OK 101	
	QC60624 VS	>A4424	5ml	8			20	
	QC60624 VS	>A4425		9			15	
	QC60624 VS	>A4426		10		CBUPD CBCAL	10	
	QC60624 VS	>A4427		11			5	
	QC60624 VS	>A4428		12			2	
	QC60624 V	>A4429		13				
	QC60624 V	>A4430		14			OK -	
	FC1072 V	>A4431		15			NG leak Rerun same	
	FC1072 VS	>A4432		16			OK ~~No leak Rerun~~ mjb 3/15/91	
	FC1072 V2	>A4433		1			OK	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 028 Page 2 of 4

Date 3/18/91 Instr. A

A-Type VOA
Tune file APE101
Seq. file MJA
Method file VOAA
ID file IA0192
CB file CA0192
Analyst [illegible]
Reviewed by/Date [illegible]
Batch #'s QV60624

__ Standards Updated
Date 3/16/91 By MJB

Tape # _____ Inj. __ ul

Standard	Conc ppm	Lot No.	Lot Vol.
see pg 1			

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	Pos. blk	>A4434	5ml	2			40	
	Pos. blk	>A4435		3			52	
	Pos. blk	>A4436		4			42	
	Pos. blk	>A4437		5			37	
	Pos. blk	>A4438		6			28	
	Pos. blk	>A4439		7			26	
	P-BFB	>A4440	1ml	—		8:53	ok 100 each	
	QC60624 V5	>A4441	5ml	13	QC(A2)	9:35	ok	
	QC60624 V2	>A4442		14		10:19	OK	
R	FC1072 V2	>A4443	5ml	8		11:34	OK	
	FC1215 V2	>A4444		9		12:19	OK	
	FC1686 V2	>A4445		10		13:04	ok	
	FC1687 V2	>A4446		11		13:49	OK	
	FC1688 V2	>A4447		12		14:33	OK	
	FC1689 V2	>A4448		13		15:18	OK	
	FC1054 V2	>A4449	2.0	14			OK Rerun 1:10	
	FC1685 V2	>A4450	2.0	15		16:48	OK	
	FC1690 V2	>A4451	2.0	16			Rerun 1:10	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department 029 Page 3 of 4

Date 3/18/91 Instr. A

A-Type TCLP/VOA
Tune file APE101
Seq. file VOA
Method file VOAA
ID file IA0192
CB file CA0192
Analyst [signature]
Reviewed by/Date [signature]

Batch #'s QV60624

Standard	Conc ppm	Lot No.	Lot Vol.
Sel Std			

Standards Updated
Date 3/16/91 By VOA

Tape # _____ Inj. ___ ul

R	NAME	DATA File	Init. ml/g	ALS #	Dil	Inj. Time	Comments MJB 3/18/91	P
	FC1699 V2	>A4452		1			Rerun 1:10 1:5	
	Pos. blk	>A4453	5ml	2			63.25	
		>A4454		3			59	
		>A4455		4			60	
		>A4456		5			45	
		>A4457		6			39	
		>A4458		7			34	
	P-BFB	>A4459	1ml	-		11:14	OK 100	
	QC60624 V5	>A4460	5ml	13			NC	
	QC60624 V3	>A4461		14			OK	
	QC60624 V5	>A4462	5ml	15	QLAC		OK	
	P-BFB	>A4463	1ml	-			OK 10/ent	
R	FC1699 V3	>A4464	1ml	8		15:09	OK QV60629	
	FC1699 V5	>A4465		9		15:53	OK	
R	FC1054 V3	>A4466	.500	10		16:38	OK	
R	FC1690 V3	>A4467		11		17:22	OK	
	FC1691 V3	>A4468		12			OK Rerun 1:50 for C15	
	QC60624 V5	>A4469	5ml	13			20ml IA0193 CA0193	

R : redo , P : Aroclor search , + : Plus search

ETC Corp. LABORATORY CHRONICLE : GC-MS Department

Date 3/20/91 Instr. A

Type TCLP/VOA
Tune file AMZ101
Seq. file MSA
Method file VOAA
ID file IA0193
CB file CA0199
Analyst [illegible]
Reviewed by/Date [illegible]

Batch #'s QV60624

Standard	Conc ppm	Lot No.	Lot Vol.
see pg 1			

Standards Updated
Date By

Tape # Inj. ul

R	NAME	DATA File	init. ml/g	ALS #	Dil	Inj. Time	Comments	+ P
	QC60624 VS	>A4470	5ml	14			95 Cal I, II, xVOA, Ethyl Ether	
	QC60624 VS	>A4471		15			10	
	QC60624 VS	>A4472		16			5	
	QC60624 VS	>A4473		1			2	
	Pos. blk	>A4474	5ml	2				
		>A4475		3				
		>A4476		4				
		>A4477		5				
		>A4478		6				
		>A4479		7				

R : redo , P : Aroclor search , + : Plus search