

# CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental  
550 South Wadsworth Boulevard  
Suite 500  
Lakewood, CO 80226

Package ID T703DF7

Task Order 313150008

SDG No. IJH0950

No. of Analyses 11

Laboratory Triangle Laboratories

Reviewer L. Calvin

Analysis/Method Dioxins/Furans

Date: 03.11.02

Reviewer's Signature

L. Calvin

## ACTION ITEMS<sup>a</sup>

1. Case Narrative  
Deficiencies

2. Out of Scope  
Analyses

3. Analyses Not  
Conducted

4. Missing Hardcopy  
Deliverables

5. Incorrect Hardcopy  
Deliverables

6. Deviations from  
Analysis Protocol, e.g.,

Holding Times

GC/MS Tune/Inst.

Perform

Calibrations

Blanks

Surrogates

Matrix Spike/Dup LCS

Field QC

Internal Standard Per-  
formance

Compound Identifica-  
tion and Quantitation

System Performance

*Qualifications assigned for the following*  
*- LCS/LCSD recoveries above QC limits*  
*- detect reported above linear range of the calibration.*  
*- EMPCs qualified as estimated nondetects or reported totals also reported as EMPCs were estimated detects.*

## COMMENTS<sup>b</sup>

*Laboratory did not correctly calculate compound-specific detection limits.*

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# **DATA VALIDATION REPORT**

## **Rocketdyne Former Sodium Disposal Facility Site Sampling Program**

**ANALYSIS: POLYCHLORINATED DIOXINS AND FURANS**

**SAMPLE DELIVERY GROUP: IJH0950**

Prepared by

AMEC—Denver Operations  
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Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: Rocketdyne  
Former Sodium Disposal Facility Site Sampling Program  
Contract Task Order #: 313150008  
SDG#: IJH0950  
Project Manager: D. Hambrick  
Matrix: Soil  
Analysis: Dioxins/Furans  
QC Level: IV  
No. of Samples: 11  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: March 11, 2002

The samples listed in Table 1 were validated based on the guidelines outlined in the *National Functional Guidelines for Organic Data Review* (2/94), Triangle Laboratories, Inc. SOP *DHR182 Version 8* (11/01), and SW-846 Method 8290 (9/94). Any deviations from these guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab ID	Matrix	COC Method
CAC-89BE	CAC-89BE	IJH0950-11	soil	8290
CAC-89BW	CAC-89BW	IJH0950-17	soil	8290
CAC-90BE	CAC-90BE	IJH0950-09	soil	8290
CBC-91S	CBC-91S	IJH0950-01	soil	8290
CBC-92S	CBC-92S	IJH0950-02	soil	8290
CBC-93S	CBC-93S	IJH0950-06	soil	8290
CBC-94SW	CBC-94SW	IJH0950-07	soil	8290
PC-24	PC-24	IJH0950-15	soil	8290
PC-25	PC-25	IJH0950-14	soil	8290
PC-27	PC-27	IJH0950-04	soil	8290
PC-28	PC-28	IJH0950-05	soil	8290
PC-28D	PC-28D	IJH0950-16	soil	8290



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at both Del Mar Analytical Laboratory and Triangle Laboratories within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The samples were received intact and in good condition. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs provided in the data package pertained to the transfer of samples from the field to Del Mar Laboratory, and from Del Mar to Triangle Laboratories. The COCs noted cooler temperatures and sample conditions upon receipt. The laboratory login sheets indicated custody seals were present and intact on both the coolers and sample containers. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted within 30 days of collection and analyzed within of 45 days of extraction. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

The chromatographic separation was acceptable with a valley less than 25% between 2,3,7,8-TCDD and the other tetra-dioxin isomers on the DB-5 column and between 2,3,7,8-TCDF and the other tetra-furan isomers on the DB-225 column. All samples were run within 12 hours of a preceding GC Column Performance Check Solution analysis. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable. The SIM sensitivity was acceptable with a static resolving power of at least 10,000.  $M/Z$  292.9825 was used as the low mass PFK reference ion and  $M/Z$  416.9760 or  $M/Z$  330.9792 was used as the high mass PFK reference ion. This deviation from the method was deemed acceptable. No qualifications were required.

## 2.3 CALIBRATION

Following are findings associated with calibrations.

### 2.3.1 Initial Calibration

Two initial calibrations were analyzed on the DB-5 column dated 07/14/00 from two different instruments, and one initial calibration dated 11/22/99 was analyzed on the DB-225 column. The %RSDs were less than 20% for unlabeled compounds and less than 30% for the labeled compounds. All reported ion abundance ratios were within the QC windows and the signal-to-noise (S/N) ratios were greater than 10 for all compounds. No qualifications were required.

### 2.3.2 Continuing Calibration

The %Ds were less than 20% for unlabeled compounds and less than 30% for labeled compounds in all continuing calibrations. The ion abundance ratios were within the QC windows and S/N ratios were greater than 10 for all compounds. No qualifications were required.

## 2.4 BLANKS

One method blank was extracted and analyzed with the samples of this SDG. There were no reported detects in the method blank, and review of the method blank raw data revealed no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One LCS/LCSD pair was extracted and analyzed with the samples of this SDG. In both the LCS and LCSD, recoveries were above the laboratory control limits of 70-130% for 1,2,3,7,8-PeCDF and 2,3,4,7,8-PeCDF. The reported detects for 2,3,4,7,8-PeCDF in sample CAC-89BE and for both compounds in sample CAC-89BW were qualified as estimated, "J." As there were no other detects for the aforementioned compounds in the associated samples, no further qualifications were necessary for the elevated recoveries. All RPDs were within the method control limit of 20%. No further qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed on any of the samples. Evaluation of method accuracy and precision was based on the LCS/LCSD results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

There were no identified field QC samples associated with the samples in this SDG. No qualifications were required.

### 2.7.2 Field Duplicates

Samples PC-28 and PC-28D were the field duplicate pair associated with this SDG. Qualifications are not routinely assigned to sample results on the basis of field duplicate results; however, RPDs are calculated for those compounds present in both samples. If RPDs are greater than 50% for waters or 100% for soils, the RPDs and affected analytes are noted in the data validation report. Detects for 1,2,3,4,6,7,8,9-OCDD were reported in both samples at concentrations below the lower calibration level, with a calculated RPD of 9%. There were no other reported detects in either sample. The pair was considered to be in good agreement.

## 2.8 INTERNAL STANDARDS

The laboratory utilized 40-130% and 25-130% for the internal standard recovery limits. The control limits specified in Method 8290 are 40-135%. The method-specified control limits were utilized for the validation. All internal standard recoveries were within the method control limits; therefore, no qualifications were necessary.

## 2.9 COMPOUND IDENTIFICATION

Identification of the reported detects was verified from the raw data for representative number of samples. The detects met the criteria for the signal-to-noise ratio and ion abundance ratios. The method, however, also requires that the quantitation ions must reach maximum simultaneously (within  $\pm 2$  seconds) for all detects. As the laboratory raw data recorded the retention time of only one of the two ions, this identification criteria could not be verified.

Due to the non-specificity of 2,3,7,8-TCDF on the DB-5 column, confirmation analyses for samples with detects for 2,3,7,8-TCDF on the DB-5 column were performed on a DB-225 column. Since the laboratory reported the 2,3,7,8-TCDF results from both columns, the results on the DB-5 column were rejected, "R," in favor of the results from the DB-225 column for samples CAC-89BE and CBC-92S. As confirmation analysis was not performed for the 2,3,7,8-TCDF result in sample CAC-89BW, the result was qualified as estimated, "J." No further qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

The compound quantitations were verified from the raw data for a representative number of reported detects and no errors were noted. The compounds denoted with the laboratory qualifier, "J," were detects reported below the lower method calibration limit (MCL). The concentration of 1,2,3,4,6,7,8,9-OCDD in sample CAC-89BE exceeded the linear range of the calibration. The result was qualified as estimated, "J."

The compounds reported only at the "Estimated Maximum Possible Concentration" (EMPC) on the associated sample results summary forms were qualified as estimated nondetects, "UJ." The compounds reported at the EMPC, by definition, are signals which do not meet the ion abundance ratio identification criteria (although retention time and signal to noise criteria are met); therefore, all EMPCs are considered nondetects.

Any reported total results which were also reported as EMPCs were qualified as estimated, "J," since those results include at least one or more individual target compound congener results meeting all identification criteria, as well as peaks not meeting criteria. The total compounds reported with the laboratory qualifier of "X," indicating the presence of diphenyl ether interference, were also reported as EMPCs even if the ion abundance ratios were acceptable. Since those EMPCs were already qualified as estimated, "J," no further qualification was necessary.

The laboratory made a deviation to the calculation of estimated detection limits (EDLs). The method specifies that the EDLs be calculated using the sum of the heights of the noise level for each quantitation ion for specific 2,3,7,8-substituted PCDD/PCDFs; however, the laboratory measured only the height of the noise levels of both quantitation ions for 2,3,7,8-TCDD. The sum of these heights was then multiplied by a laboratory-derived factor used to convert height to area. This factor could not be verified by the reviewer and it was not possible to ascertain how this value was derived. This area, then, was used to calculate the EDLs for all target compounds; therefore, the EDLs reported are not compound-specific as the method specifies. Evaluation of the raw data for all samples indicated that using the noise level for 2,3,7,8-TCDD produced generally higher EDLs than other substituted congeners; therefore, the reported EDLs are likely to be more conservative than compound-specific detection limits. Although no qualification was deemed necessary, it should be noted that the EDLs are not compound-specific.

No further qualifications were required.

# Del Mar Analytical

TLI Project: **51765A**  
 Client Sample: **IJH0950-11**

Method 8290 PCDD/PCDF Analysis (b)  
 Analysis File: **U140703**

Client Project:	<b>IJH0950</b>	Date Received:	<b>08/30/2000</b>	Spike File:	<b>SPMIT32S</b>
Sample Matrix:	<b>SOIL</b>	Date Extracted:	<b>08/30/2000</b>	ICal:	<b>UF57140</b>
TLI ID:	<b>268-92-10</b>	Date Analyzed:	<b>09/06/2000</b>	ConCal:	<b>U001405</b>
<i>CAC-99BE</i>					
Sample Size:	<b>12.100 g</b>	Dilution Factor:	<b>n/a</b>	% Moisture:	<b>2.6</b>
Dry Weight:	<b>11.785 g</b>	Blank File:	<b>T004301</b>	% Lipid:	<b>n/a</b>
GC Column:	<b>DB-5</b>	Analyst:	<b>TMD</b>	% Solids:	<b>97.4</b>

Analytes	Qual	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	u	ND	0.3				—
1,2,3,7,8-PeCDD	u	ND	0.4				—
1,2,3,4,7,8-HxCDD	J	1.1			1.14	34:17	J_
1,2,3,6,7,8-HxCDD	J	4.8			1.24	34:22	—
1,2,3,7,8,9-HxCDD	J	3.6			1.22	34:41	J_
1,2,3,4,6,7,8-HpCDD	J	320			1.05	37:38	—
1,2,3,4,6,7,8,9-OCDD	J	*10 6220			0.83	41:17	E_
2,3,7,8-TCDF	R	4.4			0.72	26:18	—
1,2,3,7,8-PeCDF	u	ND	0.3				—
2,3,4,7,8-PeCDF	J	2.2			1.41	30:51	J_
1,2,3,4,7,8-HxCDF	J	4.2			1.31	33:36	J_
1,2,3,6,7,8-HxCDF	J	2.1			1.31	33:42	J_
2,3,4,6,7,8-HxCDF	J	2.7			1.19	34:10	J_
1,2,3,7,8,9-HxCDF	u	0.90			1.11	34:57	J_
1,2,3,4,6,7,8-HpCDF	J	18.7			1.05	36:37	—
1,2,3,4,7,8,9-HpCDF	J	3.2			0.94	38:09	J_
1,2,3,4,6,7,8,9-OCDF	J	18.7			0.89	41:29	—

Totals		Conc. (ppt)	Number	DL	EMPC	Flags
Total TCDD	u	ND		0.3		—
Total PeCDD	u	*10 EMPC			0.30	—
Total HxCDD	J	35.1	7			—
Total HpCDD	J	649	2			—
Total TCDF	J	*10 16.7	7		37.0	X_
Total PeCDF	J	17.0	7		30.5	X_
Total HxCDF	J	32.1	10		40.5	X_
Total HpCDF	J	53.2	3		59.6	X_

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LEVEL IV

## Del Mar Analytical

TLI Project: 51765A  
Client Sample: IJH0950-11

## Method 8290 TCDD/TCDF Analysis (DB-225)

Analysis File: P003070

Client Project: IJH0950  
Sample Matrix: SOIL  
TLI ID: 268-92-10

Date Received: 08/30/2000  
Date Extracted: 08/30/2000  
Date Analyzed: 09/06/2000

Spike File: SPC2NF2S  
ICal: PF2N229  
ConCal: P003065

Sample Size: 12.100 g  
Dry Weight: 11.785 g  
GC Column: DB-225

Dilution Factor: n/a  
Blank File: T004301  
Analyst: DPW

% Moisture:	2.6
% Lipid:	n/a
% Solids:	97.4

Analytes	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDF	2.4			0.80	23:36	

Internal Standard	Conc. (ppt)	% Recovery	QC Limits	Ratio	RT	Flags
<sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDF	151	89.1	40%-130%	0.78	23:35	—

Recovery Standard	Ratio	RT	Flags
<sup>13</sup> C <sub>12</sub> -1,2,3,4-TCDD	0.81	22:23	

WAC  
03.07.02

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Data Reviewer:

09/07/2000

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C2NF\_PSR v2.03, LARS 6.25.00

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# Del Mar Analytical

TLI Project: **51765A**  
 Client Sample: **IJH0950-17**

Method 8290 PCDD/PCDF Analysis (b)  
 Analysis File: **U140707**

Client Project:	<b>IJH0950</b>	Date Received:	<b>08/30/2000</b>	Spike File:	<b>SPMIT32S</b>
Sample Matrix:	<b>SOIL</b>	Date Extracted:	<b>08/30/2000</b>	ICal:	<b>UF57140</b>
TLI ID:	<b>268-92-16</b>	Date Analyzed:	<b>09/06/2000</b>	ConCal:	<b>U001405</b>
<i>CAC 89-BW</i>					
Sample Size:	<b>12.400 g</b>	Dilution Factor:	<b>n/a</b>	% Moisture:	<b>2.2</b>
Dry Weight:	<b>12.127 g</b>	Blank File:	<b>T004301</b>	% Lipid:	<b>n/a</b>
GC Column:	<b>DB-5</b>	Analyst:	<b>TMD</b>	% Solids:	<b>97.8</b>

Analytes	rev qual	conc code	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	U		ND	0.2				—
1,2,3,7,8-PeCDD	UJ	*10	EMPC		0.92			J_
1,2,3,4,7,8-HxCDD	J		0.98			1.05	34:17	J_
1,2,3,6,7,8-HxCDD	↓		1.3			1.18	34:22	J_
1,2,3,7,8,9-HxCDD	↓		1.6			1.22	34:41	J_
1,2,3,4,6,7,8-HpCDD	↓		3.9			1.01	37:38	J_
1,2,3,4,6,7,8,9-OCDD	↓		26.6			0.82	41:16	—
2,3,7,8-TCDF	J	*9	0.74			0.75	26:17	J_
1,2,3,7,8-PeCDF	J	↓	1.4			1.48	30:10	J_
2,3,4,7,8-PeCDF	↓	↓	1.2			1.62	30:51	J_
1,2,3,4,7,8-HxCDF	J		1.3			1.35	33:35	J_
1,2,3,6,7,8-HxCDF	↓		1.1			1.19	33:41	J_
2,3,4,6,7,8-HxCDF	↓		1.2			1.37	34:10	J_
1,2,3,7,8,9-HxCDF	↓		1.8			1.33	34:58	J_
1,2,3,4,6,7,8-HpCDF	↓		2.8			0.96	36:36	J_
1,2,3,4,7,8,9-HpCDF	↓		1.3			1.05	38:08	J_
1,2,3,4,6,7,8,9-OCDF	↓		3.2			0.89	41:28	J_

Totals			Conc. (ppt)	Number	DL	EMPC	Flags
Total TCDD	U		ND		0.2		—
Total PeCDD	UJ	*10	EMPC			0.92	—
Total HxCDD	J	*10	3.9	3		4.8	—
Total HpCDD			7.4	2			—
Total TCDF			0.74	1			—
Total PeCDF			2.6	2			—
Total HxCDF			6.5	6			—
Total HpCDF			5.7	3			—

~~REVISED~~ *AC*

**AMEC VALIDATED  
LEVEL V**

mit3\_PSR v1.00, LARS 6.25.00

# Del Mar Analytical

TLI Project: **51765A**  
 Client Sample: **IJH0950-09**

Method 8290 PCDD/PCDF Analysis (b)  
 Analysis File: **T004309**

Client Project: <b>IJH0950</b>	Date Received: <b>08/30/2000</b>	Spike File: <b>SPMIT32S</b>
Sample Matrix: <b>SOIL</b>	Date Extracted: <b>08/30/2000</b>	ICal: <b>TF57140</b>
TLI ID: <b>268-92-8</b>	Date Analyzed: <b>09/06/2000</b>	ConCal: <b>T004299</b>
<i>CAC-907BE</i>		
Sample Size: <b>12.000 g</b>	Dilution Factor: <b>n/a</b>	% Moisture: <b>7.2</b>
Dry Weight: <b>11.136 g</b>	Blank File: <b>T004301</b>	% Lipid: <b>n/a</b>
GC Column: <b>DB-5</b>	Analyst: <b>TMD</b>	% Solids: <b>92.8</b>

Analytes	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	ND	0.4				—
1,2,3,7,8-PeCDD	ND	0.7				—
1,2,3,4,7,8-HxCDD	ND	0.4				—
1,2,3,6,7,8-HxCDD	ND	0.4				—
1,2,3,7,8,9-HxCDD	ND	0.4				—
1,2,3,4,6,7,8-HpCDD	1.3			0.97	37:11	J
1,2,3,4,6,7,8,9-OCDD	10.8			0.91	41:01	—
2,3,7,8-TCDF	ND	0.3				—
1,2,3,7,8-PeCDF	ND	0.4				—
2,3,4,7,8-PeCDF	ND	0.4				—
1,2,3,4,7,8-HxCDF	ND	0.3				—
1,2,3,6,7,8-HxCDF	ND	0.3				—
2,3,4,6,7,8-HxCDF	ND	0.3				—
1,2,3,7,8,9-HxCDF	ND	0.3				—
1,2,3,4,6,7,8-HpCDF	ND	0.3				—
1,2,3,4,7,8,9-HpCDF	ND	0.4				—
1,2,3,4,6,7,8,9-OCDF	ND	0.6				—

Totals	Conc. (ppt)	Number	DL	EMPC	Flags
Total TCDD	ND		0.4		—
Total PeCDD	ND		0.7		—
Total HxCDD	ND		0.4		—
Total HpCDD	2.5	2			—
Total TCDF	ND		0.3		—
Total PeCDF	ND		0.4		—
Total HxCDF	ND		0.3		—
Total HpCDF	ND		0.3		—

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LEVEL IV



# Del Mar Analytical

TLI Project: **51765A**  
 Client Sample: **IJH0950-01**

Method 8290 PCDD/PCDF Analysis (b)  
 Analysis File: **T004302**

Client Project:	<b>IJH0950</b>	Date Received:	<b>08/30/2000</b>	Spike File:	<b>SPMIT32S</b>
Sample Matrix:	<b>SOIL</b>	Date Extracted:	<b>08/30/2000</b>	ICal:	<b>TF57140</b>
TLI ID:	<b>268-92-1</b>	Date Analyzed:	<b>09/06/2000</b>	ConCal:	<b>T004299</b>
	<i>CBC-915</i>				
Sample Size:	<b>11.500 g</b>	Dilution Factor:	<b>n/a</b>	% Moisture:	<b>4.3</b>
Dry Weight:	<b>11.006 g</b>	Blank File:	<b>T004301</b>	% Lipid:	<b>n/a</b>
GC Column:	<b>DB-5</b>	Analyst:	<b>TMD</b>	% Solids:	<b>95.7</b>

Analytes	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	ND	0.5				—
1,2,3,7,8-PeCDD	ND	0.7				—
1,2,3,4,7,8-HxCDD	ND	0.7				—
1,2,3,6,7,8-HxCDD	ND	0.7				—
1,2,3,7,8,9-HxCDD	ND	0.7				—
1,2,3,4,6,7,8-HpCDD	ND	1.0				—
1,2,3,4,6,7,8,9-OCDD	16.0			0.90	41:01	—
2,3,7,8-TCDF	ND	0.4				—
1,2,3,7,8-PeCDF	ND	0.5				—
2,3,4,7,8-PeCDF	ND	0.4				—
1,2,3,4,7,8-HxCDF	ND	0.5				—
1,2,3,6,7,8-HxCDF	ND	0.4				—
2,3,4,6,7,8-HxCDF	ND	0.5				—
1,2,3,7,8,9-HxCDF	ND	0.6				—
1,2,3,4,6,7,8-HpCDF	ND	0.6				—
1,2,3,4,7,8,9-HpCDF	ND	0.8				—
1,2,3,4,6,7,8,9-OCDF	ND	1.3				—

Totals	Conc. (ppt)	Number	DL	EMPC	Flags
Total TCDD	ND		0.5		—
Total PeCDD	ND		0.7		—
Total HxCDD	ND		0.7		—
Total HpCDD	ND		1.0		—
Total TCDF	ND		0.4		—
Total PeCDF	ND		0.5		—
Total HxCDF	ND		0.5		—
Total HpCDF	ND		0.7		—

AMEC VALIDATED  
LEVEL IV

TLI Project: 51765A  
Client Sample: IJH0950-02

Method 8290 PCDD/PCDF Analysis (b)  
Analysis File: T004303

Client Project:	IJH0950	Date Received:	08/30/2000	Spike File:	SPMIT32S
Sample Matrix:	SOIL	Date Extracted:	08/30/2000	ICal:	TF57140
TLI ID:	268-92-2	Date Analyzed:	09/06/2000	ConCal:	T004299
	0950-925				
Sample Size:	11.600 g	Dilution Factor:	n/a	% Moisture:	1.8
Dry Weight:	11.391 g	Blank File:	T004301	% Lipid:	n/a
GC Column:	DB-5	Analyst:	TMD	% Solids:	98.2

Analytes	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	ND	0.6				—
1,2,3,7,8-PeCDD	ND	0.7				—
1,2,3,4,7,8-HxCDD	ND	0.6				—
1,2,3,6,7,8-HxCDD	2.1			1.06	33:50	J_
1,2,3,7,8,9-HxCDD	2.5			1.30	34:09	J_
1,2,3,4,6,7,8-HpCDD	57.2			1.06	37:12	—
1,2,3,4,6,7,8,9-OCDD	706			0.86	41:01	—
2,3,7,8-TCDF	1.9			0.82	25:50	—
1,2,3,7,8-PeCDF	ND	0.5				—
2,3,4,7,8-PeCDF	ND	0.5				—
1,2,3,4,7,8-HxCDF	1.7			1.26	33:03	J_
1,2,3,6,7,8-HxCDF	0.92			1.05	33:09	J_
2,3,4,6,7,8-HxCDF	0.98			1.14	33:38	J_
1,2,3,7,8,9-HxCDF	ND	0.5				—
1,2,3,4,6,7,8-HpCDF	8.0			0.94	36:07	—
1,2,3,4,7,8,9-HpCDF	ND	0.6				—
1,2,3,4,6,7,8,9-OCDF	20.4			0.86	41:15	—

Totals	Conc. (ppt)	Number	DL	EMPC	Flags
Total TCDD	ND		0.6		—
Total PeCDD	ND		0.7		—
Total HxCDD	17.0	5			—
Total HpCDD	147	2			—
Total TCDF	10.3	5		22.5	X_
Total PeCDF	13.5	3		15.2	—
Total HxCDF	13.3	5		17.9	X_
Total HpCDF	27.0	3			—

AMEC VALIDATED  
LEVEL IV

# Del Mar Analytical

TLI Project: 51765A  
Client Sample: IJH0950-02

Method 8290 TCDD/TCDF Analysis (DB-225)  
Analysis File: P003068

Client Project: IJH0950  
Sample Matrix: SOIL  
TLI ID: 268-92-2

Date Received: 08/30/2000  
Date Extracted: 08/30/2000  
Date Analyzed: 09/06/2000

Spike File: **SPC2NF2S**  
ICal: **PF2N229**  
ConCal: **P003065**

Sample Size: 11.600 g  
Dry Weight: 11.391 g  
GC Column: DB-225

Dilution Factor: n/a  
Blank File: T004301  
Analyst: DPW

% Moisture:	1.8
% Lipid:	n/a
% Solids:	98.2

Analytes	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDF	1.1			0.76	23:36	

Internal Standard	Conc. (ppt)	% Recovery	QC Limits	Ratio	RT	Flags
<sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDF	151	86.2	40%-130%	0.78	23:36	

Recovery Standard	Ratio	RT	Flags
<sup>13</sup> C <sub>12</sub> -1,2,3,4-TCDD	0.81	22:23	

AMEC VALIDATED  
LEVEL IV

Data Reviewer: ✓ JH 09/07/2000

# Del Mar Analytical

TLI Project: **51765A**  
 Client Sample: **IJH0950-06**

Method 8290 PCDD/PCDF Analysis (b)  
 Analysis File: **T004306**

Client Project:	<b>IJH0950</b>	Date Received:	<b>08/30/2000</b>	Spike File:	<b>SPMIT32S</b>
Sample Matrix:	<b>SOIL</b>	Date Extracted:	<b>08/30/2000</b>	ICal:	<b>TF57140</b>
TLI ID:	<b>268-92-5</b>	Date Analyzed:	<b>09/06/2000</b>	ConCal:	<b>T004299</b>
	<b>CBC-935</b>				
Sample Size:	<b>12.000 g</b>	Dilution Factor:	<b>n/a</b>	% Moisture:	<b>6.2</b>
Dry Weight:	<b>11.256 g</b>	Blank File:	<b>T004301</b>	% Lipid:	<b>n/a</b>
GC Column:	<b>DB-5</b>	Analyst:	<b>TMD</b>	% Solids:	<b>93.8</b>

Analytes	Qual	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	u	ND	0.4				—
1,2,3,7,8-PeCDD	↓	ND	0.6				—
1,2,3,4,7,8-HxCDD	u	EMPC		0.93			J_
1,2,3,6,7,8-HxCDD	J	2.4			1.21	33:51	J_
1,2,3,7,8,9-HxCDD	↓	0.99			1.13	34:10	J_
1,2,3,4,6,7,8-HpCDD		68.7			1.04	37:12	—
1,2,3,4,6,7,8,9-OCDD		1280			0.86	41:01	—
2,3,7,8-TCDF	u	ND	0.3				—
1,2,3,7,8-PeCDF	↓	ND	0.4				—
2,3,4,7,8-PeCDF	↓	ND	0.4				—
1,2,3,4,7,8-HxCDF	J	1.4			1.07	33:03	J_
1,2,3,6,7,8-HxCDF	u	EMPC		0.52			J_
2,3,4,6,7,8-HxCDF	J	0.81			1.20	33:38	J_
1,2,3,7,8,9-HxCDF	u	ND	0.4				—
1,2,3,4,6,7,8-HpCDF		13.3			1.11	36:07	—
1,2,3,4,7,8,9-HpCDF	J	1.9			0.99	37:44	J_
1,2,3,4,6,7,8,9-OCDF		27.5			0.87	41:14	—

Totals		Conc. (ppt)	Number	DL	EMPC	Flags
Total TCDD	u	ND		0.4		—
Total PeCDD	↓	ND		0.6		—
Total HxCDD	J	12.7	4		13.6	—
Total HpCDD		150	2			—
Total TCDF		1.3	2			—
Total PeCDF		2.1	1			—
Total HxCDF	J	15.6	5		23.1	X_
Total HpCDF		44.9	4			—

AMEC VALIDATED  
LEVEL IV

# Del Mar Analytical

TLI Project: **51765A**  
 Client Sample: **IJH0950-07**

Method 8290 PCDD/PCDF Analysis (b)  
 Analysis File: **T004307**

Client Project:	<b>IJH0950</b>	Date Received:	<b>08/30/2000</b>	Spike File:	<b>SPMIT32S</b>
Sample Matrix:	<b>SOIL</b>	Date Extracted:	<b>08/30/2000</b>	ICal:	<b>TF57140</b>
TLI ID:	<b>268-92-6</b>	Date Analyzed:	<b>09/06/2000</b>	ConCal:	<b>T004299</b>
	<i>C8C-925W</i>				
Sample Size:	<b>12.000 g</b>	Dilution Factor:	<b>n/a</b>	% Moisture:	<b>7.4</b>
Dry Weight:	<b>11.112 g</b>	Blank File:	<b>T004301</b>	% Lipid:	<b>n/a</b>
GC Column:	<b>DB-5</b>	Analyst:	<b>TMD</b>	% Solids:	<b>92.6</b>

Analytes	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	ND	0.2				—
1,2,3,7,8-PeCDD	ND	0.3				—
1,2,3,4,7,8-HxCDD	ND	0.2				—
1,2,3,6,7,8-HxCDD	ND	0.2				—
1,2,3,7,8,9-HxCDD	ND	0.2				—
1,2,3,4,6,7,8-HpCDD	3.0			0.95	37:12	J
1,2,3,4,6,7,8,9-OCDD	43.6			0.90	41:03	—
2,3,7,8-TCDF	ND	0.1				—
1,2,3,7,8-PeCDF	ND	0.2				—
2,3,4,7,8-PeCDF	ND	0.2				—
1,2,3,4,7,8-HxCDF	ND	0.1				—
1,2,3,6,7,8-HxCDF	ND	0.1				—
2,3,4,6,7,8-HxCDF	ND	0.2				—
1,2,3,7,8,9-HxCDF	ND	0.2				—
1,2,3,4,6,7,8-HpCDF	0.52			1.00	36:07	J
1,2,3,4,7,8,9-HpCDF	ND	0.2				—
1,2,3,4,6,7,8,9-OCDF	1.6			0.90	41:14	J

Totals	Conc. (ppt)	Number	DL	EMPC	Flags
Total TCDD	ND		0.2		—
Total PeCDD	ND		0.3		—
Total HxCDD	ND		0.2		—
Total HpCDD	3.0	1		5.4	—
Total TCDF	ND		0.1		—
Total PeCDF	ND		0.2		—
Total HxCDF	ND		0.2		—
Total HpCDF	1.8	2			—

AMEC VALIDATED  
LEVEL IV

# Del Mar Analytical

TLI Project: **51765A**  
 Client Sample: **IJH0950-15**

Method 8290 PCDD/PCDF Analysis (b)  
 Analysis File: **U140705**

Client Project:	<b>IJH0950</b>	Date Received:	<b>08/30/2000</b>	Spike File:	<b>SPMIT32S</b>
Sample Matrix:	<b>SOIL</b>	Date Extracted:	<b>08/30/2000</b>	ICal:	<b>UF57140</b>
TLI ID:	<b>268-92-14</b>	Date Analyzed:	<b>09/06/2000</b>	ConCal:	<b>U001405</b>
Sample Size:	<b>12.100 g</b>	Dilution Factor:	<b>n/a</b>	% Moisture:	<b>6.0</b>
Dry Weight:	<b>11.374 g</b>	Blank File:	<b>T004301</b>	% Lipid:	<b>n/a</b>
GC Column:	<b>DB-5</b>	Analyst:	<b>TMD</b>	% Solids:	<b>94.0</b>

Analytes	Qual	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	u	ND	0.3				—
1,2,3,7,8-PeCDD	↓	ND	0.4				—
1,2,3,4,7,8-HxCDD	↓	ND	0.3				—
1,2,3,6,7,8-HxCDD	J	1.1			1.17	34:22	J
1,2,3,7,8,9-HxCDD	u	ND	0.3				—
1,2,3,4,6,7,8-HpCDD		28.0			1.09	37:38	—
1,2,3,4,6,7,8,9-OCDD		696			0.84	41:16	—
2,3,7,8-TCDF	u	ND	0.3				—
1,2,3,7,8-PeCDF	↓	ND	0.3				—
2,3,4,7,8-PeCDF		ND	0.3				—
1,2,3,4,7,8-HxCDF		ND	0.3				—
1,2,3,6,7,8-HxCDF		ND	0.2				—
2,3,4,6,7,8-HxCDF		ND	0.3				—
1,2,3,7,8,9-HxCDF	↓	ND	0.3				—
1,2,3,4,6,7,8-HpCDF		6.0			1.12	36:37	—
1,2,3,4,7,8,9-HpCDF	u	ND	0.4				—
1,2,3,4,6,7,8,9-OCDF		12.7			0.90	41:29	—

Totals		Conc. (ppt)	Number	DL	EMPC	Flags
Total TCDD	u	ND		0.3		—
Total PeCDD	↓	ND		0.4		—
Total HxCDD		3.8	3			—
Total HpCDD		55.3	2			—
Total TCDF	u	ND		0.3		—
Total PeCDF	↓	ND		0.3		—
Total HxCDF	J	4.5	2		7.2	X
Total HpCDF	↓	21.0	2		22.9	—

AMEC VALIDATED  
LEVEL IV

# Del Mar Analytical

TLI Project: **51765A**  
 Client Sample: **IJH0950-14**

Method 8290 PCDD/PCDF Analysis (b)  
 Analysis File: **U140704**

Client Project:	<b>IJH0950</b>	Date Received:	<b>08/30/2000</b>	Spike File:	<b>SPMIT32S</b>
Sample Matrix:	<b>SOIL</b>	Date Extracted:	<b>08/30/2000</b>	ICal:	<b>UF57140</b>
TLI ID:	<b>268-92-13</b>	Date Analyzed:	<b>09/06/2000</b>	ConCal:	<b>U001405</b>
	<i>PC-25</i>				
Sample Size:	<b>12.500 g</b>	Dilution Factor:	<b>n/a</b>	% Moisture:	<b>6.8</b>
Dry Weight:	<b>11.650 g</b>	Blank File:	<b>T004301</b>	% Lipid:	<b>n/a</b>
GC Column:	<b>DB-5</b>	Analyst:	<b>TMD</b>	% Solids:	<b>93.2</b>

Analytes	<i>Qual Code</i>	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	u	ND	0.3				---
1,2,3,7,8-PeCDD	u	ND	0.4				---
1,2,3,4,7,8-HxCDD	u	ND	0.4				---
1,2,3,6,7,8-HxCDD	u	ND	0.4				---
1,2,3,7,8,9-HxCDD	u	ND	0.4				---
1,2,3,4,6,7,8-HpCDD	J	1.2			0.89	37:38	J---
1,2,3,4,6,7,8,9-OCDD		16.6			0.86	41:16	---
2,3,7,8-TCDF	u	ND	0.3				---
1,2,3,7,8-PeCDF	u	ND	0.3				---
2,3,4,7,8-PeCDF	u	ND	0.3				---
1,2,3,4,7,8-HxCDF	u	ND	0.3				---
1,2,3,6,7,8-HxCDF	u	ND	0.2				---
2,3,4,6,7,8-HxCDF	u	ND	0.3				---
1,2,3,7,8,9-HxCDF	u	ND	0.3				---
1,2,3,4,6,7,8-HpCDF	u	ND	0.3				---
1,2,3,4,7,8,9-HpCDF	u	ND	0.4				---
1,2,3,4,6,7,8,9-OCDF	u	ND	0.6				---

Totals		Conc. (ppt)	Number	DL	EMPC	Flags
Total TCDD	u	ND		0.3		---
Total PeCDD	u	ND		0.4		---
Total HxCDD	u	ND		0.4		---
Total HpCDD		2.4	2			---
Total TCDF	u	ND		0.3		---
Total PeCDF	u	ND		0.3		---
Total HxCDF	u	ND		0.3		---
Total HpCDF		0.80	1			---

**AMEC VALIDATED  
LEVEL IV**

# Del Mar Analytical

TLI Project: **51765A**  
 Client Sample: **IJH0950-04**

Method 8290 PCDD/PCDF Analysis (b)  
 Analysis File: **T004304**

Client Project:	<b>IJH0950</b>	Date Received:	<b>08/30/2000</b>	Spike File:	<b>SPMIT32S</b>
Sample Matrix:	<b>SOIL</b>	Date Extracted:	<b>08/30/2000</b>	ICal:	<b>TF57140</b>
TLI ID:	<b>268-92-3</b>	Date Analyzed:	<b>09/06/2000</b>	ConCal:	<b>T004299</b>
	<i>PC-27</i>				
Sample Size:	<b>12.500 g</b>	Dilution Factor:	<b>n/a</b>	% Moisture:	<b>6.3</b>
Dry Weight:	<b>11.713 g</b>	Blank File:	<b>T004301</b>	% Lipid:	<b>n/a</b>
GC Column:	<b>DB-5</b>	Analyst:	<b>TMD</b>	% Solids:	<b>93.7</b>

Analytes	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	ND	0.4				—
1,2,3,7,8-PeCDD	ND	0.6				—
1,2,3,4,7,8-HxCDD	ND	0.5				—
1,2,3,6,7,8-HxCDD	ND	0.5				—
1,2,3,7,8,9-HxCDD	ND	0.5				—
1,2,3,4,6,7,8-HpCDD	ND	0.6				—
1,2,3,4,6,7,8,9-OCDD	12.2			0.80	41:01	—
2,3,7,8-TCDF	ND	0.3				—
1,2,3,7,8-PeCDF	ND	0.4				—
2,3,4,7,8-PeCDF	ND	0.4				—
1,2,3,4,7,8-HxCDF	ND	0.3				—
1,2,3,6,7,8-HxCDF	ND	0.3				—
2,3,4,6,7,8-HxCDF	ND	0.3				—
1,2,3,7,8,9-HxCDF	ND	0.4				—
1,2,3,4,6,7,8-HpCDF	ND	0.4				—
1,2,3,4,7,8,9-HpCDF	ND	0.5				—
1,2,3,4,6,7,8,9-OCDF	ND	0.7				—

Totals	Conc. (ppt)	Number	DL	EMPC	Flags
Total TCDD	ND	0.4			—
Total PeCDD	ND	0.6			—
Total HxCDD	ND	0.5			—
Total HpCDD	ND	0.6			—
Total TCDF	ND	0.3			—
Total PeCDF	ND	0.4			—
Total HxCDF	ND	0.3			—
Total HpCDF	ND	0.5			—

**AMEC VALIDATED  
LEVEL IV**



# Del Mar Analytical

TLI Project: **51765A**  
 Client Sample: **IJH0950-05**

Method 8290 PCDD/PCDF Analysis (b)

Analysis File: **T004305**

Client Project:	<b>IJH0950</b>	Date Received:	<b>08/30/2000</b>	Spike File:	<b>SPMIT32S</b>
Sample Matrix:	<b>SOIL</b>	Date Extracted:	<b>08/30/2000</b>	ICal:	<b>TF57140</b>
TLI ID:	<b>268-92-4</b>	Date Analyzed:	<b>09/06/2000</b>	ConCal:	<b>T004299</b>
	<i>PC-28</i>				
Sample Size:	<b>13.000 g</b>	Dilution Factor:	<b>n/a</b>	% Moisture:	<b>9.6</b>
Dry Weight:	<b>11.752 g</b>	Blank File:	<b>T004301</b>	% Lipid:	<b>n/a</b>
GC Column:	<b>DB-5</b>	Analyst:	<b>TMD</b>	% Solids:	<b>90.4</b>

Analytes	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	ND	0.4				—
1,2,3,7,8-PeCDD	ND	0.5				—
1,2,3,4,7,8-HxCDD	ND	0.4				—
1,2,3,6,7,8-HxCDD	ND	0.4				—
1,2,3,7,8,9-HxCDD	ND	0.4				—
1,2,3,4,6,7,8-HpCDD	ND	0.5				—
1,2,3,4,6,7,8,9-OCDD	3.2			0.89	41:03	J—
2,3,7,8-TCDF	ND	0.3				—
1,2,3,7,8-PeCDF	ND	0.3				—
2,3,4,7,8-PeCDF	ND	0.3				—
1,2,3,4,7,8-HxCDF	ND	0.3				—
1,2,3,6,7,8-HxCDF	ND	0.3				—
2,3,4,6,7,8-HxCDF	ND	0.3				—
1,2,3,7,8,9-HxCDF	ND	0.4				—
1,2,3,4,6,7,8-HpCDF	ND	0.4				—
1,2,3,4,7,8,9-HpCDF	ND	0.5				—
1,2,3,4,6,7,8,9-OCDF	ND	0.6				—

Totals	Conc. (ppt)	Number	DL	EMPC	Flags
Total TCDD	ND		0.4		—
Total PeCDD	ND		0.5		—
Total HxCDD	ND		0.4		—
Total HpCDD	ND		0.5		—
Total TCDF	ND		0.3		—
Total PeCDF	ND		0.3		—
Total HxCDF	ND		0.3		—
Total HpCDF	ND		0.4		—

**AMEC VALIDATED  
LEVEL IV**

# Del Mar Analytical

TLI Project: **51765A**  
 Client Sample: **IJH0950-16**

Method 8290 PCDD/PCDF Analysis (b)  
 Analysis File: **U140706**

Client Project:	<b>IJH0950</b>	Date Received:	<b>08/30/2000</b>	Spike File:	<b>SPMIT32S</b>
Sample Matrix:	<b>SOIL</b>	Date Extracted:	<b>08/30/2000</b>	ICal:	<b>UF57140</b>
TLI ID:	<b>268-92-15</b>	Date Analyzed:	<b>09/06/2000</b>	ConCal:	<b>U001405</b>
<i>PC-28D</i>					
Sample Size:	<b>12.100 g</b>	Dilution Factor:	<b>n/a</b>	% Moisture:	<b>1.8</b>
Dry Weight:	<b>11.882 g</b>	Blank File:	<b>T004301</b>	% Lipid:	<b>n/a</b>
GC Column:	<b>DB-5</b>	Analyst:	<b>TMD</b>	% Solids:	<b>98.2</b>

Analytes	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	ND	0.2				—
1,2,3,7,8-PeCDD	ND	0.3				—
1,2,3,4,7,8-HxCDD	ND	0.2				—
1,2,3,6,7,8-HxCDD	ND	0.2				—
1,2,3,7,8,9-HxCDD	ND	0.2				—
1,2,3,4,6,7,8-HpCDD	ND	0.3				—
1,2,3,4,6,7,8,9-OCDD	3.5			0.79	41:16	J—
2,3,7,8-TCDF	ND	0.2				—
1,2,3,7,8-PeCDF	ND	0.2				—
2,3,4,7,8-PeCDF	ND	0.2				—
1,2,3,4,7,8-HxCDF	ND	0.2				—
1,2,3,6,7,8-HxCDF	ND	0.2				—
2,3,4,6,7,8-HxCDF	ND	0.2				—
1,2,3,7,8,9-HxCDF	ND	0.2				—
1,2,3,4,6,7,8-HpCDF	ND	0.2				—
1,2,3,4,7,8,9-HpCDF	ND	0.3				—
1,2,3,4,6,7,8,9-OCDF	ND	0.4				—

Totals	Conc. (ppt)	Number	DL	EMPC	Flags
Total TCDD	ND		0.2		—
Total PeCDD	ND		0.3		—
Total HxCDD	ND		0.2		—
Total HpCDD	ND		0.3		—
Total TCDF	ND			0.36	—
Total PeCDF	ND		0.2		—
Total HxCDF	ND		0.2		—
Total HpCDF	ND		0.3		—

**AMEC VALIDATED  
LEVEL IV**



## DATA ASSESSMENT FORM

Project Title: Rocketdyne  
Project Manager: D. Hambrick  
Analysis/Method: Dioxins and Furans/EPA Method 8290  
QC Level: V<sup>1</sup>  
SDG: IJG0192  
Matrix: Soil  
No. of Samples: 6  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: March 4, 2002  
Reviewer: L. Calvin  
References: National Functional Guidelines for Organic Data Review (2/94) and SW-846 Method 8290 (9/94).  
Samples Reviewed: CBC-49S, CBC-50S, CBC-52SW, CBC-55S, CBC-56SW, CBC-57SW

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC had appropriate relinquish and receipt signatures. The samples were received at Triangle Laboratories with a cooler temperature within the limits of 4°C ±2°C. The COC noted that sample containers were received broken for samples CBC-50S, CBC-55S, and CBC-56SW. The case narrative noted that the aforementioned samples were transferred to plastic bags for storage.</p> <p>The samples were extracted within 30 days of collection and analyzed within 45 days of extraction.</p>	No qualifications were required.

	Findings	Qualifications
4. <u>Method Blanks</u>	One soil method blank was extracted and analyzed with the samples in this SDG. Detects below the reporting limits for 1,2,3,4,6,7,8,9-OCDD, 1,2,3,4,7,8-HxCDF, and totals for HxCDF and HpCDF were reported in the method blank.	All reported sample detects for 1,2,3,4,7,8-HxCDF, and detects for 1,2,3,4,6,7,8-HpCDF in samples CBC-52SW, CBC-55S, and CBC-57SW were less than five times the blank concentrations, and were therefore qualified as estimated nondetects, "UJ," at the levels of interference. All other sample concentrations for the compounds reported in the blank exceeded five times the method blank amounts. As all total concentrations in the samples included isomer concentrations other than the reported individual congeners, the sample totals were not qualified as method blank contamination.
5. <u>LCS/BS</u>	One soil LCS/LCSD pair was extracted and analyzed with the samples in this SDG. All percent recoveries were within the laboratory QC limits of 70-130%, with the exception of recoveries above the QC limits for 2,3,7,8-TCDD, 1,2,3,7,8-PeCDF, and 2,3,4,7,8-PeCDF in the LCSD only. All RPDs were within the QC limit of 20%.	No qualifications were required.
6. <u>MS/MSDs</u>	No MS/MSD analyses were performed in this SDG. Evaluation of method accuracy and precision were based on the LCS/LCSD results.	No qualifications were required.
7. <u>Field QC Samples</u> ER: None FB: None FD: None	No field QC samples were identified for the samples in this SDG.	No qualifications were required.
9. <u>Internal Standards</u>	All internal standard recoveries were within the method QC limits of 40-135%.	No qualifications were required.

	Findings	Qualifications
10. <u>Other</u>	<p>Any individual congener results reported as EMPCs were considered nondetects.</p> <p>Some total results which included individual congener results were also reported as EMPCs.</p> <p>The sample results were reported on a dry-weight basis. Results reported with the laboratory qualifier "J," were concentrations below the lower calibration level.</p> <p>Confirmation analysis on a DB-225 column was not performed for the 2,3,7,8-TCDF sample result reported below the lower calibration level in sample CBC-56SW.</p>	<p>All target compound EMPCs were qualified as estimated nondetects, "UJ."</p> <p>Any totals also including individual congener concentrations were qualified as estimated, "J."</p>
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

# Del Mar Analytical

TLI Project: **51383**  
 Client Sample: **CBC-49S/IJG0194-02**

Method 8290 PCDD/PCDF Analysis (b)  
 Analysis File: **T003405**

Client Project: <b>870071/IJG0194</b>	Date Received: <b>07/11/00</b>	Spike File: <b>SPMIT22S</b>
Sample Matrix: <b>SOIL</b>	Date Extracted: <b>07/13/00</b>	ICal: <b>TF57140</b>
TLI ID: <b>265-7-2</b>	Date Analyzed: <b>07/15/00</b>	ConCal: <b>T003401</b>
Sample Size: <b>11.900 g</b>	Dilution Factor: <b>n/a</b>	% Moisture: <b>15.7</b>
Dry Weight: <b>10.032 g</b>	Blank File: <b>T003403</b>	% Lipid: <b>n/a</b>
GC Column: <b>DB-5</b>	Analyst: <b>JMM</b>	% Solids: <b>84.3</b>

Analytes	Qual	Code	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	u		ND	0.5				—
1,2,3,7,8-PeCDD	↓		ND	0.6				—
1,2,3,4,7,8-HxCDD	J		2.5			1.13	34:19	J_
1,2,3,6,7,8-HxCDD			6.0			1.30	34:24	—
1,2,3,7,8,9-HxCDD	J		3.3			1.30	34:45	J_
1,2,3,4,6,7,8-HpCDD			187			1.03	37:54	—
1,2,3,4,6,7,8,9-OCDD			2210			0.84	41:54	—
2,3,7,8-TCDF	u		ND	0.4				—
1,2,3,7,8-PeCDF	↓		ND	0.4				—
2,3,4,7,8-PeCDF	↓		ND	0.4				—
1,2,3,4,7,8-HxCDF	u	B	3.6			1.13	33:35	JB_
1,2,3,6,7,8-HxCDF	J		2.0			1.06	33:42	J_
2,3,4,6,7,8-HxCDF	↓		2.2			1.21	34:12	J_
1,2,3,7,8,9-HxCDF	u		ND	0.6				—
1,2,3,4,6,7,8-HpCDF			29.5			1.06	36:47	B_
1,2,3,4,7,8,9-HpCDF	J		3.5			1.03	38:27	J_
1,2,3,4,6,7,8,9-OCDF			42.3			0.86	42:07	—

Totals		Conc. (ppt)	Number	DL	EMPC		Flags
Total TCDD	u	ND		0.5			—
Total PeCDD	↓	ND		0.6			—
Total HxCDD		45.9	6				—
Total HpCDD		359	2				—
Total TCDF	u	ND		0.4			—
Total PeCDF		1.3	1				—
Total HxCDF		33.4	6				—
Total HpCDF		79.0	3				—

AMEC VALIDATED  
LEVEL V

# Del Mar Analytical

TLI Project: **51383**  
 Client Sample: **CBC-50S/IJG0194-03**

Method 8290 PCDD/PCDF Analysis (b)  
 Analysis File: **T003406**

Client Project:	<b>870071/IJG0194</b>	Date Received:	<b>07/11/00</b>	Spike File:	<b>SPMIT22S</b>
Sample Matrix:	<b>SOIL</b>	Date Extracted:	<b>07/13/00</b>	ICal:	<b>TF57140</b>
TLI ID:	<b>265-7-3</b>	Date Analyzed:	<b>07/15/00</b>	ConCal:	<b>T003401</b>
Sample Size:	<b>10.400 g</b>	Dilution Factor:	<b>n/a</b>	% Moisture:	<b>3.6</b>
Dry Weight:	<b>10.026 g</b>	Blank File:	<b>T003403</b>	% Lipid:	<b>n/a</b>
GC Column:	<b>DB-5</b>	Analyst:	<b>JMM</b>	% Solids:	<b>96.4</b>

Analytes	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	ND	0.5				—
1,2,3,7,8-PeCDD	ND	0.6				—
1,2,3,4,7,8-HxCDD	ND	0.6				—
1,2,3,6,7,8-HxCDD	2.2			1.33	34:25	J_
1,2,3,7,8,9-HxCDD	2.2			1.06	34:46	J_
1,2,3,4,6,7,8-HpCDD	106			1.02	37:54	—
1,2,3,4,6,7,8,9-OCDD	861			0.84	41:54	—
2,3,7,8-TCDF	ND	0.4				—
1,2,3,7,8-PeCDF	ND	0.4				—
2,3,4,7,8-PeCDF	ND	0.4				—
1,2,3,4,7,8-HxCDF	3.1			1.09	33:35	JB_
1,2,3,6,7,8-HxCDF	1.9			1.17	33:42	J_
2,3,4,6,7,8-HxCDF	5.8			1.38	34:13	—
1,2,3,7,8,9-HxCDF	ND	0.6				—
1,2,3,4,6,7,8-HpCDF	28.1			1.03	36:47	B_
1,2,3,4,7,8,9-HpCDF	12.1			1.13	38:27	—
1,2,3,4,6,7,8,9-OCDF	176			0.88	42:08	—

Totals	Conc. (ppt)	Number	DL	EMPC	Flags
Total TCDD	ND		0.5		—
Total PeCDD	ND		0.6		—
Total HxCDD	22.8	5			—
Total HpCDD	190	2			—
Total TCDF	ND		0.4		—
Total PeCDF	ND		0.4		—
Total HxCDF	20.5	9			—
Total HpCDF	76.4	4			—

**AMEC VALIDATED**  
**LEVEL V**

# Del Mar Analytical

TLI Project: 51383  
Client Sample: CBC-52SW/IJG0194-04

Method 8290 PCDD/PCDF Analysis (b)  
Analysis File: T003407

Client Project:	870071/IJG0194	Date Received:	07/11/00	Spike File:	SPMIT22S
Sample Matrix:	SOIL	Date Extracted:	07/13/00	ICal:	TF57140
TLI ID:	265-7-4	Date Analyzed:	07/15/00	ConCal:	T003401
Sample Size:	10.400 g	Dilution Factor:	n/a	% Moisture:	3.7
Dry Weight:	10.015 g	Blank File:	T003403	% Lipid:	n/a
GC Column:	DB-5	Analyst:	JMM	% Solids:	96.3

Analytes	rel. qual. code	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	u	ND	0.3				---
1,2,3,7,8-PeCDD	u	ND	0.3				---
1,2,3,4,7,8-HxCDD	u	ND	0.3				---
1,2,3,6,7,8-HxCDD	u	EMPC		1.0			J_
1,2,3,7,8,9-HxCDD	u	EMPC		0.73			J_
1,2,3,4,6,7,8-HpCDD	u	21.1			1.06	37:55	---
1,2,3,4,6,7,8,9-OCDD	u	221			0.85	41:54	---
2,3,7,8-TCDF	u	EMPC		0.58			J_
1,2,3,7,8-PeCDF	u	ND	0.2				---
2,3,4,7,8-PeCDF	u	ND	0.2				---
1,2,3,4,7,8-HxCDF	u	1.1			1.42	33:35	JB_
1,2,3,6,7,8-HxCDF	u	0.66			1.23	33:41	J_
2,3,4,6,7,8-HxCDF	u	ND	0.3				---
1,2,3,7,8,9-HxCDF	u	ND	0.3				---
1,2,3,4,6,7,8-HpCDF	u	4.4			1.06	36:47	JB_
1,2,3,4,7,8,9-HpCDF	u	ND	0.4				---
1,2,3,4,6,7,8,9-OCDF	u	7.7			0.94	42:07	J_

Totals		Conc. (ppt)	Number	DL	EMPC	Flags
Total TCDD	u	ND		0.3		---
Total PeCDD	u	ND		0.3		---
Total HxCDD	u	4.9	3		6.7	---
Total HpCDD	u	47.9	2			---
Total TCDF	u	2.9	1		3.5	---
Total PeCDF	u	3.5	3			---
Total HxCDF	u	5.3	4			---
Total HpCDF	u	12.0	2			---

AMEC VALIDATED  
LEVEL V



# Del Mar Analytical

TLI Project: **51383**  
 Client Sample: **CBC-55S/IJG0194-07**

Method 8290 PCDD/PCDF Analysis (b)  
 Analysis File: **T003410**

Client Project:	<b>870071/IJG0194</b>	Date Received:	<b>07/11/00</b>	Spike File:	<b>SPMIT22S</b>
Sample Matrix:	<b>SOIL</b>	Date Extracted:	<b>07/13/00</b>	ICal:	<b>TF57140</b>
TLI ID:	<b>265-7-7</b>	Date Analyzed:	<b>07/15/00</b>	ConCal:	<b>T003401</b>
Sample Size:	<b>12.500 g</b>	Dilution Factor:	<b>n/a</b>	% Moisture:	<b>19.8</b>
Dry Weight:	<b>10.025 g</b>	Blank File:	<b>T003403</b>	% Lipid:	<b>n/a</b>
GC Column:	<b>DB-5</b>	Analyst:	<b>JMM</b>	% Solids:	<b>80.2</b>

Analytes	Qual	Code	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	u		ND	0.3				---
1,2,3,7,8-PeCDD	↓		ND	0.3				---
1,2,3,4,7,8-HxCDD	↓		ND	0.4				---
1,2,3,6,7,8-HxCDD	J		1.3			1.40	34:23	J_
1,2,3,7,8,9-HxCDD	u		ND	0.4				---
1,2,3,4,6,7,8-HpCDD			32.6			1.09	37:53	---
1,2,3,4,6,7,8,9-OCDD			435			0.84	41:52	---
2,3,7,8-TCDF	u		ND	0.2				---
1,2,3,7,8-PeCDF	↓		ND	0.2				---
2,3,4,7,8-PeCDF	↓		ND	0.2				---
1,2,3,4,7,8-HxCDF	uJ	B	0.97			1.07	33:34	JB_
1,2,3,6,7,8-HxCDF	u		ND	0.3				---
2,3,4,6,7,8-HxCDF	↓		ND	0.3				---
1,2,3,7,8,9-HxCDF	↓		ND	0.4				---
1,2,3,4,6,7,8-HpCDF	uJ	B	6.0			1.05	36:46	B_
1,2,3,4,7,8,9-HpCDF	u		ND	0.4				---
1,2,3,4,6,7,8,9-OCDF			10.8			0.87	42:06	---

Totals		Conc. (ppt)	Number	DL	EMPC	Flags
Total TCDD	u	ND		0.3		---
Total PeCDD	↓	ND		0.3		---
Total HxCDD	J	*10 5.6	3		6.9	---
Total HpCDD		62.8	2			---
Total TCDF	u	ND		0.2		---
Total PeCDF	↓	ND		0.2		---
Total HxCDF		5.9	3			---
Total HpCDF		17.5	2			---

AMEC VALIDATED  
LEVEL V

# Del Mar Analytical

TLI Project: **51383**  
 Client Sample: **CBC-56SW/IJG0194-08**

Method 8290 PCDD/PCDF Analysis (b)  
 Analysis File: **T003411**

Client Project:	870071/IJG0194	Date Received:	07/11/00	Spike File:	SPMIT22S
Sample Matrix:	SOIL	Date Extracted:	07/13/00	ICal:	TF57140
TLI ID:	265-7-8	Date Analyzed:	07/15/00	ConCal:	T003401
Sample Size:	11.000 g	Dilution Factor:	n/a	% Moisture:	9.0
Dry Weight:	10.010 g	Blank File:	T003403	% Lipid:	n/a
GC Column:	DB-5	Analyst:	JMM	% Solids:	91.0

Analytes	val qual	conc. code	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	u		ND	0.4				—
1,2,3,7,8-PeCDD	u		ND	0.4				—
1,2,3,4,7,8-HxCDD	J		1.9			1.20	34:18	J_
1,2,3,6,7,8-HxCDD	J		4.5			1.11	34:24	J_
1,2,3,7,8,9-HxCDD	u		2.3			1.36	34:44	J_
1,2,3,4,6,7,8-HpCDD			145			1.03	37:53	—
1,2,3,4,6,7,8,9-OCDD			1770			0.84	41:53	—
2,3,7,8-TCDF	J		0.92			0.87	26:24	J_
1,2,3,7,8-PeCDF	u		ND	0.3				—
2,3,4,7,8-PeCDF	u		ND	0.3				—
1,2,3,4,7,8-HxCDF	u	B	2.3			1.37	33:35	JB_
1,2,3,6,7,8-HxCDF	J		1.2			1.14	33:41	J_
2,3,4,6,7,8-HxCDF	J		1.4			1.08	34:11	J_
1,2,3,7,8,9-HxCDF	u		ND	0.5				—
1,2,3,4,6,7,8-HpCDF	J		21.6			1.04	36:47	B_
1,2,3,4,7,8,9-HpCDF	J		3.1			1.16	38:27	J_
1,2,3,4,6,7,8,9-OCDF			44.7			0.85	42:07	—

Totals			Conc. (ppt)	Number	DL	EMPC	Flags
Total TCDD	u		ND		0.4		—
Total PeCDD	u		ND		0.4		—
Total HxCDD			28.3	6			—
Total HpCDD			280	2			—
Total TCDF	J	*10	4.2	4		8.0	—
Total PeCDF			3.0	2			—
Total HxCDF			24.8	6			—
Total HpCDF			70.0	3			—

AMEC VALIDATED  
LEVEL V

# Del Mar Analytical

TLI Project: **51383**  
 Client Sample: **CBC-57SW/IJG0194-09**

Method 8290 PCDD/PCDF Analysis (b)  
 Analysis File: **T003412**

Client Project:	870071/IJG0194	Date Received:	07/11/00	Spike File:	SPMIT22S
Sample Matrix:	SOIL	Date Extracted:	07/13/00	ICal:	TF57140
TLI ID:	265-7-9	Date Analyzed:	07/15/00	ConCal:	T003401
Sample Size:	10.300 g	Dilution Factor:	n/a	% Moisture:	2.5
Dry Weight:	10.043 g	Blank File:	T003403	% Lipid:	n/a
GC Column:	DB-5	Analyst:	JMM	% Solids:	97.5

Analytes	Conc. (ppt)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	ND	0.3				—
1,2,3,7,8-PeCDD	ND	0.3				—
1,2,3,4,7,8-HxCDD	ND	0.3				—
1,2,3,6,7,8-HxCDD	ND	0.3				—
1,2,3,7,8,9-HxCDD	ND	0.3				—
1,2,3,4,6,7,8-HpCDD	6.2			1.04	37:52	—
1,2,3,4,6,7,8,9-OCDD	84.7			0.86	41:52	B—
2,3,7,8-TCDF	ND	0.2				—
1,2,3,7,8-PeCDF	ND	0.3				—
2,3,4,7,8-PeCDF	ND	0.2				—
1,2,3,4,7,8-HxCDF	0.93			1.14	33:34	JB—
1,2,3,6,7,8-HxCDF	ND	0.3				—
2,3,4,6,7,8-HxCDF	ND	0.3				—
1,2,3,7,8,9-HxCDF	ND	0.3				—
1,2,3,4,6,7,8-HpCDF	1.4			1.08	36:45	JB—
1,2,3,4,7,8,9-HpCDF	ND	0.4				—
1,2,3,4,6,7,8,9-OCDF	EMPC		1.6			J—

Totals	Conc. (ppt)	Number	DL	EMPC	Flags
Total TCDD	ND		0.3		—
Total PeCDD	ND		0.3		—
Total HxCDD	0.81	1			—
Total HpCDD	11.8	2			—
Total TCDF	ND		0.2		—
Total PeCDF	ND		0.3		—
Total HxCDF	2.1	2			—
Total HpCDF	2.8	2			—

**AMEC VALIDATED**  
**LEVEL V**



## DATA ASSESSMENT FORM

Project Title: Rocketdyne  
Project Manager: D. Hambrick  
Analysis/Method: Dioxins and Furans/EPA Method 8290  
QC Level: V<sup>1</sup>  
SDG: IJI0055  
Matrix: Soil  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: March 6, 2002  
Reviewer: L. Calvin  
References: National Functional Guidelines for Organic Data Review (2/94) and SW-846 Method 8290 (9/94).  
Samples Reviewed: CBC-96SW, CBC-97SW, CBC-97SWD, CBC-98S, CBC-99SW

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The COC had appropriate relinquish and receipt signatures. The samples were received at Triangle Laboratories with a cooler temperature within the limits of 4°C ±2°C. The COC noted that the samples were received intact.</p> <p>The samples were extracted within 30 days of collection and analyzed within 45 days of extraction.</p>	No qualifications were required.
4. <u>Method Blanks</u>	<p>One soil method blank was extracted and analyzed with the samples in this SDG. Detects below the reporting limits for 1,2,3,4,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,4,6,7,8-HpCDD, 2,3,7,8-TCDF, 2,3,4,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,6,7,8,9-OCDF, and all totals were reported in the method blank. Results reported only as EMPCs in the method blank were considered nondetects.</p>	<p>Any sample detects for the aforementioned target compounds reported at concentrations less than five times the blank concentrations, were qualified as estimated nondetects, "UJ," at the levels of interference, as well as totals including only the individual congener concentration. Any total concentrations in the samples which included isomer concentrations other than those of the reported individual congeners were not qualified as method blank contamination.</p>

	Findings	Qualifications
5. <u>LCS/BS</u>	One soil LCS/LCSD pair was extracted and analyzed with the samples in this SDG. All percent recoveries were within the laboratory QC limits of 70-130%, and all RPDs were within the QC limit of 20%.	No qualifications were required.
6. <u>MS/MSDs</u>	No MS/MSD analyses were performed in this SDG. Evaluation of method accuracy and precision were based on the LCS/LCSD results.	No qualifications were required.
7. <u>Field QC Samples</u> ER: None FB: None FD: CBC-97SW CBC-97SWD	No field blanks or equipment rinsates were identified for the samples in this SDG.  RPDs for the common detects in the field duplicate pair were less than 100%.	No qualifications were required.
9. <u>Internal Standards</u>	All internal standard recoveries were within the method QC limits of 40-135%, with the exception of recoveries below the QC limits for internal standard 13C12-1,2,3,4,6,7,8,9-OCDD in samples CBC-97SW, CBC-97SWD, and CBC-99SW.	Results for associated target compounds 1,2,3,4,6,7,8,9-OCDD and 1,2,3,4,6,7,8,9-OCDF were qualified as estimated, "UJ," for nondetects, and "J," for detects.
10. <u>Other</u>	Any individual congener results or totals reported as EMPCs were considered nondetects.  Some total results which included individual congener results were also reported as EMPCs.  The sample results were reported on a dry-weight basis. Results reported with the laboratory qualifier "J," were concentrations below the lower calibration level.	All target compound and total EMPCs were qualified as estimated nondetects, "UJ."  Any reportable totals also including individual congener concentrations were qualified as estimated, "J."
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

# Del Mar Analytical

TLI Project: 51826  
Client Sample: IJI0146-01/CBC-96SW

Method 8290 PCDD/PCDF Analysis (b)  
Analysis File: S004054

Client Project:	Boeing	Date Received:	09/07/2000	Spike File:	SPMIT32S
Sample Matrix:	SOIL	Date Extracted:	09/08/2000	ICal:	SF57130
TLI ID:	269-54-1	Date Analyzed:	09/13/2000	ConCal:	S004048
Sample Size:	10.400 g	Dilution Factor:	n/a	% Moisture:	3.2
Dry Weight:	10.067 g	Blank File:	S004038	% Lipid:	n/a
GC Column:	DB-5	Analyst:	TMD	% Solids:	96.8

Analytes	Conc. (pg/g)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	0.07			0.80	27:07	J__
1,2,3,7,8-PeCDD	0.27			1.53	31:16	J__
1,2,3,4,7,8-HxCDD	ND	0.2				___
1,2,3,6,7,8-HxCDD	0.57			1.07	34:26	JB_
1,2,3,7,8,9-HxCDD	EMPC		0.56			JB_
1,2,3,4,6,7,8-HpCDD	2.1			0.90	37:44	JB_
1,2,3,4,6,7,8,9-OCDD	15.5			0.86	41:26	B__
2,3,7,8-TCDF	0.53			0.71	26:25	JB_
1,2,3,7,8-PeCDF	0.35			1.36	30:16	JB_
2,3,4,7,8-PeCDF	0.32			1.50	30:56	JB_
1,2,3,4,7,8-HxCDF	EMPC		0.39			JB_
1,2,3,6,7,8-HxCDF	ND	0.1				___
2,3,4,6,7,8-HxCDF	ND	0.2				___
1,2,3,7,8,9-HxCDF	ND	0.2				___
1,2,3,4,6,7,8-HpCDF	0.78			0.94	36:41	JB_
1,2,3,4,7,8,9-HpCDF	ND	0.4				___
1,2,3,4,6,7,8,9-OCDF	ND	1.0				___

Totals	Conc. (pg/g)	Number	DL	EMPC	Flags
Total TCDD	2.0	6		2.4	___
Total PeCDD	1.1	2		2.8	___
Total HxCDD	1.9	3		3.8	___
Total HpCDD	4.6	2			___
Total TCDF	2.4	6		2.6	___
Total PeCDF	1.0	4			___
Total HxCDF	EMPC			0.85	___
Total HpCDF	0.78	1			___

LEVEL V

**AMEC VALIDATED**

# Del Mar Analytical

TLI Project: 51826  
Client Sample: IJI0146-02/CBC-97SW

Method 8290 PCDD/PCDF Analysis (b)  
Analysis File: S004055

Client Project:	Boeing	Date Received:	09/07/2000	Spike File:	SPMIT32S
Sample Matrix:	SOIL	Date Extracted:	09/08/2000	ICal:	SF57130
TLI ID:	269-54-2	Date Analyzed:	09/13/2000	ConCal:	S004048
Sample Size:	10.500 g	Dilution Factor:	n/a	% Moisture:	2.6
Dry Weight:	10.227 g	Blank File:	S004038	% Lipid:	n/a
GC Column:	DB-5	Analyst:	TMD	% Solids:	97.4

Analytes	Conc. (pg/g)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	ND	0.1				—
1,2,3,7,8-PeCDD	ND	0.2				—
1,2,3,4,7,8-HxCDD	0.47			1.08	34:24	JB_
1,2,3,6,7,8-HxCDD	0.75			1.15	34:43	JB_
1,2,3,7,8,9-HxCDD	ND	0.4				—
1,2,3,4,6,7,8-HpCDD	2.0			1.04	37:42	JB_
1,2,3,4,6,7,8,9-OCDD	ND	1.8				—
2,3,7,8-TCDF	0.52			0.78	26:23	JB_
1,2,3,7,8-PeCDF	ND	0.1				—
2,3,4,7,8-PeCDF	EMPC		0.26			JB_
1,2,3,4,7,8-HxCDF	0.37			1.33	33:37	JB_
1,2,3,6,7,8-HxCDF	0.25			1.11	33:45	JB_
2,3,4,6,7,8-HxCDF	ND	0.2				—
1,2,3,7,8,9-HxCDF	0.35			1.10	34:59	J_
1,2,3,4,6,7,8-HpCDF	0.52			1.13	36:39	JB_
1,2,3,4,7,8,9-HpCDF	ND	0.5				—
1,2,3,4,6,7,8,9-OCDF	ND	1.5				—

Totals	Conc. (pg/g)	Number	DL	EMPC	Flags
Total TCDD	1.2	3			—
Total PeCDD	1.9	3		2.6	—
Total HxCDD	2.0	3		3.1	—
Total HpCDD	2.0	1		3.7	—
Total TCDF	2.1	5		2.3	—
Total PeCDF	0.57	1		1.1	—
Total HxCDF	1.3	4			—
Total HpCDF	0.52	1			—

LEVEL V

AMEC VALIDATED

# Del Mar Analytical

TLI Project: 51826  
Client Sample: IJI0146-03/CBC-97SWD

Method 8290 PCDD/PCDF Analysis (b)  
Analysis File: S004056

Client Project:	Boeing	Date Received:	09/07/2000	Spike File:	SPMIT32S
Sample Matrix:	SOIL	Date Extracted:	09/08/2000	ICal:	SF57130
TLI ID:	269-54-3	Date Analyzed:	09/13/2000	ConCal:	S004048
Sample Size:	11.300 g	Dilution Factor:	n/a	% Moisture:	11.1
Dry Weight:	10.046 g	Blank File:	S004038	% Lipid:	n/a
GC Column:	DB-5	Analyst:	TMD	% Solids:	88.9

Analytes	Qual	Code	Conc. (pg/g)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	U		ND	0.09				—
1,2,3,7,8-PeCDD	UJ	*10	EMPC		0.22			J_
1,2,3,4,7,8-HxCDD	U		ND	0.2				—
1,2,3,6,7,8-HxCDD	UJ	*10	EMPC		0.49			JB_
1,2,3,7,8,9-HxCDD	↓	B	0.71			1.25	34:44	JB_
1,2,3,4,6,7,8-HpCDD	↓	*10	EMPC		1.1			JB_
1,2,3,4,6,7,8,9-OCDD	J	I	6.8			0.84	41:25	JB_
2,3,7,8-TCDF	UJ	*10	EMPC		0.48			JB_
1,2,3,7,8-PeCDF	↓	↓	EMPC		0.24			JB_
2,3,4,7,8-PeCDF	↓	B	0.28			1.45	30:55	JB_
1,2,3,4,7,8-HxCDF	↓	↓	0.49			1.26	33:38	JB_
1,2,3,6,7,8-HxCDF	↓	↓	0.23			1.30	33:43	JB_
2,3,4,6,7,8-HxCDF	U		ND	0.1				—
1,2,3,7,8,9-HxCDF	J		0.31			1.09	34:58	J_
1,2,3,4,6,7,8-HpCDF	UJ	B	0.53			0.88	36:38	JB_
1,2,3,4,7,8,9-HpCDF	U		ND	0.3				—
1,2,3,4,6,7,8,9-OCDF	UJ	I	ND	0.9				—

Totals			Conc. (pg/g)	Number	DL	EMPC	Flags
Total TCDD	J	*10	1.8	4		2.2	—
Total PeCDD	↓	↓	1.2	2		3.6	—
Total HxCDD	↓	↓	2.1	3		4.0	—
Total HpCDD	↓	↓	1.3	1		2.3	—
Total TCDF	J	*10	1.6	5		3.3	—
Total PeCDF	↓	↓	0.28	1		1.7	—
Total HxCDF	↓	↓	1.4	4		1.6	—
Total HpCDF	UJ	B	0.53	1			—

LEVEL V  
AMEC VALIDATED



# Del Mar Analytical

TLI Project: 51826  
Client Sample: IJI0146-04/CBC-98S

Method 8290 PCDD/PCDF Analysis (b)  
Analysis File: S004057

Client Project:	Boeing	Date Received:	09/07/2000	Spike File:	SPMIT32S
Sample Matrix:	SOIL	Date Extracted:	09/08/2000	ICal:	SF57130
TLI ID:	269-54-4	Date Analyzed:	09/13/2000	ConCal:	S004048
Sample Size:	10.400 g	Dilution Factor:	n/a	% Moisture:	3.3
Dry Weight:	10.057 g	Blank File:	S004038	% Lipid:	n/a
GC Column:	DB-5	Analyst:	TMD	% Solids:	96.7

Analytes	Qual	Conc. (pg/g)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	u	ND	0.1				—
1,2,3,7,8-PeCDD	J	0.48			1.54	31:17	J_
1,2,3,4,7,8-HxCDD	u	1.0			1.34	34:24	JB_
1,2,3,6,7,8-HxCDD	J	2.3			1.23	34:28	JB_
1,2,3,7,8,9-HxCDD	u	1.5			1.21	34:47	JB_
1,2,3,4,6,7,8-HpCDD	B	50.3			0.91	37:45	—
1,2,3,4,6,7,8,9-OCDD	B	654			0.84	41:28	—
2,3,7,8-TCDF	u	0.75			0.76	26:23	JB_
1,2,3,7,8-PeCDF	u	ND	0.1				—
2,3,4,7,8-PeCDF		ND	0.2				—
1,2,3,4,7,8-HxCDF		ND	0.4				—
1,2,3,6,7,8-HxCDF		ND	0.4				—
2,3,4,6,7,8-HxCDF		ND	0.4				—
1,2,3,7,8,9-HxCDF		ND	0.5				—
1,2,3,4,6,7,8-HpCDF	Y	9.0			1.02	36:42	B_
1,2,3,4,7,8,9-HpCDF	u	ND	1.3				—
1,2,3,4,6,7,8,9-OCDF		17.2			0.95	41:40	—

Totals		Conc. (pg/g)	Number	DL	EMPC	Flags
Total TCDD	J	1.1	2		1.7	—
Total PeCDD	J	2.1	3		2.9	—
Total HxCDD	J	13.6	5		15.3	—
Total HpCDD	J	102	2			—
Total TCDF	J	2.3	3		11.2	X_
Total PeCDF	J	2.0	2		7.3	X_
Total HxCDF	J	5.1	1		14.4	X_
Total HpCDF	J	25.9	2		28.9	—

*Handwritten:* MC 03-04-02

**LEVEL V**  
**AMEC VALIDATED**

# Del Mar Analytical

TLI Project: 51826  
Client Sample: IJI0146-05/CBC-99SW

Method 8290 PCDD/PCDF Analysis (b)  
Analysis File: S004058

Client Project:	Boeing	Date Received:	09/07/2000	Spike File:	SPMIT32S
Sample Matrix:	SOIL	Date Extracted:	09/08/2000	ICal:	SF57130
TLI ID:	269-54-5	Date Analyzed:	09/13/2000	ConCal:	S004048
Sample Size:	10.400 g	Dilution Factor:	n/a	% Moisture:	2.6
Dry Weight:	10.130 g	Blank File:	S004038	% Lipid:	n/a
GC Column:	DB-5	Analyst:	TMD	% Solids:	97.4

Analytes	qual	Conc. (pg/g)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	U	ND	0.07				—
1,2,3,7,8-PeCDD	J	0.23			1.71	31:15	J_
1,2,3,4,7,8-HxCDD	U	ND	0.2				—
1,2,3,6,7,8-HxCDD	J	1.1			1.39	34:26	JB_
1,2,3,7,8,9-HxCDD	UJ	0.97			1.24	34:44	JB_
1,2,3,4,6,7,8-HpCDD	J	35.0			1.07	37:42	B_
1,2,3,4,6,7,8,9-OCDD	J	397			0.85	41:24	—
2,3,7,8-TCDF	UJ	EMPC		0.47			JB_
1,2,3,7,8-PeCDF	J	0.21			1.53	30:14	JB_
2,3,4,7,8-PeCDF	UJ	0.38			1.41	30:54	JB_
1,2,3,4,7,8-HxCDF	J	1.2			1.18	33:37	JB_
1,2,3,6,7,8-HxCDF	J	0.41			1.13	33:44	JB_
2,3,4,6,7,8-HxCDF	J	0.84			1.20	34:12	JB_
1,2,3,7,8,9-HxCDF	J	0.36			1.31	34:59	J_
1,2,3,4,6,7,8-HpCDF	J	9.6			0.99	36:39	B_
1,2,3,4,7,8,9-HpCDF	UJ	EMPC		0.80			J_
1,2,3,4,6,7,8,9-OCDF	J	45.0			0.88	41:36	—

Totals	Conc. (pg/g)	Number	DL	EMPC	Flags
Total TCDD	1.8	5		2.1	—
Total PeCDD	1.6	3		2.9	—
Total HxCDD	6.2	4		7.3	—
Total HpCDD	70.2	2			—
Total TCDF	2.1	6		3.5	—
Total PeCDF	2.6	6		9.1	—
Total HxCDF	13.9	8		14.1	—
Total HpCDF	38.1	2		40.0	—

LEVEL V

Page 1 of 2 **AMEC VALIDATED**

mils-PSR-V00, LARS 6.25.00



## DATA ASSESSMENT FORM

Project Title: Rocketdyne  
Project Manager: D. Hambrick  
Analysis/Method: Dioxins and Furans/EPA Method 8290  
QC Level: V<sup>1</sup>  
SDG: IJF1026  
Matrix: Soil  
No. of Samples: 3  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: February 28, 2002  
Reviewer: L. Calvin  
References: National Functional Guidelines for Organic Data Review (2/94) and SW-846 Method 8290 (9/94).  
Samples Reviewed: PC-20, PC-21, PC-22

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	The COC had appropriate relinquish and receipt signatures. The laboratory login sheet noted a cooler temperature within the limits of 4°C ±2°C.  The samples were extracted within 30 days of collection and analyzed within 45 days of extraction.	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was extracted and analyzed with the samples in this SDG. There were no reported target compound detects in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil LCS was extracted and analyzed with the samples in this SDG. All percent recoveries were within the laboratory QC limits of 50-150%.	No qualifications were required.
6. <u>MS/MSDs</u>	No MS/MSD analyses were performed in this SDG. Evaluation of method accuracy was based on the LCS results.	No qualifications were required.

	Findings	Qualifications
7. <u>Field QC Samples</u> ER: None FB: None FD: None	No field QC samples were identified for the samples in this SDG.	No qualifications were required.
9. <u>Internal Standards</u>	All internal standard recoveries were within the method QC limits of 40-135%, with the exception of recoveries below the QC limit for internal standards 13C-1,2,3,7,8-PeCDD, 13C-1,2,3,4,6,7,8-HpCDD, 13C-OCDD, 13C-1,2,3,7,8-PeCDF, 13C-1,2,3,4,7,8-HxCDF, and 13C-1,2,3,4,6,7,8-HpCDF in sample PC-20.	Associated individual congeners and their totals, all nondetects, were qualified as estimated, "UJ."
10. <u>Other</u>	The sample results were reported on a dry-weight basis.	No qualifications were required.
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

## IT CORPORATION

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: PC-20

Lot-Sample #....: GOF300201-016  
 Date Sampled....: 6/29/00  
 Prep Date.....: 7/5/00  
 Prep Batch #....: 0187203

Work Order #....: DFKQM102  
 Date Received...: 6/30/00  
 Analysis Date...: 7/9/00  
 Dilution Factor: 1

Matrix.....: SOLID  
 Instrument: 6D5  
 Units.....: PG/g  
 % Moisture: 9.1

PARAMETER	result	REPORTING LIMIT	TEF FACTOR	TEQ Conc.
2,3,7,8-TCDD	ND	0.62	1.000	0.00
Total TCDD	ND	0.62		
1,2,3,7,8-PeCDD	ND	1.8	0.500	0.00
Total PeCDD	ND	5.6		
1,2,3,4,7,8-HxCDD	ND	1.0	0.100	0.00
1,2,3,6,7,8-HxCDD	ND	0.97	0.100	0.00
1,2,3,7,8,9-HxCDD	ND	0.89	0.100	0.00
Total HxCDD	ND	4.6		
1,2,3,4,6,7,8-HpCDD	ND	1.3	0.010	0.00
Total HpCDD	ND	1.3		
OCDD	ND	1.6	0.001	0.00
2,3,7,8-TCDF	ND	0.54	0.100	0.00
Total TCDF	ND	0.54		
1,2,3,7,8-PeCDF	ND	0.96	0.050	0.00
2,3,4,7,8-PeCDF	ND	0.96	0.500	0.00
Total PeCDF	ND	0.96		
1,2,3,4,7,8-HxCDF	ND	0.66	0.100	0.00
1,2,3,6,7,8-HxCDF	ND	0.48	0.100	0.00
2,3,4,6,7,8-HxCDF	ND	0.69	0.100	0.00
1,2,3,7,8,9-HxCDF	ND	0.68	0.100	0.00
Total HxCDF	ND	0.69		
1,2,3,4,6,7,8-HpCDF	ND	0.66	0.010	0.00
1,2,3,4,7,8,9-HpCDF	ND	0.73	0.010	0.00
Total HpCDF	ND	0.73		
OCDF	ND	1.6	0.001	0.00
Total TEQ Concentration**				0.00

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	43	40 - 135
13C-1,2,3,7,8-PeCDD	34 *	40 - 135
13C-1,2,3,6,7,8-HxCDD	43	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	37 *	40 - 135
13C-OCDD	33 *	40 - 135
13C-2,3,7,8-TCDF	42	40 - 135
13C-1,2,3,7,8-PeCDF	33 *	40 - 135
13C-1,2,3,4,7,8-HxCDF	37 *	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	37 *	40 - 135

NOTES:  
 Calculations are performed before rounding to avoid round-off errors in calculated results

\* Surrogate recovery is outside stated control limits.

\*\* Not validated.

**AMEC VALIDATED**  
**LEVEL V**

## IT CORPORATION

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: PC-21

Lot-Sample #....: G0F300201-017  
 Date Sampled....: 6/29/00  
 Prep Date.....: 7/5/00  
 Prep Batch #....: 0187203

Work Order #....: DFKQQ102  
 Date Received...: 6/30/00  
 Analysis Date...: 7/9/00  
 Dilution Factor: 1

Matrix.....: SOLID  
 Instrument: 6D5  
 Units.....: pg/g  
 % Moisture: 17

PARAMETER	rev qual code	RESULT	REPORTING LIMIT	TEF FACTOR	TEQ Conc.
2,3,7,8-TCDD	u	ND	0.36	1.000	0.00
Total TCDD		ND	0.42		
1,2,3,7,8-PeCDD		ND	0.92	0.500	0.00
Total PeCDD		ND	2.1		
1,2,3,4,7,8-HxCDD		ND	0.52	0.100	0.00
1,2,3,6,7,8-HxCDD		ND	0.51	0.100	0.00
1,2,3,7,8,9-HxCDD		ND	0.46	0.100	0.00
Total HxCDD		ND	5.4		
1,2,3,4,6,7,8-HpCDD		ND	0.47	0.010	0.00
Total HpCDD		ND	0.47		
OCDD		ND	1.6	0.001	0.00
2,3,7,8-TCDF		ND	0.34	0.100	0.00
Total TCDF		ND	0.34		
1,2,3,7,8-PeCDF		ND	0.46	0.050	0.00
2,3,4,7,8-PeCDF		ND	0.47	0.500	0.00
Total PeCDF		ND	0.47		
1,2,3,4,7,8-HxCDF		ND	0.29	0.100	0.00
1,2,3,6,7,8-HxCDF		ND	0.22	0.100	0.00
2,3,4,6,7,8-HxCDF		ND	0.30	0.100	0.00
1,2,3,7,8,9-HxCDF		ND	0.30	0.100	0.00
Total HxCDF		ND	0.30		
1,2,3,4,6,7,8-HpCDF		ND	0.36	0.010	0.00
1,2,3,4,7,8,9-HpCDF		ND	0.40	0.010	0.00
Total HpCDF		ND	0.40		
OCDF		ND	0.69	0.001	0.00
Total TEQ Concentration*					0.00

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	83	40 - 135
13C-1,2,3,7,8-PeCDD	71	40 - 135
13C-1,2,3,6,7,8-HxCDD	96	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	86	40 - 135
13C-OCDD	82	40 - 135
13C-2,3,7,8-TCDF	82	40 - 135
13C-1,2,3,7,8-PeCDF	69	40 - 135
13C-1,2,3,4,7,8-HxCDF	83	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	86	40 - 135

## NOTES:

Calculations are performed before rounding to avoid round-off errors in calculated results

\* Not validated

**AMEC VALIDATED**  
**LEVEL V**

## IT CORPORATION

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: PC-22

Lot-Sample #....:	G0F300201-018	Work Order #....:	DFKQW102	Matrix.....:	SOLID
Date Sampled....:	6/29/00	Date Received...:	6/30/00	Instrument:	6D5
Prep Date.....:	7/5/00	Analysis Date...:	7/9/00	Units.....:	pg/g
Prep Batch #....:	0187203	Dilution Factor:	1	% Moisture:	19

PARAMETER	RESULT	REPORTING LIMIT	TEF FACTOR	TEQ Conc.
2,3,7,8-TCDD	ND	0.45	1.000	0.00
Total TCDD	ND	0.45		
1,2,3,7,8-PeCDD	ND	1.0	0.500	0.00
Total PeCDD	ND	3.2		
1,2,3,4,7,8-HxCDD	ND	0.62	0.100	0.00
1,2,3,6,7,8-HxCDD	ND	0.60	0.100	0.00
1,2,3,7,8,9-HxCDD	ND	0.55	0.100	0.00
Total HxCDD	ND	5.8		
1,2,3,4,6,7,8-HpCDD	ND	0.68	0.010	0.00
Total HpCDD	ND	0.68		
OCDD	ND	3.1	0.001	0.00
2,3,7,8-TCDF	ND	0.40	0.100	0.00
Total TCDF	ND	0.43		
1,2,3,7,8-PeCDF	ND	0.57	0.050	0.00
2,3,4,7,8-PeCDF	ND	0.58	0.500	0.00
Total PeCDF	ND	0.71		
1,2,3,4,7,8-HxCDF	ND	0.36	0.100	0.00
1,2,3,6,7,8-HxCDF	ND	0.27	0.100	0.00
2,3,4,6,7,8-HxCDF	ND	0.37	0.100	0.00
1,2,3,7,8,9-HxCDF	ND	0.37	0.100	0.00
Total HxCDF	ND	0.37		
1,2,3,4,6,7,8-HpCDF	ND	0.33	0.010	0.00
1,2,3,4,7,8,9-HpCDF	ND	0.37	0.010	0.00
Total HpCDF	ND	0.37		
OCDF	ND	0.61	0.001	0.00
Total TEQ Concentration*				0.00

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	81	40 - 135
13C-1,2,3,7,8-PeCDD	72	40 - 135
13C-1,2,3,6,7,8-HxCDD	94	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	84	40 - 135
13C-OCDD	80	40 - 135
13C-2,3,7,8-TCDF	80	40 - 135
13C-1,2,3,7,8-PeCDF	68	40 - 135
13C-1,2,3,4,7,8-HxCDF	81	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	88	40 - 135

## NOTES:

Calculations are performed before rounding to avoid round-off errors in calculated results

\* Not validated.

**AMEC VALIDATED**  
**LEVEL V**



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method 7471A  
QC Level: V<sup>1</sup>  
SDG: IJJ0179  
Matrix: Soil  
No. of Samples: 2  
Date Reviewed: March 7, 2002  
Reviewer: A. Lang  
Reference: USEPA SW-846 Method 7471A (11/90)  
Samples Reviewed: PCS-46B, PCS-47B

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The coolers were received within temperature QC limits of 4°±2° C. The COC matched the samples and accounted for the analysis. No custody seals were present on the coolers.</p> <p>The analysis was performed within the 28-day holding time for mercury.</p>	No qualifications were required.
3. <u>Method Blanks</u>	Mercury was not detected in the method blank associated with the samples in this SDG.	No qualifications were required.
5. <u>LCS/BS</u>	One solid LCS sample was analyzed with the samples. The recovery for mercury was within the laboratory defined QC limits.	No qualifications were required.
6. <u>Duplicates</u>	None.	No qualifications were required.
7. <u>MS/MSDs</u>	None.	No qualifications were required.
9. <u>ICP Serial Dilution</u>	None.	No qualifications were required.



	Findings	Qualifications
10. <u>Other</u>	None.	No qualifications were required.
11. <u>Field QC Samples</u>	None	No qualifications were required.
<u>Comments</u>	Sample results were reported on a wet weight basis.	None.

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<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJJ0179

Sampled: 10/04/00  
Received: 10/05/00

## METALS

Analyte	Method	Batch	Reporting Limit mg/kg	Sample Result mg/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	<i>Pro</i>	<i>Qual</i>
Sample ID: IJJ0179-01 (PCS-46B - Soil)										
Mercury	EPA 7471A	I0J1334	0.020	0.030	1	10/13/00	10/13/00			
Sample ID: IJJ0179-02 (PCS-47B - Soil)										
Mercury	EPA 7471A	I0J1334	0.020	ND	1	10/13/00	10/13/00	u		
Sample ID: IJJ0179-03 (BR-35 - Soil)										
Mercury	EPA 7471A	I0J1334	0.020	ND	1	10/13/00	10/13/00	*		

*\* Analysis not validated*

## AMEC VALIDATED

## LEVEL V

Del Mar Analytical, Irvine  
at Abe  
Project Manager

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IJJ0179 <Page 3 of 8>



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method 7471A  
QC Level: V<sup>1</sup>  
SDG: IJH0606  
Matrix: Soil  
No. of Samples: 2  
Date Reviewed: March 7, 2002  
Reviewer: A. Lang  
Reference: USEPA SW-846 Method 7471A (11/90)  
Samples Reviewed: CBC-80S, PC-23

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The coolers were received within temperature QC limits of 4°±2° C. The COC matched the samples and accounted for the analysis. No custody seals were present on the coolers.</p> <p>The analysis was performed within the 28-day holding time for mercury.</p>	No qualifications were required.
3. <u>Method Blanks</u>	Mercury was not detected in the method blanks associated with the samples in this SDG.	No qualifications were required.
5. <u>LCS/BS</u>	Two solid LCS samples were analyzed with the samples. The recoveries for mercury were within the laboratory defined QC limits.	No qualifications were required.
6. <u>Duplicates</u>	None.	No qualifications were required.
7. <u>MS/MSDs</u>	None.	No qualifications were required.

	Findings	Qualifications
9. <u>ICP Serial Dilution</u>	None.	No qualifications were required.
10. <u>Other</u>	None.	No qualifications were required.
11. <u>Field QC Samples</u>	None	No qualifications were required.
<u>Comments</u>	Sample results were reported on a wet weight basis.	None.

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<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJH0606

Sampled: 08/17/00  
 Received: 08/17/00

## METALS

Analyte	Method	Batch	Reporting Limit mg/kg	Sample Result mg/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IJH0606-02 (CBC-79SW - Soil)								
Mercury	EPA 7471A	I0H2530	0.020	0.054	1	8/25/00	8/25/00	* <i>Bw</i>
Sample ID: IJH0606-03 (CBC-79SWD - Soil)								
Mercury	EPA 7471A	I0H2530	0.020	0.044	1	8/25/00	8/25/00	* <i>Bw</i>
Sample ID: IJH0606-04 (CBC-80S - Soil)								
Mercury	EPA 7471A	I0H2530	0.020	ND	1	8/25/00	8/25/00	<i>u</i>

*\* Analysis not validated*

## AMEC VALIDATED

## LEVEL V

Del Mar Analytical, Irvine  
 Pat Abe  
 Project Manager

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IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJH0606

Sampled: 08/17/00  
Received: 08/17/00

## METALS

Analyte	Method	Batch	Reporting Limit mg/kg	Sample Result mg/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IJH0606-01 (PC-23 - Soil)								
Mercury	EPA 7471A	I0H2128	0.020	0.020	1	8/21/00	8/21/00	<i>Pat Abe</i> <i>Qual Code</i>

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Pat Abe  
Project Manager

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IJH0606 < 2 of 4 >

# **DATA VALIDATION REPORT**

**ROCKETDYNE**  
Former Sodium Disposal Facility Site Sampling

**ANALYSIS: METALS**  
**SAMPLE DELIVERY GROUP: IJF0961**

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Project: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Contract Task Order #: 313150008  
SDG#: IJF0961  
Project Manager: D. Hambrick  
Matrix: Soil  
Analysis: Metals  
QC Level: IV  
No. of Samples: 13  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: March 11, 2002

The samples listed in Table 1 were validated based on the guidelines outlined in the *Amec Data Validation Procedure for Levels C and D metals and cyanide* (DVP-5, Rev. 2), *USEPA SW-846 Method 7471A*, and the *National Functional Guidelines for Inorganic Data Review* (2/94). Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on the Sample Result Forms with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
PC-1	PC-1	IJF0961-01	soil	mercury
PC-3	PC-3	IJF0961-03	soil	mercury
PC-4	PC-4	IJF0961-04	soil	mercury
PC-6	PC-6	IJF0961-06	soil	mercury
PC-8	PC-8	IJF0961-08	soil	mercury
PC-9	PC-9	IJF0961-09	soil	mercury
PC-10	PC-10	IJF0961-10	soil	mercury
PC-12	PC-12	IJF0961-12	soil	mercury
PC-14B	PC-14B	IJF0961-14	soil	mercury
PC-14T	PC-14T	IJF0961-16	soil	mercury
PC-16T	PC-16T	IJF0961-19	soil	mercury
PC-16B	PC-16B	IJF0961-20	soil	mercury
PC-16BD	PC-16BD	IJF0961-21	soil	mercury

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples arrived within the temperature limit of 4°C ± 2°C. No sample preservation, handling, or transport problems were noted, and no qualifications were required.

#### 2.1.2 Chain of Custody

The COCs in the package were legible, were signed by the field and laboratory personnel, and accounted for the analyses presented in the data package. There were no sample condition questions on the COCs, and no sample receiving checklist was included. No cooler or sample container custody seal information was provided. The case narrative, however, stated that the samples were received intact. No qualifications were required.

#### 2.1.3 Holding Times

The date of collection recorded on the COCs and the dates of analysis recorded in the raw data documented that all sample analyses were performed within the specified holding times of 28 days for mercury. No qualifications were assigned to sample results.

### 2.2 CALIBRATION

All mercury ICV and CCV results in the raw data showed acceptable %Rs, 80-120%. No qualifications were required based on the calibration information.

### 2.3 BLANKS

The mercury results reported on the summary forms and in the raw data for the blank analyses associated with these samples were nondetects at the reporting limits. The raw data blanks verification showed that all applicable method blank and CCB results were found at less than one half the absolute value of the reporting limits, which meets the laboratory SOP requirements for the blanks. No sample qualifications were required.

### 2.4 ICP INTERFERENCE CHECK SAMPLE (ICP ICS)

The ICP interference check sample is not applicable to the mercury analysis. No sample qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

A solid LCS sample was analyzed with the samples in this SDG. The LCS result reported on the Method Blank/QC Data Forms and in the raw data were within the laboratory's control limits of 85-115%R for the mercury analysis. The mercury LCS was identified as I0G0611-BS1. No qualifications were required.

## 2.6 LABORATORY DUPLICATES

No laboratory duplicate analyses were performed in association with the samples in this SDG; therefore, no assessment was made with respect to this criteria. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed in association with the samples in this SDG; therefore, no assessment was made with respect to this criteria. No qualifications were required.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

The ICP serial dilution is not applicable to the mercury analysis. No qualifications were required.

## 2.10 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for all samples in this data package. Calculations were verified, sample results reported on the Form Is were verified against the raw data, and no transcription errors or calculations errors were noted. The samples in this SDG were reported on a wet weight basis. No qualifications were necessary.

## 2.11 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### **2.11.1 Field Blanks and Equipment Rinsates**

The samples in this SDG had no associated field QC samples. No qualifications were necessary.

### **2.11.2 Field Duplicates**

Samples PC-16B/PC-16BD were identified as the field duplicate pair for the mercury only samples in this SDG. If RPDs are greater than 30% for waters or 50% for soils for sample results  $>5\text{HCRDL}$ , the RPDs and affected analytes are noted in the validation report. A control limit of  $4\text{HCRDL}$  is used for soil sample values  $<5\text{HCRDL}$ . Mercury was detected in both field duplicate samples with an RPD of less than 50%.

IT Corporation/Emcon - Burbank 601 S. Glenoaks Boulevard, Suite 314 Burbank, CA 91502 Attention: Sally Bilodeau	Client Project ID: Boeing/Rocketdyne 870071 Report Number: IJF0961	Sampled: 06/28/00 Received: 06/28/00
--	--	---

METALS

anlyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
			mg/kg	mg/kg						
ample ID: IJF0961-01 (PC-1 - Soil)										
tercury	EPA 7471A	I0G0611	0.020	ND	1	7/6/00	7/7/00	U		
ample ID: IJF0961-02 (PC-2 - Soil)										
tercury	EPA 7471A	I0G0611	0.020	0.059	1	7/6/00	7/7/00	*		
ample ID: IJF0961-03 (PC-3 - Soil)										
tercury	EPA 7471A	I0G0611	0.020	0.023	1	7/6/00	7/7/00			
ample ID: IJF0961-04 (PC-4 - Soil)										
tercury	EPA 7471A	I0G0611	0.020	ND	1	7/6/00	7/7/00	U		
ample ID: IJF0961-06 (PC-6 - Soil)										
tercury	EPA 7471A	I0G0611	0.020	ND	1	7/6/00	7/7/00	U		
ample ID: IJF0961-08 (PC-8 - Soil)										
tercury	EPA 7471A	I0G0611	0.020	0.025	1	7/6/00	7/7/00			
ample ID: IJF0961-09 (PC-9 - Soil)										
tercury	EPA 7471A	I0G0611	0.020	0.069	1	7/6/00	7/7/00			
ample ID: IJF0961-10 (PC-10 - Soil)										
tercury	EPA 7471A	I0G0611	0.020	0.11	1	7/6/00	7/7/00			

\*Analysis Not Validated

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LEVEL IV

Mar Analytical, Irvine  
Abe  
ject Manager

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IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0961

Sampled: 06/28/00  
 Received: 06/28/00

## METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			mg/kg	mg/kg				Raw Qual   Qual Code
Sample ID: IJF0961-12 (PC-12 - Soil)								
Mercury	EPA 7471A	10G0611	0.020	0.029	1	7/6/00	7/7/00	
Sample ID: IJF0961-14 (PC-14B - Soil)								
Mercury	EPA 7471A	10G0611	0.020	0.029	1	7/6/00	7/7/00	
Sample ID: IJF0961-16 (PC-14T - Soil)								
Mercury	EPA 7471A	10G0611	0.020	ND	1	7/6/00	7/7/00	U
Sample ID: IJF0961-19 (PC-16T - Soil)								
Mercury	EPA 7471A	10G0611	0.020	0.023	1	7/6/00	7/7/00	
Sample ID: IJF0961-20 (PC-16B - Soil)								
Mercury	EPA 7471A	10G0611	0.020	0.098	1	7/6/00	7/7/00	
Sample ID: IJF0961-21 (PC-16BD - Soil)								
Mercury	EPA 7471A	10G0611	0.020	0.064	1	7/6/00	7/7/00	
Sample ID: IJF0961-24 (PC-18 - Soil)								
Mercury	EPA 7471A	10G0611	0.020	0.72	1	7/6/00	7/7/00	*

\*Analysis Not Validated

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**LEVEL IV**

Del Mar Analytical, Irvine  
 Abe  
 Project Manager

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IJF0961 < 8 of 17 >

# **DATA VALIDATION REPORT**

**ROCKETDYNE**  
Former Sodium Disposal Facility Site Sampling

**ANALYSIS: METALS**  
**SAMPLE DELIVERY GROUP: IJI0547**

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Project:	Rocketdyne Former Sodium Disposal Facility Site Sampling
Contract Task Order #:	313150008
SDG#:	IJI0547
Project Manager:	D. Hambrick
Matrix:	Soil
Analysis:	Metals
QC Level:	IV
No. of Samples:	6
No. of Reanalyses/Dilutions:	0
Reviewer:	K. Okonczak
Date of Review:	March 07, 2002

The samples listed in Table 1 were validated based on the guidelines outlined in the *Ogden Data Validation Procedure for Levels C and D metals and cyanide* (DVP-5, Rev. 2), *USEPA SW-846 Methods 6010B, and 7471A*, and the *National Functional Guidelines for Inorganic Data Review* (2/94). Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on the Sample Result Forms with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
PCS-29	PCS-29	IJI0547-01	soil	CAM 22 Metals
PCS-31	PCS-31	IJI0547-04	soil	CAM 22 Metals
CAC-100BE	CAC-100BE	IJI0547-06	soil	mercury
CAC-101BE	CAC-101BE	IJI0547-07	soil	mercury
CAC-101BED	CAC-101BED	IJI0547-08	soil	mercury
CBC-102SW	CBC-102SW	IJI0547-09	soil	mercury

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples arrived within the temperature limit of 4°C ± 2°C. No sample preservation, handling, or transport problems were noted, and no qualifications were required.

#### 2.1.2 Chain of Custody

The COCs in the package were legible, were signed by the field and laboratory personnel, and accounted for the analyses presented in the data package. There were no sample condition questions on the COCs, and no sample receiving checklist was included. No cooler or sample container custody seal information was provided. The case narrative, however, stated that the samples were received intact. No qualifications were required.

#### 2.1.3 Holding Times

The date of collection recorded on the COC and the dates of analysis recorded in the raw data documented that all sample analyses were performed within the specified holding times of six months for metals and 28 days for mercury. No qualifications were assigned to sample results.

### 2.2 CALIBRATION

All ICAP and mercury ICV and CCV results in the raw data showed acceptable %Rs, 90-110% for ICAP and 80-120% for mercury. No qualifications were required based on the calibration information.

### 2.3 BLANKS

The ICAP and mercury results reported on the summary forms and in the raw data for the blank analyses associated with these samples were nondetects at the reporting limits. The raw data blanks verification showed that all applicable method blank and CCB results were found at less than one half the absolute value of the reporting limits, which meets the laboratory SOP requirements for the blanks. No sample qualifications were required.

### 2.4 ICP INTERFERENCE CHECK SAMPLE (ICP ICS)

The raw data results for the ICSAB sample, analyzed at the beginning of the analytical run, were within the established control limits of 80%-120%. No sample qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Aqueous LCS samples were analyzed with this SDG. The LCS result reported on the Method Blank/QC Data Forms and in the raw data were within the laboratory's control limits of 80-120%R for the ICAP analytes and 85-115%R for the mercury analysis. The ICAP LCS was identified as I0I1858-BS1, and the mercury LCS was identified as I0I1937-BS1. No qualifications were required.

## 2.6 LABORATORY DUPLICATES

The ICAP MS/MSD analyses were performed on site sample PCS-29 in association with the site soil samples in this SDG. The RPDs between the MS/MSD aliquots were within the established limits of "20%. The mercury MS/MSD analyses reported in this package were performed on a sample not associated with this SDG; therefore, the mercury results were not assessed for the duplicate criteria. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The ICAP MS/MSD analyses were performed on sample PCS-29 in association with the site soil samples in this SDG. The %Rs were within the laboratory-established control limits of 75-125%, with the exception of antimony, which had MS/MSD %Rs of 40.4% and 46.2%, respectively; therefore, the antimony nondetects were qualified "UJ" for samples PCS-29 and PCS-31. The mercury MS/MSD analyses reported in this package were performed on a sample not associated with this SDG; therefore, the mercury results were not assessed for the matrix spike criteria. No further qualifications were required.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

The ICP serial dilution analysis was not performed for the samples in this SDG; therefore, the samples were not assessed for this criteria.

## 2.10 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for all samples in this data package. Calculations were verified, sample results reported on the Form Is were verified against the raw data, and no transcription errors or calculations errors were noted. The samples in this SDG were reported on a wet weight basis. No qualifications were necessary.

## **2.11 FIELD QC SAMPLES**

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### **2.11.1 Field Blanks and Equipment Rinsates**

The samples in this SDG had no associated field QC samples. No qualifications were necessary.

### **2.11.2 Field Duplicates**

Samples CAC-101BE/CAC-101BED were identified as the field duplicate pair for the mercury only samples in this SDG. If RPDs are greater than 30% for waters or 50% for soils for sample results >5<sub>H</sub>CRDL, the RPDs and affected analytes are noted in the validation report. A control limit of "4<sub>H</sub>CRDL is used for soil sample values <5<sub>H</sub>CRDL. Mercury was detected in both CAC-101BE and CAC-101BED with an RPD of less than 50%.

IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJI0547

Sampled:09/15/00  
 Received:09/15/00

## METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			mg/kg	mg/kg				Rev Qual Qual Code
Sample ID: IJI0547-01 (PCS-29 - Soil)								
Antimony	EPA 6010B	I0I1858	10	ND	1	9/18/00	9/18/00	uJ MQ
Arsenic	EPA 6010B	I0I1858	2.0	5.1	1	9/18/00	9/18/00	
Barium	EPA 6010B	I0I1858	1.0	120	1	9/18/00	9/18/00	
Beryllium	EPA 6010B	I0I1858	0.50	0.85	1	9/18/00	9/18/00	
Cadmium	EPA 6010B	I0I1858	0.50	0.59	1	9/18/00	9/18/00	
Chromium	EPA 6010B	I0I1858	1.0	30	1	9/18/00	9/18/00	
Cobalt	EPA 6010B	I0I1858	1.0	9.5	1	9/18/00	9/18/00	
Copper	EPA 6010B	I0I1858	1.0	16	1	9/18/00	9/18/00	
Lead	EPA 6010B	I0I1858	2.0	9.0	1	9/18/00	9/18/00	
Mercury	EPA 7471A	I0I1937	0.020	ND	1	9/19/00	9/19/00	u
Molybdenum	EPA 6010B	I0I1858	2.0	ND	1	9/18/00	9/18/00	u
Nickel	EPA 6010B	I0I1858	1.0	19	1	9/18/00	9/18/00	
Selenium	EPA 6010B	I0I1858	2.0	ND	1	9/18/00	9/18/00	u
Silver	EPA 6010B	I0I1858	1.0	ND	1	9/18/00	9/18/00	u
Thallium	EPA 6010B	I0I1858	10	ND	1	9/18/00	9/18/00	u
Vanadium	EPA 6010B	I0I1858	1.0	54	1	9/18/00	9/18/00	
Zinc	EPA 6010B	I0I1858	5.0	58	1	9/18/00	9/18/00	
Sample ID: IJI0547-02 (PCS-30 - Soil)								
Antimony	EPA 6010B	I0I1858	10	ND	1	9/18/00	9/18/00	*
Arsenic	EPA 6010B	I0I1858	2.0	5.8	1	9/18/00	9/18/00	
Barium	EPA 6010B	I0I1858	1.0	150	1	9/18/00	9/18/00	
Beryllium	EPA 6010B	I0I1858	0.50	0.84	1	9/18/00	9/18/00	
Cadmium	EPA 6010B	I0I1858	0.50	0.55	1	9/18/00	9/18/00	
Chromium	EPA 6010B	I0I1858	1.0	26	1	9/18/00	9/18/00	
Cobalt	EPA 6010B	I0I1858	1.0	9.6	1	9/18/00	9/18/00	
Copper	EPA 6010B	I0I1858	1.0	14	1	9/18/00	9/18/00	
Lead	EPA 6010B	I0I1858	2.0	9.3	1	9/18/00	9/18/00	
Mercury	EPA 7471A	I0I1937	0.020	ND	1	9/19/00	9/19/00	
Molybdenum	EPA 6010B	I0I1858	2.0	ND	1	9/18/00	9/18/00	
Nickel	EPA 6010B	I0I1858	1.0	18	1	9/18/00	9/18/00	
Selenium	EPA 6010B	I0I1858	2.0	ND	1	9/18/00	9/18/00	
Silver	EPA 6010B	I0I1858	1.0	ND	1	9/18/00	9/18/00	
Thallium	EPA 6010B	I0I1858	10	ND	1	9/18/00	9/18/00	
Vanadium	EPA 6010B	I0I1858	1.0	49	1	9/18/00	9/18/00	
Zinc	EPA 6010B	I0I1858	5.0	55	1	9/18/00	9/18/00	

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 Pat Abe  
 Project Manager

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\*Analysis Not Validated

# LEVEL IV

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851

IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJI0547

Sampled:09/15/00  
 Received:09/15/00

## METALS

Analyte	Method	Batch	Reporting Limit mg/kg	Sample Result mg/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IJI0547-03 (PCS-32 - Soil)								
Antimony	EPA 6010B	I0I1858	10	ND	1	9/18/00	9/18/00	Rev Qual Circle
Arsenic	EPA 6010B	I0I1858	2.0	5.0	1	9/18/00	9/18/00	
Barium	EPA 6010B	I0I1858	1.0	120	1	9/18/00	9/18/00	
Beryllium	EPA 6010B	I0I1858	0.50	0.76	1	9/18/00	9/18/00	
Cadmium	EPA 6010B	I0I1858	0.50	0.52	1	9/18/00	9/18/00	
Chromium	EPA 6010B	I0I1858	1.0	28	1	9/18/00	9/18/00	
Cobalt	EPA 6010B	I0I1858	1.0	8.6	1	9/18/00	9/18/00	
Copper	EPA 6010B	I0I1858	1.0	14	1	9/18/00	9/18/00	
Lead	EPA 6010B	I0I1858	2.0	8.1	1	9/18/00	9/18/00	
Mercury	EPA 7471A	I0I1937	0.020	ND	1	9/19/00	9/19/00	
Molybdenum	EPA 6010B	I0I1858	2.0	ND	1	9/18/00	9/18/00	
Nickel	EPA 6010B	I0I1858	1.0	17	1	9/18/00	9/18/00	
Selenium	EPA 6010B	I0I1858	2.0	ND	1	9/18/00	9/18/00	
Silver	EPA 6010B	I0I1858	1.0	ND	1	9/18/00	9/18/00	
Thallium	EPA 6010B	I0I1858	10	ND	1	9/18/00	9/18/00	
Vanadium	EPA 6010B	I0I1858	1.0	49	1	9/18/00	9/18/00	
Zinc	EPA 6010B	I0I1858	5.0	52	1	9/18/00	9/18/00	
Sample ID: IJI0547-04 (PCS-31 - Soil)								
Antimony	EPA 6010B	I0I1858	10	ND	1	9/18/00	9/18/00	UJ
Arsenic	EPA 6010B	I0I1858	2.0	6.2	1	9/18/00	9/18/00	
Barium	EPA 6010B	I0I1858	1.0	130	1	9/18/00	9/18/00	
Beryllium	EPA 6010B	I0I1858	0.50	0.86	1	9/18/00	9/18/00	
Cadmium	EPA 6010B	I0I1858	0.50	0.55	1	9/18/00	9/18/00	
Chromium	EPA 6010B	I0I1858	1.0	30	1	9/18/00	9/18/00	
Cobalt	EPA 6010B	I0I1858	1.0	9.4	1	9/18/00	9/18/00	
Copper	EPA 6010B	I0I1858	1.0	14	1	9/18/00	9/18/00	
Lead	EPA 6010B	I0I1858	2.0	9.1	1	9/18/00	9/18/00	
Mercury	EPA 7471A	I0I1937	0.020	ND	1	9/19/00	9/19/00	U
Molybdenum	EPA 6010B	I0I1858	2.0	ND	1	9/18/00	9/18/00	U
Nickel	EPA 6010B	I0I1858	1.0	18	1	9/18/00	9/18/00	
Selenium	EPA 6010B	I0I1858	2.0	ND	1	9/18/00	9/18/00	U
Silver	EPA 6010B	I0I1858	1.0	ND	1	9/18/00	9/18/00	U
Thallium	EPA 6010B	I0I1858	10	ND	1	9/18/00	9/18/00	U
Vanadium	EPA 6010B	I0I1858	1.0	53	1	9/18/00	9/18/00	
Zinc	EPA 6010B	I0I1858	5.0	55	1	9/18/00	9/18/00	

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**LEVEL IV**

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 Pat Abe  
 Project Manager



IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJI0547

Sampled:09/15/00  
 Received:09/15/00

## METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			mg/kg	mg/kg				
Sample ID: IJI0547-05 (PCS-33B - Soil)								
Antimony	EPA 6010B	I0I1858	10	ND	1	9/18/00	9/18/00	Rev Qual
Arsenic	EPA 6010B	I0I1858	2.0	3.9	1	9/18/00	9/18/00	Qual Calc
Barium	EPA 6010B	I0I1858	1.0	64	1	9/18/00	9/18/00	
Beryllium	EPA 6010B	I0I1858	0.50	ND	1	9/18/00	9/18/00	
Cadmium	EPA 6010B	I0I1858	0.50	ND	1	9/18/00	9/18/00	
Chromium	EPA 6010B	I0I1858	1.0	17	1	9/18/00	9/18/00	
Cobalt	EPA 6010B	I0I1858	1.0	5.0	1	9/18/00	9/18/00	
Copper	EPA 6010B	I0I1858	1.0	8.9	1	9/18/00	9/18/00	
Lead	EPA 6010B	I0I1858	2.0	5.3	1	9/18/00	9/18/00	
Mercury	EPA 7471A	I0I1937	0.020	0.020	1	9/19/00	9/19/00	
Molybdenum	EPA 6010B	I0I1858	2.0	ND	1	9/18/00	9/18/00	
Nickel	EPA 6010B	I0I1858	1.0	11	1	9/18/00	9/18/00	
Selenium	EPA 6010B	I0I1858	2.0	ND	1	9/18/00	9/18/00	
Silver	EPA 6010B	I0I1858	1.0	ND	1	9/18/00	9/18/00	
Thallium	EPA 6010B	I0I1858	10	ND	1	9/18/00	9/18/00	
Vanadium	EPA 6010B	I0I1858	1.0	33	1	9/18/00	9/18/00	
Zinc	EPA 6010B	I0I1858	5.0	28	1	9/18/00	9/18/00	
Sample ID: IJI0547-06 (CAC-100BE - Soil)								
Mercury	EPA 7471A	I0I1937	0.020	ND	1	9/19/00	9/19/00	u
Sample ID: IJI0547-07 (CAC-101BE - Soil)								
Mercury	EPA 7471A	I0I1937	0.020	0.20	1	9/19/00	9/19/00	

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 Project Manager

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IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJI0547

Sampled:09/15/00  
Received:09/15/00

## METALS

Analyte	Method	Batch	Reporting Limit mg/kg	Sample Result mg/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IJI0547-08 (CAC-101BED - Soil)								
Mercury	EPA 7471A	I0I1937	0.020	0.14	1	9/19/00	9/19/00	Rev Qual Code
Sample ID: IJI0547-09 (CBC-102SW - Soil)								
Mercury	EPA 7471A	I0I1937	0.020	0.023	1	9/19/00	9/19/00	

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Project Manager

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550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method 7471A  
QC Level: V<sup>1</sup>  
SDG: IJF1026  
Matrix: Soil  
No. of Samples: 3  
Date Reviewed: March 7, 2002  
Reviewer: A. Lang  
Reference: USEPA SW-846 Method 7471A (11/90)  
Samples Reviewed: PC-20, PC-21, PC-22

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The coolers were received within temperature QC limits of 4°±2° C. The COC matched the samples and accounted for the analysis. No custody seals were present on the coolers.</p> <p>The analysis was performed within the 28-day holding time for mercury.</p>	No qualifications were required.
3. <u>Method Blanks</u>	Mercury was not detected in the method blank associated with the samples in this SDG.	No qualifications were required.
5. <u>LCS/BS</u>	One solid LCS sample was analyzed with the samples. The recovery for mercury was within the laboratory defined QC limits.	No qualifications were required.
6. <u>Duplicates</u> Performed on PC-20	The RPD for the MS/MSD was within the 20%D control limit.	No qualifications were required.

	Findings	Qualifications
7. <u>MS/MSDs</u> Performed on PC-20	The MS/MSD results were within the laboratory established control limits of 70-130%R.	No qualifications were required.
9. <u>ICP Serial Dilution</u>	None.	No qualifications were required.
10. <u>Other</u>	None.	No qualifications were required.
11. <u>Field QC Samples</u>	None	No qualifications were required.
<u>Comments</u>	Sample results were reported on a wet weight basis.	None.

---

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF1026

Sampled: 06/29/00  
 Received: 06/29/00

## METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			mg/kg	mg/kg				
Sample ID: IJF1026-01 (PC-20 - Soil)								
Mercury	EPA 7471A	I0F3006	0.020	0.026	1	6/30/00	6/30/00	
Sample ID: IJF1026-02 (PC-21 - Soil)								
Mercury	EPA 7471A	I0F3006	0.020	ND	1	6/30/00	6/30/00	U
Sample ID: IJF1026-03 (PC-22 - Soil)								
Mercury	EPA 7471A	I0F3006	0.020	0.061	1	6/30/00	6/30/00	
Sample ID: IJF1026-04 (R1890ML-1A - Soil)								
Mercury	EPA 7471A	I0F3006	0.040	2.7	2	6/30/00	6/30/00	*
Sample ID: IJF1026-05 (R1890ML-1B - Soil)								
Mercury	EPA 7471A	I0F3006	0.040	1.7	2	6/30/00	6/30/00	*
Sample ID: IJF1026-06 (R1890ML-1C - Soil)								
Mercury	EPA 7471A	I0F3006	0.040	2.2	2	6/30/00	6/30/00	*
Sample ID: IJF1026-07 (R1890ML-2A - Soil)								
Mercury	EPA 7471A	I0F3006	0.020	1.2	1	6/30/00	6/30/00	*
Sample ID: IJF1026-08 (R1890ML-2B - Soil)								
Mercury	EPA 7471A	I0F3006	0.020	1.2	1	6/30/00	6/30/00	*

*\* Analysis not Validated*

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## LEVEL V

Del Mar Analytical, Irvine  
 Pat Abe  
 Project Manager

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IJF1026 < 3 of 9 >

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 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF1026

Sampled: 06/29/00  
 Received: 06/29/00

### METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			mg/kg	mg/kg				
Sample ID: IJF1026-09 (R1890ML-2C - Soil)								
Mercury	EPA 7471A	I0F3006	0.020	1.2	1	6/30/00	6/30/00	✖
Sample ID: IJF1026-10 (R1890ML-3A - Soil)								
Mercury	EPA 7471A	I0F3006	0.040	2.6	2	6/30/00	6/30/00	✖
Sample ID: IJF1026-11 (R1890ML-3B - Soil)								
Mercury	EPA 7471A	I0F3006	0.20	3.5	10	6/30/00	6/30/00	✖
Sample ID: IJF1026-12 (R1890ML-3C - Soil)								
Mercury	EPA 7471A	I0F3006	0.20	5.1	10	6/30/00	6/30/00	✖

✖ Analysis not validated

**AMEC VALIDATED**

**LEVEL V**

Del Mar Analytical, Irvine  
 Pat Abe  
 Project Manager

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IJF1026 < 4 of 9 >



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## DATA ASSESSMENT FORM

Project Title: Rocketdyne  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method 7471A  
QC Level: V<sup>1</sup>  
SDG: IJF0277  
Matrix: Soil  
No. of Samples: 2  
Date Reviewed: March 7, 2002  
Reviewer: A. Lang  
Reference: USEPA SW-846 Method 7471A (11/90)  
Samples Reviewed: CAC-32SW, CAC-31SW

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The coolers were received within temperature QC limits of 4°±2° C. The COC matched the samples and accounted for the analysis. No custody seals were present on the coolers.</p> <p>The analysis was performed within the 28-day holding time for mercury.</p>	No qualifications were required.
3. <u>Method Blanks</u>	Mercury was not detected in the method blank associated with the samples in this SDG.	No qualifications were required.
5. <u>LCS/BS</u>	One solid LCS sample was analyzed with the samples. The recovery for mercury was within the laboratory defined QC limits.	No qualifications were required.
6. <u>Duplicates</u>	None.	No qualifications were required.
7. <u>MS/MSDs</u>	None.	No qualifications were required.

	Findings	Qualifications
9. <u>ICP Serial Dilution</u>	None.	No qualifications were required.
10. <u>Other</u>	None.	No qualifications were required.
11. <u>Field QC Samples</u>	None	No qualifications were required.
<u>Comments</u>	Sample results were reported on a wet weight basis.	None.

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<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJF0277

Sampled: 06/07/00  
Received: 06/08/00

## METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			mg/kg	mg/kg				
Sample ID: IJF0277-06 (CAC-32SW - Soil)								
Mercury	EPA 7471A	I0F1310	0.020	0.20	1	06/13/00	06/13/00	
Sample ID: IJF0277-07 (CAC-31SW - Soil)								
Mercury	EPA 7471A	I0F1310	0.020	0.035	1	06/13/00	06/13/00	

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## DATA ASSESSMENT FORM

Project Title: Rocketdyne  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method 7471A  
QC Level: V<sup>1</sup>  
SDG: IJH0950  
Matrix: Soil  
No. of Samples: 11  
Date Reviewed: March 7, 2002  
Reviewer: A. Lang  
Reference: USEPA SW-846 Method 7471A (11/90)  
Samples Reviewed: CAC-90BE, CAC-89BW, PC-24, PC-25, CBC-91S, CBC-92S, PC-27, PC-28, CBC-93S, CBC-94SW, PC-28D

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The coolers were received within temperature QC limits of 4°±2° C. The COC matched the samples and accounted for the analysis. No custody seals were present on the coolers.</p> <p>The analysis was performed within the 28-day holding time for mercury.</p>	No qualifications were required.
3. <u>Method Blanks</u>	Mercury was not detected in the method blanks associated with the samples in this SDG.	No qualifications were required.
5. <u>LCS/BS</u>	Three solid LCS samples were analyzed with the samples. The recoveries for mercury were within the laboratory defined QC limits.	No qualifications were required.
6. <u>Duplicates</u> Performed on CBC-94SW CAC-90BE	The RPDs for the MS/MSD were within the 20%D control limit.	No qualifications were required.



	Findings	Qualifications
7. <u>MS/MSDs</u> Performed on CBC-94SW CAC-90BE	The MS/MSD results were within the laboratory established control limits of 70-130%R.	No qualifications were required.
9. <u>ICP Serial Dilution</u>	None.	No qualifications were required.
10. <u>Other</u>	None.	No qualifications were required.
11. <u>Field QC Samples</u> Performed on PC-28	Mercury was detected in PC-28 but was not detected in PC-28D	No qualifications were required.
<u>Comments</u>	Sample results were reported on a wet weight basis.	None.

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IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJH0950

Sampled: 08/28/00  
 Received: 08/28/00

## METALS

Analyte	Method	Batch	Reporting Limit mg/kg	Sample Result mg/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IJH0950-01 (CBC-91S - Soil)								
Mercury	EPA 7471A	I0I0845	0.020	0.028	1	9/8/00	9/8/00	
Sample ID: IJH0950-02 (CBC-92S - Soil)								
Mercury	EPA 7471A	I0I0845	0.020	0.27	1	9/8/00	9/8/00	
Sample ID: IJH0950-04 (PC-27 - Soil)								
Mercury	EPA 7471A	I0I0845	0.020	ND	1	9/8/00	9/8/00	u
Sample ID: IJH0950-05 (PC-28 - Soil)								
Mercury	EPA 7471A	I0I0845	0.020	0.043	1	9/8/00	9/8/00	
Sample ID: IJH0950-06 (CBC-93S - Soil)								
Mercury	EPA 7471A	I0I0845	0.020	0.070	1	9/8/00	9/8/00	
Sample ID: IJH0950-07 (CBC-94SW - Soil)								
Mercury	EPA 7471A	I0I0847	0.020	0.021	1	9/8/00	9/8/00	
Sample ID: IJH0950-08 (CBC-51SW - Soil)								
Mercury	EPA 7471A	I0I0847	0.020	1.2	1	9/8/00	9/8/00	*
Sample ID: IJH0950-16 (PC-28D - Soil)								
Mercury	EPA 7471A	I0I0847	0.020	ND	1	9/8/00	9/8/00	u

*\* Analysis not Validated*

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 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJH0919

Sampled: 08/25/00  
 Received: 08/25/00

## METALS

Analyte	Method	Batch	Reporting Limit mg/kg	Sample Result mg/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IJH0919-08 (CAC-90BE - Soil)								
Mercury	EPA 7471A	I0H3139	0.020	0.33	1	8/31/00	8/31/00	
Sample ID: IJH0919-09 (CAC-90BW - Soil)								
Mercury	EPA 7471A	I0H3139	0.020	0.15	1	8/31/00	8/31/00	X
Sample ID: IJH0919-14 (CAC-89BE - Soil)								
Mercury	EPA 7471A	I0H3139	0.020	0.59	1	8/31/00	8/31/00	X
Sample ID: IJH0919-15 (CAC-89BW - Soil)								
Mercury	EPA 7471A	I0H3139	0.020	0.097	1	8/31/00	8/31/00	
Sample ID: IJH0919-18 (PC-24 - Soil)								
Mercury	EPA 7471A	I0H3139	0.020	0.042	1	8/31/00	8/31/00	
Sample ID: IJH0919-19 (PC-25 - Soil)								
Mercury	EPA 7471A	I0H3139	0.020	0.047	1	8/31/00	8/31/00	

*\* Analysis not validated*

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## DATA ASSESSMENT FORM

Project Title: Rocketdyne  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method 7471A  
QC Level: V<sup>1</sup>  
SDG: IJG0192  
Matrix: Soil  
No. of Samples: 6  
Date Reviewed: March 7, 2002  
Reviewer: A. Lang  
Reference: USEPA SW-846 Method 7471A (11/90)  
Samples Reviewed: CBC-49S, CBC-50S, CBC-52SW, CBC-55S, CBC-56SW, CBC-57SW

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The coolers were received within temperature QC limits of <math>4^{\circ}\pm 2^{\circ}</math> C. The COC matched the samples and accounted for the analysis. No custody seals were present on the coolers.</p> <p>The analysis was performed within the 28-day holding time for mercury.</p>	No qualifications were required.
3. <u>Method Blanks</u>	Mercury was not detected in the method blanks associated with the samples in this SDG.	No qualifications were required.
5. <u>LCS/BS</u>	Two solid LCS samples were analyzed with the samples. The recoveries for mercury were within the laboratory defined QC limits.	No qualifications were required.
6. <u>Duplicates</u>	None.	No qualifications were required.
7. <u>MS/MSDs</u>	None.	No qualifications were required.

	Findings	Qualifications
9. <u>ICP Serial Dilution</u>	None.	No qualifications were required.
10. <u>Other</u>	None.	No qualifications were required.
11. <u>Field QC Samples</u>	None	No qualifications were required.
<u>Comments</u>	Sample results were reported on a wet weight basis.	None.

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Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJG0192

Sampled: 07/10/00  
 Received: 07/10/00

## METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			mg/kg	mg/kg				<i>By</i> <i>Anal</i> <i>Qual</i> <i>Lab</i>
Sample ID: IJG0192-01 (CBC-48S - Soil)								
Mercury	EPA 7471A	I0G1428	0.020	0.085	1	7/14/00	7/14/00	*
Sample ID: IJG0192-02 (CBC-49S - Soil)								
Mercury	EPA 7471A	I0G1428	0.020	0.031	1	7/14/00	7/14/00	
Sample ID: IJG0192-03 (CBC-50S - Soil)								
Mercury	EPA 7471A	I0G1428	0.020	ND	1	7/14/00	7/14/00	u
Sample ID: IJG0192-04 (CBC-52SW - Soil)								
Mercury	EPA 7471A	I0G1428	0.020	0.031	1	7/14/00	7/14/00	
Sample ID: IJG0192-05 (CBC-54SW - Soil)								
Mercury	EPA 7471A	I0G1428	0.020	0.51	1	7/14/00	7/14/00	*
Sample ID: IJG0192-06 (CBC-56SW - Soil)								
Mercury	EPA 7471A	I0G1428	0.020	0.041	1	7/14/00	7/14/00	
Sample ID: IJG0192-07 (CBC-57SW - Soil)								
Mercury	EPA 7471A	I0G1428	0.020	0.022	1	7/14/00	7/14/00	

*\* analysis not validated*

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Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJG0104

Sampled: 07/06/00  
Received: 07/06/00

## METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			mg/kg	mg/kg				
Sample ID: IJG0104-03 (CBC-53S - Soil)								
Mercury	EPA 7471A	I0G1727	0.020	0.052	1	7/17/00	7/17/00	X
Sample ID: IJG0104-05 (CBC-55S - Soil)								
Mercury	EPA 7471A	I0G1727	0.020	0.027	1	7/17/00	7/17/00	X
Sample ID: IJG0104-08 (CBC-58SW - Soil)								
Mercury	EPA 7471A	I0G1727	0.020	0.042	1	7/17/00	7/17/00	X

X analysis not validated

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## DATA ASSESSMENT FORM

Project Title: Rocketdyne  
Project Manager: D. Hambrick  
Analysis/Method: Metals by Method 7471A  
QC Level: V<sup>1</sup>  
SDG: IJI0055  
Matrix: Soil  
No. of Samples: 5  
Date Reviewed: March 7, 2002  
Reviewer: A. Lang  
Reference: USEPA SW-846 Method 7471A (11/90)  
Samples Reviewed: CBC-96SW, CBC-97SW, CBC-98S, CBC-99SW, CBC-97SWD

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The coolers were received within temperature QC limits of 4°±2° C. The COC matched the samples and accounted for the analysis. No custody seals were present on the coolers.</p> <p>The analysis was performed within the 28-day holding time for mercury.</p>	No qualifications were required.
3. <u>Method Blanks</u>	Mercury was not detected in the method blank associated with the samples in this SDG.	No qualifications were required.
5. <u>LCS/BS</u>	One solid LCS sample was analyzed with the samples. The recovery for mercury was within the laboratory defined QC limits.	No qualifications were required.
6. <u>Duplicates</u>	None.	No qualifications were required.
7. <u>MS/MSDs</u>	None.	No qualifications were required.



	Findings	Qualifications
9. <u>ICP Serial Dilution</u>	None.	No qualifications were required.
10. <u>Other</u>	None.	No qualifications were required.
11. <u>Field QC Samples</u> Performed on CBC-97SW	Mercury was detected in CBC-97SWD while it was not detected in CBC-97SW.	No qualifications were required.
<u>Comments</u>	Sample results were reported on a wet weight basis.	None.

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Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJI0055

Sampled: 09/01/00  
 Received: 09/01/00

## METALS

Analyte	Method	Batch	Reporting Limit mg/kg	Sample Result mg/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IJI0055-02 (CBC-96SW - Soil)								
Mercury	EPA 7471A	I0I0741	0.020	ND	1	9/7/00	9/7/00	u
Sample ID: IJI0055-03 (CBC-97SW - Soil)								
Mercury	EPA 7471A	I0I0741	0.020	ND	1	9/7/00	9/7/00	u
Sample ID: IJI0055-04 (CBC-98S - Soil)								
Mercury	EPA 7471A	I0I0741	0.020	ND	1	9/7/00	9/7/00	u
Sample ID: IJI0055-05 (CBC-99SW - Soil)								
Mercury	EPA 7471A	I0I0741	0.020	0.030	1	9/7/00	9/7/00	u
Sample ID: IJI0055-06 (CBC-97SWD - Soil)								
Mercury	EPA 7471A	I0I0741	0.020	0.068	1	9/7/00	9/7/00	u

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## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: IJJ0179  
Matrix: Soil  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: March 11, 2002  
Reviewer: M. Pokorny  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: PCS-46B, PCS-47B

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	All samples were received intact and in good condition at 4°C. The samples in this SDG were accounted for on the COC.  The soil samples were extracted within the 14 day holding time and analyzed within 40 days of extraction.	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was analyzed with the samples of this SDG. No target analyte detects were reported in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil blank spike was analyzed with the samples in this SDG. All percent recoveries were within the laboratory QC limits of 45-145%.	No qualifications were required.
6. <u>Surrogates</u>	All QC and site sample surrogate recoveries were within laboratory QC limits of 45-145%.	No qualifications were required.

	Findings	Qualifications
7. <u>MS/MSDs</u>	The MS/MSD analyses were performed on sample PCS-46B. The recoveries for both fortified compounds, Aroclor 1016 and Aroclor 1260, were within the laboratory-established QC limits in both the MS and MSD. The RPDs for the fortified compounds were within the QC limit of 20%.	No qualifications were required.
8. <u>Field QC Samples</u>  ER: None FB: None Duplicates: None	There were no field QC samples associated with the samples of this SDG.	No qualifications were required.
9. <u>Other</u>	Reporting limits and results were reported on a wet-weight basis.	No qualifications were required.
<u>Comments</u>	None	No qualifications were required.

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Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJJ0179

Sampled: 10/04/00  
 Received: 10/05/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
			ug/kg	ug/kg				REV QUAL	QUAL CODE
Sample ID: IJJ0179-01 (PCS-46B - Soil)									
Aroclor 1016	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00	U       ↓	
Aroclor 1221	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Aroclor 1232	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Aroclor 1242	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Aroclor 1248	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Aroclor 1254	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Aroclor 1260	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Surrogate: Decachlorobiphenyl (45-145%)				94.0 %					
Sample ID: IJJ0179-02 (PCS-47B - Soil)									
Aroclor 1016	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00	U       ↓	
Aroclor 1221	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Aroclor 1232	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Aroclor 1242	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Aroclor 1248	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Aroclor 1254	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Aroclor 1260	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Surrogate: Decachlorobiphenyl (45-145%)				74.3 %					
Sample ID: IJJ0179-03 (BR-35 - Soil)									
Aroclor 1016	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00	✱       ↓	
Aroclor 1221	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Aroclor 1232	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Aroclor 1242	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Aroclor 1248	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Aroclor 1254	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Aroclor 1260	EPA 3550/8082	IOJ1002	50	ND	1	10/10/00	10/10/00		
Surrogate: Decachlorobiphenyl (45-145%)				68.9 %					

\* = NOT VALIDATED

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 Project Manager

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## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: IJH0606  
Matrix: Soil  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: March 11, 2002  
Reviewer: M. Pokorny  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: CBC-80S

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	The sample was received intact and in good condition at 5°C. The sample in this SDG was accounted for on the COC.  The soil sample was extracted within the 14 day holding time and analyzed within 40 days of extraction.	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was analyzed with the sample of this SDG. No target analyte detects were reported in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil blank spike was analyzed with the sample in this SDG. All percent recoveries were within the laboratory QC limits of 60-115%.	No qualifications were required.
6. <u>Surrogates</u>	All QC and site sample surrogate recoveries were within laboratory QC limits of 45-145.	No qualifications were required.
7. <u>MS/MSDs</u>	None performed. Evaluation of method accuracy and precision were based on blank spike/blank spike duplicate results.	No qualifications were required.

	Findings	Qualifications
8. <u>Field QC Samples</u>  ER: None FB: None Duplicates: None	There were no field QC samples associated with the sample of this SDG.	No qualifications were required.
9. <u>Other</u>	Reporting limits and results were reported on a wet-weight basis.	No qualifications were required.
<u>Comments</u>	None	No qualifications were required.

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Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJH0606

Sampled: 08/17/00  
Received: 08/17/00

### POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REV QUAL   QUAL CODE
Sample ID: IJH0606-02 (CBC-79SW - Soil)								
Aroclor 1016	EPA 3550/8082	I0H2819	50	ND	1	8/28/00	8/30/00	* ↓
Aroclor 1221	EPA 3550/8082	I0H2819	50	ND	1	8/28/00	8/30/00	
Aroclor 1232	EPA 3550/8082	I0H2819	50	ND	1	8/28/00	8/30/00	
Aroclor 1242	EPA 3550/8082	I0H2819	50	ND	1	8/28/00	8/30/00	
Aroclor 1248	EPA 3550/8082	I0H2819	50	ND	1	8/28/00	8/30/00	
Aroclor 1254	EPA 3550/8082	I0H2819	50	ND	1	8/28/00	8/30/00	
Aroclor 1260	EPA 3550/8082	I0H2819	50	ND	1	8/28/00	8/30/00	
Surrogate: Decachlorobiphenyl (45-145%)				139 %				
Sample ID: IJH0606-03 (CBC-79SWD - Soil)								
Aroclor 1016	EPA 3550/8082	I0H2819	50	ND	1	8/28/00	8/30/00	* ↓
Aroclor 1221	EPA 3550/8082	I0H2819	50	ND	1	8/28/00	8/30/00	
Aroclor 1232	EPA 3550/8082	I0H2819	50	ND	1	8/28/00	8/30/00	
Aroclor 1242	EPA 3550/8082	I0H2819	50	ND	1	8/28/00	8/30/00	
Aroclor 1248	EPA 3550/8082	I0H2819	50	ND	1	8/28/00	8/30/00	
Aroclor 1254	EPA 3550/8082	I0H2819	50	ND	1	8/28/00	8/30/00	
Aroclor 1260	EPA 3550/8082	I0H2819	50	ND	1	8/28/00	8/30/00	
Surrogate: Decachlorobiphenyl (45-145%)				79.0 %				
Sample ID: IJH0606-04 (CBC-80S - Soil)								
Aroclor 1016	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U ↓
Aroclor 1221	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	
Aroclor 1232	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	
Aroclor 1242	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	
Aroclor 1248	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	
Aroclor 1254	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	
Aroclor 1260	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	
Surrogate: Decachlorobiphenyl (45-145%)				85.0 %				

\* = NOT VALIDATED

**AMEC VALIDATED**

**LEVEL V**

Del Mar Analytical, Irvine  
Pat Abe  
Project Manager

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IJH0606 <Page 2 of 5>



# **DATA VALIDATION REPORT**

Rocketdyne  
Former Sodium Disposal Facility Site Sampling

ANALYSIS: PESTICIDES/PCBs  
SAMPLE DELIVERY GROUP: IJF0961

Prepared by  
AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Contract Task Order #: 313150008  
SDG#: IJF0961  
Project Manager: D. Hambrick  
Matrix: Soils  
Analysis: PCBs  
QC Level: IV  
No. of Samples: 13  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: March 12, 2002

The samples listed in Table 1 were validated based on *AMEC Data Validation Procedure for Levels C and D pesticides/PCBs (DVP-4, Rev. 2)*, *Delmar Analytical, SOP No. 8082.SOP, Revision 2 (03/01)*, *PCB Analysis by SW846 Method 8082*, *USEPA SW846 Test Methods for Evaluating Solid Wastes, Method 8082 and Method 8000B (12/96)*, and the *USEPA CLP National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
PC-1	PC-1	IJF0961-01	soil	8082
PC-3	PC-3	IJF0961-03	soil	8082
PC-4	PC-4	IJF0961-04	soil	8082
PC-6	PC-6	IJF0961-06	soil	8082
PC-8	PC-8	IJF0961-08	soil	8082
PC-9	PC-9	IJF0961-09	soil	8082
PC-10	PC-10	IJF0961-10	soil	8082
PC-12	PC-12	IJF0961-12	soil	8082
PC-14B	PC-14B	IJF0961-14	soil	8082
PC-14T	PC-14T	IJF0961-16	soil	8082
PC-16T	PC-16T	IJF0961-19	soil	8082
PC-16B	PC-16B	IJF0961-20	soil	8082
PC-16BD	PC-16BD	IJF0961-21	soil	8082

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

According to the COCs, the cooler temperatures were within the established QC guidelines of 4°C " 2°C. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were legible and were signed by the field and laboratory personnel. The COCs accounted for the samples in the SDG. According to laboratory Receiving Checklist, all samples were received intact. There were no custody seals on the coolers. No information was provided about sample container custody seals. No qualifications were required based on sample receipt information.

#### 2.1.3 Holding Times

The soil samples were extracted within 14 days from the date of sample collection and all extracts were analyzed within 40 days of extraction. No qualifications were required.

### 2.2 PESTICIDES INSTRUMENT PERFORMANCE

No resolution check standards or breakdown check standards are required by Method 8082, and according to the raw data provided, these check standards were not analyzed by the laboratory. A cursory review of the raw data indicated that the analytical run time was of sufficient length to provide adequate standard separation. The two analytical columns used in the analyses were within the guidelines specified in the Method.

No surrogate or calibration retention time windows are specified in Method 8082. A cursory review of the raw data indicated that the retention time windows for decachlorobiphenyl were within "0.05 minutes, and the retention time windows for the Aroclor peaks were "0.10 minutes. No qualifications were required.

### 2.3 CALIBRATION

#### 2.3.1 Analytical Sequence

Based on the data provided, the analytical sequence was in accordance with the requirements of the laboratory SOP and Method 8082. No qualifications were necessary.

### 2.3.2 Initial Calibration

The initial calibrations associated with the samples of this SDG consisted of five-point curves for Aroclors 1016 and 1260. According to the laboratory SOP, whenever an Aroclor other than 1016 or 1260 is identified or expected to be present in a batch of samples, that Aroclor must be used as the calibration standard in place of Aroclors 1016 and 1260. For this SDG, Aroclor 1254 was present in some samples; therefore, a five-point curve for Aroclor 1254 was also provided by the laboratory. The initial calibrations for Aroclor 1254, Aroclor 1016, and Aroclor 1260 were analyzed on 06/12/00 and 06/14/00, respectively. To determine the %RSDs, individual peak %RSDs were calculated and then averaged for each Aroclor. The averaged %RSDs were then used to evaluate the initial calibration curves. The %RSDs for Aroclor 1254, Aroclor 1016, and 1260 were less than or equal to the Method 8000B QC limit of 20%. Due to software limitations, summary forms were not provided for the initial calibration. The %RSDs and calibration factors were verified from the raw data. No errors were noted and therefore, no qualifications were required.

The laboratory analyzed an initial calibration verification (ICV) at the beginning of the each analytical sequence, as noted in the laboratory SOP. The %Ds for the ICVs were less than 15%. No qualifications were required.

### 2.3.3 Continuing Calibration

Continuing calibrations consisted of a standard mix of Aroclors 1016 and 1260 analyzed at 12-hour intervals. Due to the presence of detects for Aroclor-1254 in some of the site samples, continuing calibration standards for Aroclor 1254 were analyzed to bracket these samples. The %Ds for the continuing calibrations were determined by averaging the results for the quantitation peaks. All %Ds were within the Method QC limit of 15%, except for the %Ds for Aroclor 1254 analyzed on 07/07/00 (01:40), and Aroclor 1260 analyzed 07/07/00 (02:03); therefore, the nondetected results for the aforementioned target compounds were qualified as estimated, "UJ," in associated samples PC-8, PC-16B, and PC-16BD. No summary forms were provided by the laboratory; therefore, %Ds were calculated from the raw data. No further qualifications were required.

## 2.4 BLANKS

### 2.4.1 Instrument Blanks

Instrument blank summary forms or raw data were not provided in the data package; however, according to the analytical runlogs, instrument blanks were analyzed in conjunction with the samples. No evidence of carryover was present in the site samples or calibration standards. No qualifications were deemed necessary by the reviewer.

### 2.4.2 Method Blanks

Two soil method blanks (I0F3032-BLK1 and I0G0519-BLK1) were extracted and analyzed with the samples in this SDG. No target compound detects were present at or above the reporting limits in either method blank. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Two blank spikes (I0F3032-BS1 and I0G0519-BS1) was extracted and analyzed with the samples in this SDG. The blank spike was fortified with Aroclors 1016 and 1260, in compliance with Method 8082 and the laboratory SOP. Recoveries were within the laboratory-established QC limits of 60-115% for both compounds and therefore, no qualifications were required. Recovery results were verified from the raw data. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The samples, blanks, and blank spikes were noted to contain the surrogate compound decachlorobiphenyl. All sample surrogate recoveries were within the laboratory-established QC limits of 45-145%. Recovery results were verified from the raw data. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Samples PC-4 and PC-14B were the MS/MSD pairs associated with this SDG. The recoveries of Aroclor 1016 and Aroclor 1260 were below the QC limits but greater than 10% in the MSD analysis of PC-4 only, and the RPDs for Aroclor 1016 and Aroclor 1260 both exceeded the QC limits of 20%. For PC-14B MS and MSD, both recoveries and RPDs were within QC limits. Recovery and RPD results were verified from the raw data. No qualifications were required.

## 2.8 SAMPLE CLEANUP PERFORMANCE

No information was provided about sulfuric acid sample cleanup, either in the case narrative or in the raw data package. No qualifications were required.

## 2.9 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for useability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field blanks or equipment rinsates associated with the samples in this SDG. No qualifications were required.

### **2.9.2 Field Duplicates**

Samples PC-16B and PC-16BD were identified as the field duplicate pair associated with this SDG. Qualifications are not routinely assigned to sample results on the basis of field duplicate results; however, RPDs are calculated for those compounds present in both samples. If RPDs are greater than 50% for waters or 100% for soils, the RPDs and affected analytes are noted in the data validation report. There were no reportable detects in either of the samples and the field duplicate pair was considered to be in agreement.

### **2.10 COMPOUND IDENTIFICATION**

Compound identification was verified from the raw data. No false negatives or false positives were noted. No qualifications were required.

### **2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified from the raw data. The samples were reported on a wet-weight basis. No qualifications were required.



IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0961

Sampled: 06/28/00  
 Received: 06/28/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				Rev Qual   Qual Code
<b>Sample ID: IJF0961-01 (PC-1 - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/6/00	u
Aroclor 1221	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/6/00	
Aroclor 1232	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/6/00	
Aroclor 1242	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/6/00	
Aroclor 1248	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/6/00	
Aroclor 1254	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/6/00	
Aroclor 1260	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/6/00	
Surrogate: Decachlorobiphenyl (45-145%)				79.6 %				
<b>Sample ID: IJF0961-02 (PC-2 - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0F3032	10000	ND	200	6/30/00	7/6/00	*
Aroclor 1221	EPA 3550/8082	I0F3032	10000	ND	200	6/30/00	7/6/00	
Aroclor 1232	EPA 3550/8082	I0F3032	10000	ND	200	6/30/00	7/6/00	
Aroclor 1242	EPA 3550/8082	I0F3032	10000	ND	200	6/30/00	7/6/00	
Aroclor 1248	EPA 3550/8082	I0F3032	10000	ND	200	6/30/00	7/6/00	
<b>Aroclor 1254</b>	EPA 3550/8082	I0F3032	10000	<b>22000</b>	200	6/30/00	7/6/00	
Aroclor 1260	EPA 3550/8082	I0F3032	10000	ND	200	6/30/00	7/6/00	
Surrogate: Decachlorobiphenyl (45-145%)				113 %				
<b>Sample ID: IJF0961-03 (PC-3 - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/6/00	u
Aroclor 1221	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/6/00	
Aroclor 1232	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/6/00	
Aroclor 1242	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/6/00	
Aroclor 1248	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/6/00	
Aroclor 1254	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/6/00	
Aroclor 1260	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/6/00	
Surrogate: Decachlorobiphenyl (45-145%)				49.5 %				

## AMEC VALIDATED

Analysis Not Validated

# LEVEL IV

Del Mar Analytical, Irvine  
 Pat Abe  
 Project Manager

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 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0961

Sampled: 06/28/00  
 Received: 06/28/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				Per Qual   Qual Code
Sample ID: IJF0961-04 (PC-4 - Soil)								
Aroclor 1016	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	6/30/00	u
Aroclor 1221	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	6/30/00	u
Aroclor 1232	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	6/30/00	u
Aroclor 1242	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	6/30/00	u
Aroclor 1248	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	6/30/00	u
Aroclor 1254	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	6/30/00	u
Aroclor 1260	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	6/30/00	u
Surrogate: Decachlorobiphenyl (45-145%)				77.8 %				
Sample ID: IJF0961-06 (PC-6 - Soil)								
Aroclor 1016	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1221	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1232	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1242	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1248	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1254	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1260	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Surrogate: Decachlorobiphenyl (45-145%)				100 %				
Sample ID: IJF0961-08 (PC-8 - Soil)								
Aroclor 1016	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1221	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1232	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1242	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1248	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1254	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1260	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Surrogate: Decachlorobiphenyl (45-145%)				91.0 %				

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 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0961

Sampled: 06/28/00  
 Received: 06/28/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				Rev Qual Qual Code
Sample ID: IJF0961-09 (PC-9 - Soil)								
Aroclor 1016	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	u
Aroclor 1221	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	
Aroclor 1232	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	
Aroclor 1242	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	
Aroclor 1248	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	
Aroclor 1254	EPA 3550/8082	10G0519	50	59	1	7/5/00	7/7/00	
Aroclor 1260	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	
Surrogate: Decachlorobiphenyl (45-145%)				104 %				
Sample ID: IJF0961-10 (PC-10 - Soil)								
Aroclor 1016	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	u
Aroclor 1221	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	
Aroclor 1232	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	
Aroclor 1242	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	
Aroclor 1248	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	
Aroclor 1254	EPA 3550/8082	10G0519	50	58	1	7/5/00	7/7/00	
Aroclor 1260	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	
Surrogate: Decachlorobiphenyl (45-145%)				105 %				
Sample ID: IJF0961-12 (PC-12 - Soil)								
Aroclor 1016	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1221	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	
Aroclor 1232	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	
Aroclor 1242	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	
Aroclor 1248	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	
Aroclor 1254	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	
Aroclor 1260	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	
Surrogate: Decachlorobiphenyl (45-145%)				108 %				

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03/12/02

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 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0961

Sampled: 06/28/00  
 Received: 06/28/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				Rev Qual Qual Code
<b>Sample ID: IJF0961-14 (PC-14B - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1221	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1232	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1242	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1248	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1254	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1260	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Surrogate: Decachlorobiphenyl (45-145%)				98.2 %				Rev Qual Qual Code
<b>Sample ID: IJF0961-16 (PC-14T - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1221	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1232	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1242	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1248	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1254	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1260	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Surrogate: Decachlorobiphenyl (45-145%)				87.4 %				Rev Qual Qual Code
<b>Sample ID: IJF0961-19 (PC-16T - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1221	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1232	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1242	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1248	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1254	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1260	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/6/00	u
Surrogate: Decachlorobiphenyl (45-145%)				100 %				Rev Qual Qual Code

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 Pat Abe  
 Project Manager

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**LEVEL IV**  
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IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0961

Sampled: 06/28/00  
 Received: 06/28/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				Rev Qual Qual Code
Sample ID: IJF0961-20 (PC-16B - Soil)								
Aroclor 1016	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	uS
Aroclor 1221	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1232	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	
Aroclor 1242	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	
Aroclor 1248	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	
Aroclor 1254	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	uS
Aroclor 1260	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	uS
Surrogate: Decachlorobiphenyl (45-145%)				90.4 %				
Sample ID: IJF0961-21 (PC-16BD - Soil)								
Aroclor 1016	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	uS
Aroclor 1221	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	u
Aroclor 1232	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	
Aroclor 1242	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	
Aroclor 1248	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	
Aroclor 1254	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	uS
Aroclor 1260	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/6/00	uS
Surrogate: Decachlorobiphenyl (45-145%)				98.2 %				
Sample ID: IJF0961-24 (PC-18 - Soil)								
Aroclor 1016	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	*
Aroclor 1221	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	
Aroclor 1232	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	
Aroclor 1242	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	
Aroclor 1248	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	
Aroclor 1254	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	
Aroclor 1260	EPA 3550/8082	10G0519	50	ND	1	7/5/00	7/7/00	
Surrogate: Decachlorobiphenyl (45-145%)				94.6 %				

KS 03/12/02

\*Analysis Not Validated

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IJF0961 < 6 of 17 >



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: IJI0547  
Matrix: Soil  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: March 11, 2002  
Reviewer: M. Pokorny  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: PCS-29, PCS-31

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	The samples were received intact and in good condition at 5°C. The samples in this SDG were accounted for on the COC.  The soil samples were extracted within the 14 day holding time and analyzed within 40 days of extraction.	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was analyzed with the samples of this SDG. No target analyte detects were reported in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil blank spike was analyzed with the samples in this SDG. All percent recoveries were within the laboratory QC limits of 45-145%.	No qualifications were required.
6. <u>Surrogates</u>	All QC and site sample surrogate recoveries were within laboratory QC limits of 45-145%.	No qualifications were required.
7. <u>MS/MSDs</u>	None performed. Evaluation of method accuracy and precision were based on blank spike/blank spike duplicate results.	No qualifications were required.

	Findings	Qualifications
8. <u>Field QC Samples</u>  ER: None FB: None Duplicates: None	There were no field QC samples associated with the sample of this SDG.	No qualifications were required.
9. <u>Other</u>	Reporting limits and results were reported on a wet-weight basis.	No qualifications were required.
<u>Comments</u>	None	No qualifications were required.

---

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJI0547

Sampled:09/15/00  
Received:09/15/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				
Sample ID: IJI0547-01 (PCS-29 - Soil)								
Aroclor 1016	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	REV QUAL U ↓ X U
Aroclor 1221	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	
Aroclor 1232	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	
Aroclor 1242	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	
Aroclor 1248	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	
Aroclor 1254	EPA 3550/8082	I0I1802	50	97	1	9/18/00	9/19/00	
Aroclor 1260	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	
Surrogate: Decachlorobiphenyl (45-145%)				75.4 %				
Sample ID: IJI0547-02 (PCS-30 - Soil)								
Aroclor 1016	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	* ↓ V
Aroclor 1221	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	
Aroclor 1232	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	
Aroclor 1242	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	
Aroclor 1248	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	
Aroclor 1254	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	
Aroclor 1260	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	
Surrogate: Decachlorobiphenyl (45-145%)				77.2 %				
Sample ID: IJI0547-03 (PCS-32 - Soil)								
Aroclor 1016	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	* ↓ V
Aroclor 1221	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	
Aroclor 1232	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	
Aroclor 1242	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	
Aroclor 1248	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	
Aroclor 1254	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	
Aroclor 1260	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	
Surrogate: Decachlorobiphenyl (45-145%)				92.2 %				

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Project Manager

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IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJI0547

Sampled:09/15/00  
Received:09/15/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
			ug/kg	ug/kg				REV QUAL	QUAL CODE
Sample ID: IJI0547-04 (PCS-31 - Soil)									
Aroclor 1016	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	U      ↓	
Aroclor 1221	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00		
Aroclor 1232	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00		
Aroclor 1242	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00		
Aroclor 1248	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00		
Aroclor 1254	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00		
Aroclor 1260	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00		
Surrogate: Decachlorobiphenyl (45-145%)				82.6 %					
Sample ID: IJI0547-05 (PCS-33B - Soil)									
Aroclor 1016	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00	*      ↓	
Aroclor 1221	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00		
Aroclor 1232	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00		
Aroclor 1242	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00		
Aroclor 1248	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00		
Aroclor 1254	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00		
Aroclor 1260	EPA 3550/8082	I0I1802	50	ND	1	9/18/00	9/19/00		
Surrogate: Decachlorobiphenyl (45-145%)				80.8 %					

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Project Manager

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IJI0547 <Page 13 of 30>





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303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: IJG0597  
Matrix: Soil  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 1  
Date Reviewed: March 12, 2002  
Reviewer: M. Pokorny  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: CAC-66B@3", CAC-66D@3", CAC-70B@3", CAC-69B@9", CAC-63B@9",  
CAC-63B@9"RE

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	<p>The samples were received intact and in good condition at 3°C. The samples in this SDG were accounted for on the COC.</p> <p>The soil samples were originally extracted within the 14 day holding time and analyzed within 40 days of extraction. Sample CAC-63B@9"RE was extracted out of holding time.</p>	<p>Nondetects were qualified as estimate, "UJ," and detects were qualified "J," for sample CAC-63B@9"RE.</p>
4. <u>Method Blanks</u>	<p>Three soil method blanks were analyzed with the samples of this SDG. No target analyte detects were reported in the method blanks.</p>	<p>No qualifications were required.</p>
5. <u>LCS/BS</u>	<p>Three soil blank spikes were analyzed with the samples in this SDG. All percent recoveries were within the laboratory QC limits of 60-115% except for the recovery of Aroclor 1016 below the QC limits for I0G2728-BS2.</p>	<p>Sample CAC-69B@9" had Aroclors 1016, 1221, 1232, 1242, and 1248 qualified as estimated nondetects, "UJ."</p>

	Findings	Qualifications
6. <u>Surrogates</u>	All QC and site sample surrogate recoveries were within laboratory QC limits of 45-145% except for sample CAC-63B@9" which had a surrogate recovery below the QC limit. Sample CAC-63B@9" was reextracted with an acceptable surrogate recovery.	Sample CAC-63B@9" was rejected, "R," in favor of the reextraction, CAC-63B@9"RE.
7. <u>MS/MSDs</u>	MS/MSD analyses were performed on sample CAC-63B@9". The recoveries for Aroclor 1254 were above the laboratory-established QC limits in the MS/MSD pair. The RPD for the Aroclor-1254 was less than the QC limit of 20%, and the RPD for Aroclor-1016 was greater than 20% for CAC-63B@9".	No qualifications were required due to high concentrations of Aroclor-1254 in the samples as the sample was rejected for poor surrogate recovery (see Section 6).
8. <u>Field QC Samples</u>  ER: None FB: None Duplicates: CAC-66B@3" / CAC-66D@3"	Both of the field duplicate samples had detects for Aroclor-1254 with an RPD of 31%.	No qualifications were required.
9. <u>Other</u>	Reporting limits and results were reported on a wet-weight basis.  Samples CAC-66B@3" and CAC-63B@9"RE were analyzed at 2.5X dilutions and sample CAC-66D@3" was analyzed at a 5X dilution due to high concentrations of target compounds.	No qualifications were required.
<u>Comments</u>	None	No qualifications were required.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJG0597

Sampled: 07/21/00  
Received: 07/21/00

### POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REF QUAL
<b>Sample ID: IJG0597-01 (CAC-66B@3" - Soil) ✓</b>								
Aroclor 1016	EPA 3550/8082	I0G2430	130	ND	2.5	7/24/00	7/25/00	U
Aroclor 1221	EPA 3550/8082	I0G2430	130	ND	2.5	7/24/00	7/25/00	↓
Aroclor 1232	EPA 3550/8082	I0G2430	130	ND	2.5	7/24/00	7/25/00	↓
Aroclor 1242	EPA 3550/8082	I0G2430	130	ND	2.5	7/24/00	7/25/00	↓
Aroclor 1248	EPA 3550/8082	I0G2430	130	ND	2.5	7/24/00	7/25/00	↓
<b>Aroclor 1254</b>	EPA 3550/8082	I0G2430	130	<b>380</b>	2.5	7/24/00	7/25/00	↓
Aroclor 1260	EPA 3550/8082	I0G2430	130	ND	2.5	7/24/00	7/25/00	U
Surrogate: Decachlorobiphenyl (45-145%)				82.6 %				
<b>Sample ID: IJG0597-02 (CAC-66D@3" - Soil) ✓</b>								
Aroclor 1016	EPA 3550/8082	I0G2430	250	ND	5	7/24/00	7/25/00	U
Aroclor 1221	EPA 3550/8082	I0G2430	250	ND	5	7/24/00	7/25/00	↓
Aroclor 1232	EPA 3550/8082	I0G2430	250	ND	5	7/24/00	7/25/00	↓
Aroclor 1242	EPA 3550/8082	I0G2430	250	ND	5	7/24/00	7/25/00	↓
Aroclor 1248	EPA 3550/8082	I0G2430	250	ND	5	7/24/00	7/25/00	↓
<b>Aroclor 1254</b>	EPA 3550/8082	I0G2430	250	<b>520</b>	5	7/24/00	7/25/00	↓
Aroclor 1260	EPA 3550/8082	I0G2430	250	ND	5	7/24/00	7/25/00	U
Surrogate: Decachlorobiphenyl (45-145%)				88.6 %				
<b>Sample ID: IJG0597-03 (CAC-69B@3" - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0G2430	1000	ND	20	7/24/00	7/25/00	*
Aroclor 1221	EPA 3550/8082	I0G2430	1000	ND	20	7/24/00	7/25/00	↓
Aroclor 1232	EPA 3550/8082	I0G2430	1000	ND	20	7/24/00	7/25/00	↓
Aroclor 1242	EPA 3550/8082	I0G2430	1000	ND	20	7/24/00	7/25/00	↓
Aroclor 1248	EPA 3550/8082	I0G2430	1000	ND	20	7/24/00	7/25/00	↓
<b>Aroclor 1254</b>	EPA 3550/8082	I0G2430	1000	<b>2600</b>	20	7/24/00	7/25/00	↓
Aroclor 1260	EPA 3550/8082	I0G2430	1000	ND	20	7/24/00	7/25/00	↓
Surrogate: Decachlorobiphenyl (45-145%)				101 %				

\* = NOT VALIDATED

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Pat Abe  
Project Manager

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IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJG0597

Sampled: 07/21/00  
 Received: 07/21/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REV QUAL
Sample ID: IJG0597-04 (CAC-70B@3" - Soil) ✓								
Aroclor 1016	EPA 3550/8082	I0G2430	50	ND	1	7/24/00	7/25/00	U
Aroclor 1221	EPA 3550/8082	I0G2430	50	ND	1	7/24/00	7/25/00	U
Aroclor 1232	EPA 3550/8082	I0G2430	50	ND	1	7/24/00	7/25/00	U
Aroclor 1242	EPA 3550/8082	I0G2430	50	ND	1	7/24/00	7/25/00	U
Aroclor 1248	EPA 3550/8082	I0G2430	50	ND	1	7/24/00	7/25/00	U
<b>Aroclor 1254</b>	EPA 3550/8082	I0G2430	50	<b>140</b>	1	7/24/00	7/25/00	U
Aroclor 1260	EPA 3550/8082	I0G2430	50	ND	1	7/24/00	7/25/00	U
Surrogate: Decachlorobiphenyl (45-145%)				74.3 %				

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 Project Manager

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IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJG0597

Sampled: 07/21/00  
Received: 07/21/00

### POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REV QUAL QUAL CODE
<b>Sample ID: IJG0597-21 (CAC-69B@6" - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0G2728	500	ND	10	7/27/00	7/28/00	*
Aroclor 1221	EPA 3550/8082	I0G2728	500	ND	10	7/27/00	7/28/00	
Aroclor 1232	EPA 3550/8082	I0G2728	500	ND	10	7/27/00	7/28/00	
Aroclor 1242	EPA 3550/8082	I0G2728	500	ND	10	7/27/00	7/28/00	
Aroclor 1248	EPA 3550/8082	I0G2728	500	ND	10	7/27/00	7/28/00	
<b>Aroclor 1254</b>	EPA 3550/8082	I0G2728	500	<b>1100</b>	10	7/27/00	7/28/00	
Aroclor 1260	EPA 3550/8082	I0G2728	500	ND	10	7/27/00	7/28/00	
Surrogate: Decachlorobiphenyl (45-145%)				173 %				Z
<b>Sample ID: IJG0597-22 (CAC-69B@9" - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0G2728	50	ND	1	7/27/00	7/28/00	UJ L
Aroclor 1221	EPA 3550/8082	I0G2728	50	ND	1	7/27/00	7/28/00	
Aroclor 1232	EPA 3550/8082	I0G2728	50	ND	1	7/27/00	7/28/00	
Aroclor 1242	EPA 3550/8082	I0G2728	50	ND	1	7/27/00	7/28/00	
Aroclor 1248	EPA 3550/8082	I0G2728	50	ND	1	7/27/00	7/28/00	
<b>Aroclor 1254</b>	EPA 3550/8082	I0G2728	50	<b>120</b>	1	7/27/00	7/28/00	
Aroclor 1260	EPA 3550/8082	I0G2728	50	ND	1	7/27/00	7/28/00	U
Surrogate: Decachlorobiphenyl (45-145%)				114 %				

\* = NOT VALIDATED

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Project Manager

# LEVEL V

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IJG0597 < 2 of 4 >

IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJG0597

Sampled: 07/21/00  
 Received: 07/21/00

### POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REV QUAL   QUAL CODE
<b>Sample ID: IJG0597-23 (CAC-63B@9" - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0H0328	50	ND	1	8/3/00	8/4/00	R D
Aroclor 1221	EPA 3550/8082	I0H0328	50	ND	1	8/3/00	8/4/00	R D
Aroclor 1232	EPA 3550/8082	I0H0328	50	ND	1	8/3/00	8/4/00	R D
Aroclor 1242	EPA 3550/8082	I0H0328	50	ND	1	8/3/00	8/4/00	R D
Aroclor 1248	EPA 3550/8082	I0H0328	50	ND	1	8/3/00	8/4/00	R D
<b>Aroclor 1254</b>	EPA 3550/8082	I0H0328	50	<b>160</b>	1	8/3/00	8/4/00	R D
Aroclor 1260	EPA 3550/8082	I0H0328	50	ND	1	8/3/00	8/4/00	R D
Surrogate: Decachlorobiphenyl (45-145%)				26.6 %				ZH
<b>Sample ID: IJG0597-23RE1 (CAC-63B@9" - Soil) RE</b>								
Aroclor 1016	EPA 3550/8082	I0H0743	130	ND	2.5	8/7/00	8/7/00	UJ H
Aroclor 1221	EPA 3550/8082	I0H0743	130	ND	2.5	8/7/00	8/7/00	UJ H
Aroclor 1232	EPA 3550/8082	I0H0743	130	ND	2.5	8/7/00	8/7/00	UJ H
Aroclor 1242	EPA 3550/8082	I0H0743	130	ND	2.5	8/7/00	8/7/00	UJ H
Aroclor 1248	EPA 3550/8082	I0H0743	130	ND	2.5	8/7/00	8/7/00	UJ H
<b>Aroclor 1254</b>	EPA 3550/8082	I0H0743	130	<b>330</b>	2.5	8/7/00	8/7/00	UJ H
Aroclor 1260	EPA 3550/8082	I0H0743	130	ND	2.5	8/7/00	8/7/00	UJ H
Surrogate: Decachlorobiphenyl (45-145%)				75.0 %				
<b>Sample ID: IJG0597-24 (CAC-62B@9" - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0H0328	500	ND	10	8/3/00	8/4/00	*
Aroclor 1221	EPA 3550/8082	I0H0328	500	ND	10	8/3/00	8/4/00	*
Aroclor 1232	EPA 3550/8082	I0H0328	500	ND	10	8/3/00	8/4/00	*
Aroclor 1242	EPA 3550/8082	I0H0328	500	ND	10	8/3/00	8/4/00	*
Aroclor 1248	EPA 3550/8082	I0H0328	500	ND	10	8/3/00	8/4/00	*
<b>Aroclor 1254</b>	EPA 3550/8082	I0H0328	500	<b>950</b>	10	8/3/00	8/4/00	*
Aroclor 1260	EPA 3550/8082	I0H0328	500	ND	10	8/3/00	8/4/00	*
Surrogate: Decachlorobiphenyl (45-145%)				62.3 %				

\* = NOT VALIDATED

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**LEVEL V**

Del Mar Analytical, Irvine  
 Pat Abe  
 Project Manager

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IJG0597 < 2 of 5 >



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: IJH0438  
Matrix: Soil  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: March 12, 2002  
Reviewer: M. Pokorny  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: CAC-71B, CAC-72B, CAC-72D, CAC-73B, CAC-74B, CAC-76B, CAC-77B, CAC-78B

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	All samples were received intact and in good condition at 3°C. The samples in this SDG were accounted for on the COC.  The soil samples were extracted within the 14 day holding time and analyzed within 40 days of extraction.	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was analyzed with the samples of this SDG. No target analyte detects were reported in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil blank spike was analyzed with the samples in this SDG. All percent recoveries were within the laboratory QC limits of 60-115%.	No qualifications were required.
6. <u>Surrogates</u>	All QC and site sample surrogate recoveries were within laboratory QC limits of 45-145%.	No qualifications were required.

	Findings	Qualifications
7. <u>MS/MSDs</u>	The MS/MSD analyses were performed on sample CAC-77B. The recoveries for both fortified compounds, Aroclor 1016 and Aroclor 1260, were within the laboratory-established QC limits in both the MS and MSD. The RPDs for the fortified compounds were within the QC limit of 20%.	No qualifications were required.
8. <u>Field QC Samples</u>  ER: None FB: None Duplicates: CAC-72B/ CAC-72D	Although sample CAC-72D does not follow the standard duplicate naming convention, it appears to be a field duplicate of sample CAC-72B. No target compounds were reported in either of the field duplicate samples.	No qualifications were required.
9. <u>Other</u>	Reporting limits and results were reported on a wet-weight basis.	No qualifications were required.
<u>Comments</u>	None	No qualifications were required.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.





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IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071, 94040000  
 Report Number: IJH0438

Sampled: 08/11/00  
 Received: 08/11/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
			ug/kg	ug/kg				REV QUAL	QUAL CODE
Sample ID: IJH0438-01 (CAC-71 B - Soil)									
Aroclor 1016	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00	U	↓
Aroclor 1221	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1232	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1242	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1248	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1254	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1260	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Surrogate: Decachlorobiphenyl (45-145%)				61.7 %					
Sample ID: IJH0438-02 (CAC-72 B - Soil)									
Aroclor 1016	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00	U	↓
Aroclor 1221	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1232	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1242	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1248	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1254	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1260	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Surrogate: Decachlorobiphenyl (45-145%)				64.7 %					
Sample ID: IJH0438-03 (CAC-72 D - Soil)									
Aroclor 1016	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/19/00	U	↓
Aroclor 1221	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/19/00		
Aroclor 1232	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/19/00		
Aroclor 1242	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/19/00		
Aroclor 1248	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/19/00		
Aroclor 1254	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/19/00		
Aroclor 1260	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/19/00		
Surrogate: Decachlorobiphenyl (45-145%)				64.7 %					

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**LEVEL V**

Del Mar Analytical, Irvine  
 Pat Abe  
 Project Manager

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IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071, 94040000  
Report Number: IJH0438

Sampled: 08/11/00  
Received: 08/11/00

### POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	REV QUAL	QUAL CODE
			ug/kg	ug/kg						
<b>Sample ID: IJH0438-04 (CAC-73 B - Soil)</b>										
Aroclor 1016	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00	U		
Aroclor 1221	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00			
Aroclor 1232	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00			
Aroclor 1242	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00			
Aroclor 1248	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00			
Aroclor 1254	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00			
Aroclor 1260	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00			
Surrogate: Decachlorobiphenyl (45-145%)				70.1 %						
<b>Sample ID: IJH0438-05 (CAC-74 B - Soil)</b>										
Aroclor 1016	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00	U		
Aroclor 1221	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00			
Aroclor 1232	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00			
Aroclor 1242	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00			
Aroclor 1248	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00			
Aroclor 1254	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00			
Aroclor 1260	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00			
Surrogate: Decachlorobiphenyl (45-145%)				65.3 %						
<b>Sample ID: IJH0438-06 (CAC-75 B - Soil)</b>										
Aroclor 1016	EPA 3550/8082	I0H1620	1000	ND	20	8/16/00	8/18/00	*		
Aroclor 1221	EPA 3550/8082	I0H1620	1000	ND	20	8/16/00	8/18/00			
Aroclor 1232	EPA 3550/8082	I0H1620	1000	ND	20	8/16/00	8/18/00			
Aroclor 1242	EPA 3550/8082	I0H1620	1000	ND	20	8/16/00	8/18/00			
Aroclor 1248	EPA 3550/8082	I0H1620	1000	ND	20	8/16/00	8/18/00			
<b>Aroclor 1254</b>	EPA 3550/8082	I0H1620	1000	<b>1500</b>	20	8/16/00	8/18/00			
Aroclor 1260	EPA 3550/8082	I0H1620	1000	ND	20	8/16/00	8/18/00			
Surrogate: Decachlorobiphenyl (45-145%)				59.9 %						

\* = NOT VALIDATED

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Pat Abe  
Project Manager

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IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071, 94040000  
Report Number: IJH0438

Sampled: 08/11/00  
Received: 08/11/00

### POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting	Sample	Dilution	Date	Date	Data	
			Limit	Result				Factor	Extracted
			ug/kg	ug/kg				REF	QUAL
								QUAL	CODE
Sample ID: IJH0438-07 (CAC-76 B - Soil)									
Aroclor 1016	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00	U	↓
Aroclor 1221	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1232	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1242	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1248	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1254	EPA 3550/8082	I0H1620	50	140	1	8/16/00	8/18/00		
Aroclor 1260	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00	U	
Surrogate: Decachlorobiphenyl (45-145%)				82.0 %					
Sample ID: IJH0438-08 (CAC-77 B - Soil)									
Aroclor 1016	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00	U	↓
Aroclor 1221	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1232	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1242	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1248	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1254	EPA 3550/8082	I0H1620	50	58	1	8/16/00	8/18/00		
Aroclor 1260	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00	U	
Surrogate: Decachlorobiphenyl (45-145%)				45.0 %					
Sample ID: IJH0438-09 (CAC-78 B - Soil)									
Aroclor 1016	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00	U	↓
Aroclor 1221	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1232	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1242	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1248	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1254	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Aroclor 1260	EPA 3550/8082	I0H1620	50	ND	1	8/16/00	8/18/00		
Surrogate: Decachlorobiphenyl (45-145%)				51.1 %					

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Project Manager

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## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: IJG0225  
Matrix: Soil  
No. of Samples: 7  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: March 12, 2002  
Reviewer: M. Pokorny  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: CAC-59B@3", CAC-60B, CAC-61B, CAC-65B@3", CAC-67B@3",  
CAC-68B@3", CAC-64B@9"

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	All samples were received intact and in good condition at 2°C. The samples in this SDG were accounted for on the COC.  The soil samples were extracted within the 14 day holding time and analyzed within 40 days of extraction.	No qualifications were required.
4. <u>Method Blanks</u>	Two soil method blank were analyzed with the samples of this SDG. No target analyte detects were reported in the method blanks.	No qualifications were required.
5. <u>LCS/BS</u>	Two soil blank spikes were analyzed with the samples in this SDG. All percent recoveries were within the laboratory QC limits of 60-115%.	No qualifications were required.
6. <u>Surrogates</u>	All QC and site sample surrogate recoveries were within laboratory QC limits of 45-145% except for sample CAC-64B@9" which had the surrogate recovered above the QC limits.	Sample CAC-64B@9" had Aroclor-1254 qualified as estimated, "J."

	Findings	Qualifications
7. <u>MS/MSDs</u>	The MS/MSD analyses were performed on sample CAC-64B@9". The recovery for Aroclor 1016 was within the laboratory-established QC limits in both the MS and MSD. The recovery of Aroclor-1260 was above the QC limits in both the MS and MSD. The RPDs for the fortified compounds were within the QC limit of 20%.	As Aroclor-1260 was not reported in sample CAC-64B@9", no qualifications were required.
8. <u>Field QC Samples</u>  ER: None FB: None Duplicates: None	There were no field QC samples associated with the samples of this SDG.	No qualifications were required.
9. <u>Other</u>	Reporting limits and results were reported on a wet-weight basis.  Samples CAC-60B, CAC-61B, and CAC-64B@9"RE were analyzed at 5X dilutions and sample CAC-65B@3" was analyzed at a 2X dilution due to high concentrations of target compounds.	No qualifications were required.
<u>Comments</u>	None	No qualifications were required.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJG0225

Sampled: 07/11/00  
 Received: 07/11/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers		
			ug/kg	ug/kg					REV QUAL	QUAL CODE
Sample ID: IJG0225-01 (CAC-59B@3" - Soil)										
Aroclor 1016	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	U  ↓ U		
Aroclor 1221	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1232	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1242	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1248	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1254	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1260	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Surrogate: Decachlorobiphenyl (45-145%)				82.6 %						
Sample ID: IJG0225-02 (CAC-60B - Soil)										
Aroclor 1016	EPA 3550/8082	I0G1236	250	ND	5	7/12/00	7/13/00	U  ↓ U		
Aroclor 1221	EPA 3550/8082	I0G1236	250	ND	5	7/12/00	7/13/00			
Aroclor 1232	EPA 3550/8082	I0G1236	250	ND	5	7/12/00	7/13/00			
Aroclor 1242	EPA 3550/8082	I0G1236	250	ND	5	7/12/00	7/13/00			
Aroclor 1248	EPA 3550/8082	I0G1236	250	ND	5	7/12/00	7/13/00			
Aroclor 1254	EPA 3550/8082	I0G1236	250	590	5	7/12/00	7/13/00			
Aroclor 1260	EPA 3550/8082	I0G1236	250	ND	5	7/12/00	7/13/00			
Surrogate: Decachlorobiphenyl (45-145%)				91.0 %						
Sample ID: IJG0225-03 (CAC-61B - Soil)										
Aroclor 1016	EPA 3550/8082	I0G1236	250	ND	5	7/12/00	7/13/00	U  ↓ U		
Aroclor 1221	EPA 3550/8082	I0G1236	250	ND	5	7/12/00	7/13/00			
Aroclor 1232	EPA 3550/8082	I0G1236	250	ND	5	7/12/00	7/13/00			
Aroclor 1242	EPA 3550/8082	I0G1236	250	ND	5	7/12/00	7/13/00			
Aroclor 1248	EPA 3550/8082	I0G1236	250	ND	5	7/12/00	7/13/00			
Aroclor 1254	EPA 3550/8082	I0G1236	250	400	5	7/12/00	7/13/00			
Aroclor 1260	EPA 3550/8082	I0G1236	250	ND	5	7/12/00	7/13/00			
Surrogate: Decachlorobiphenyl (45-145%)				79.0 %						

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IJG0225 < 2 of 6 >

IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJG0225

Sampled: 07/11/00  
Received: 07/11/00

### POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REV QUAL CODE
Sample ID: IJG0225-07 (CAC-65B@3" - Soil)								
Aroclor 1016	EPA 3550/8082	I0G1236	100	ND	2	7/12/00	7/13/00	U
Aroclor 1221	EPA 3550/8082	I0G1236	100	ND	2	7/12/00	7/13/00	↓
Aroclor 1232	EPA 3550/8082	I0G1236	100	ND	2	7/12/00	7/13/00	↓
Aroclor 1242	EPA 3550/8082	I0G1236	100	ND	2	7/12/00	7/13/00	↓
Aroclor 1248	EPA 3550/8082	I0G1236	100	ND	2	7/12/00	7/13/00	↓
Aroclor 1254	EPA 3550/8082	I0G1236	100	260	2	7/12/00	7/13/00	A-01
Aroclor 1260	EPA 3550/8082	I0G1236	100	ND	2	7/12/00	7/13/00	U
Surrogate: Decachlorobiphenyl (45-145%)				77.2 %				
Sample ID: IJG0225-08 (CAC-67B@3" - Soil)								
Aroclor 1016	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	U
Aroclor 1221	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	↓
Aroclor 1232	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	↓
Aroclor 1242	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	↓
Aroclor 1248	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	↓
Aroclor 1254	EPA 3550/8082	I0G1236	50	120	1	7/12/00	7/13/00	A-01
Aroclor 1260	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	U
Surrogate: Decachlorobiphenyl (45-145%)				77.8 %				
Sample ID: IJG0225-09 (CAC-68B@3" - Soil)								
Aroclor 1016	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	U
Aroclor 1221	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	↓
Aroclor 1232	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	↓
Aroclor 1242	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	↓
Aroclor 1248	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	↓
Aroclor 1254	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	↓
Aroclor 1260	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	↓
Surrogate: Decachlorobiphenyl (45-145%)				76.6 %				

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 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJG0225

Sampled: 07/11/00  
 Received: 07/11/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REL QUAL
Sample ID: IJG0225-13 (CAC-64B@9" - Soil)								
Aroclor 1016	EPA 3550/8082	I0G2128	250	ND	5	7/21/00	7/21/00	U
Aroclor 1221	EPA 3550/8082	I0G2128	250	ND	5	7/21/00	7/21/00	U
Aroclor 1232	EPA 3550/8082	I0G2128	250	ND	5	7/21/00	7/21/00	U
Aroclor 1242	EPA 3550/8082	I0G2128	250	ND	5	7/21/00	7/21/00	U
Aroclor 1248	EPA 3550/8082	I0G2128	250	ND	5	7/21/00	7/21/00	U
<b>Aroclor 1254</b>	EPA 3550/8082	I0G2128	250	<b>350</b>	5	7/21/00	7/21/00	S
Aroclor 1260	EPA 3550/8082	I0G2128	250	ND	5	7/21/00	7/21/00	U
Surrogate: Decachlorobiphenyl (45-145%)				150 %				Z

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IJG0225 < 2 of 4>





550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: IJF0901  
Matrix: Soil  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: March 12, 2002  
Reviewer: M. Pokorny  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: CAC-40B-DUP, CAC-36B, CAC-38B, CAC-40B, CAC-44B, CBC-45B, CBC-46B, CBC-47B

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	All samples were received intact and in good condition at 6°C. The samples in this SDG were accounted for on the COC.  The soil samples were extracted within the 14 day holding time and analyzed within 40 days of extraction.	No qualifications were required.
4. <u>Method Blanks</u>	Two soil method blank were analyzed with the samples of this SDG. No target analyte detects were reported in the method blanks.	No qualifications were required.
5. <u>LCS/BS</u>	Two soil blank spikes were analyzed with the samples in this SDG. All percent recoveries were within the laboratory QC limits of 60-115%.	No qualifications were required.
6. <u>Surrogates</u>	All QC and site sample surrogate recoveries were within laboratory QC limits of 45-145%.	No qualifications were required.

	Findings	Qualifications
7. <u>MS/MSDs</u>	The MS/MSD analyses were performed on sample CAC-44B. The recoveries for Aroclor -1016 and Aroclor-1260 were within the laboratory-established QC limits in both the MS and MSD. The RPDs for the fortified compounds were less than the QC limit of 20%.	No qualifications were required.
8. <u>Field QC Samples</u>  ER: None FB: None Duplicates: CAC-40B/ CAC-40B-DUP	Both of the samples of the field duplicate pair had Aroclor-1254 detected with an RPD of 5.5%.	No qualifications were required.
9. <u>Other</u>	Reporting limits and results were reported on a wet-weight basis.  Sample CAC-38B was analyzed at a 5X dilution due to a high concentration of target compounds.	No qualifications were required.
<u>Comments</u>	None	No qualifications were required.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

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 601 S. Glenoaks Boulevard, Suite 314  
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 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0901

Sampled: 06/27/00  
 Received: 06/27/00

### POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REL QUAL QUAL CODE
<b>Sample ID: IJF0901-07 (CAC-39B - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0F2832	250	ND	5	6/28/00	6/29/00	*
Aroclor 1221	EPA 3550/8082	I0F2832	250	ND	5	6/28/00	6/29/00	↓
Aroclor 1232	EPA 3550/8082	I0F2832	250	ND	5	6/28/00	6/29/00	↓
Aroclor 1242	EPA 3550/8082	I0F2832	250	ND	5	6/28/00	6/29/00	↓
Aroclor 1248	EPA 3550/8082	I0F2832	250	ND	5	6/28/00	6/29/00	↓
<b>Aroclor 1254</b>	EPA 3550/8082	I0F2832	250	<b>610</b>	5	6/28/00	6/29/00	↓
Aroclor 1260	EPA 3550/8082	I0F2832	250	ND	5	6/28/00	6/29/00	↓
Surrogate: Decachlorobiphenyl (45-145%)				106 %				Z
<b>Sample ID: IJF0901-08 (CAC-40B - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U
Aroclor 1221	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	↓
Aroclor 1232	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	↓
Aroclor 1242	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	↓
Aroclor 1248	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	↓
<b>Aroclor 1254</b>	EPA 3550/8082	I0F2832	50	<b>71</b>	1	6/28/00	6/29/00	↓
Aroclor 1260	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U
Surrogate: Decachlorobiphenyl (45-145%)				89.2 %				
<b>Sample ID: IJF0901-09 (CAC-41B - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0F2832	1000	ND	20	6/28/00	6/29/00	*
Aroclor 1221	EPA 3550/8082	I0F2832	1000	ND	20	6/28/00	6/29/00	↓
Aroclor 1232	EPA 3550/8082	I0F2832	1000	ND	20	6/28/00	6/29/00	↓
Aroclor 1242	EPA 3550/8082	I0F2832	1000	ND	20	6/28/00	6/29/00	↓
Aroclor 1248	EPA 3550/8082	I0F2832	1000	ND	20	6/28/00	6/29/00	↓
<b>Aroclor 1254</b>	EPA 3550/8082	I0F2832	1000	<b>1800</b>	20	6/28/00	6/29/00	↓
Aroclor 1260	EPA 3550/8082	I0F2832	1000	ND	20	6/28/00	6/29/00	↓
Surrogate: Decachlorobiphenyl (45-145%)				101 %				Z

\* Analysis Not Validated

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**LEVEL V**

Del Mar Analytical, Irvine  
 Pat Abe  
 Project Manager

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 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0901

Sampled: 06/27/00  
 Received: 06/27/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REV QUAL CCDE
<b>Sample ID: IJF0901-10 (CAC-42B - Soil)</b>								
Aroclor 1016	EPA 3550/8082	10F2832	250	ND	5	6/28/00	6/29/00	*
Aroclor 1221	EPA 3550/8082	10F2832	250	ND	5	6/28/00	6/29/00	
Aroclor 1232	EPA 3550/8082	10F2832	250	ND	5	6/28/00	6/29/00	
Aroclor 1242	EPA 3550/8082	10F2832	250	ND	5	6/28/00	6/29/00	
Aroclor 1248	EPA 3550/8082	10F2832	250	ND	5	6/28/00	6/29/00	
<b>Aroclor 1254</b>	EPA 3550/8082	10F2832	250	<b>670</b>	5	6/28/00	6/29/00	
Aroclor 1260	EPA 3550/8082	10F2832	250	ND	5	6/28/00	6/29/00	
Surrogate: Decachlorobiphenyl (45-145%)				86.2 %				Z3
<b>Sample ID: IJF0901-11 (CAC-43B - Soil)</b>								
Aroclor 1016	EPA 3550/8082	10F2832	1000	ND	20	6/28/00	6/29/00	*
Aroclor 1221	EPA 3550/8082	10F2832	1000	ND	20	6/28/00	6/29/00	
Aroclor 1232	EPA 3550/8082	10F2832	1000	ND	20	6/28/00	6/29/00	
Aroclor 1242	EPA 3550/8082	10F2832	1000	ND	20	6/28/00	6/29/00	
Aroclor 1248	EPA 3550/8082	10F2832	1000	ND	20	6/28/00	6/29/00	
<b>Aroclor 1254</b>	EPA 3550/8082	10F2832	1000	<b>2500</b>	20	6/28/00	6/29/00	
Aroclor 1260	EPA 3550/8082	10F2832	1000	ND	20	6/28/00	6/29/00	
Surrogate: Decachlorobiphenyl (45-145%)				107 %				Z3
<b>Sample ID: IJF0901-12 (CAC-44B - Soil)</b>								
Aroclor 1016	EPA 3550/8082	10F2832	50	ND	1	6/28/00	6/29/00	U
Aroclor 1221	EPA 3550/8082	10F2832	50	ND	1	6/28/00	6/29/00	
Aroclor 1232	EPA 3550/8082	10F2832	50	ND	1	6/28/00	6/29/00	
Aroclor 1242	EPA 3550/8082	10F2832	50	ND	1	6/28/00	6/29/00	
Aroclor 1248	EPA 3550/8082	10F2832	50	ND	1	6/28/00	6/29/00	
Aroclor 1254	EPA 3550/8082	10F2832	50	ND	1	6/28/00	6/29/00	
Aroclor 1260	EPA 3550/8082	10F2832	50	ND	1	6/28/00	6/29/00	
Surrogate: Decachlorobiphenyl (45-145%)				82.0 %				

\*Analysis Not Validated

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 Project Manager

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601 S. Glenoaks Boulevard, Suite 314  
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Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJF0901

Sampled: 06/27/00  
Received: 06/27/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
			ug/kg	ug/kg					REV QUAL QUAL CODE
Sample ID: IJF0901-13 (CBC-45B - Soil)									
Aroclor 1016	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Aroclor 1221	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Aroclor 1232	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Aroclor 1242	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Aroclor 1248	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Aroclor 1254	EPA 3550/8082	I0F2832	50	52	1	6/28/00	6/29/00	U	
Aroclor 1260	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Surrogate: Decachlorobiphenyl (45-145%)				83.8 %					
Sample ID: IJF0901-14 (CBC-46B - Soil)									
Aroclor 1016	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Aroclor 1221	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Aroclor 1232	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Aroclor 1242	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Aroclor 1248	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Aroclor 1254	EPA 3550/8082	I0F2832	50	54	1	6/28/00	6/29/00	U	
Aroclor 1260	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Surrogate: Decachlorobiphenyl (45-145%)				85.0 %					
Sample ID: IJF0901-15 (CBC-47B - Soil)									
Aroclor 1016	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Aroclor 1221	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Aroclor 1232	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Aroclor 1242	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Aroclor 1248	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Aroclor 1254	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Aroclor 1260	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U	
Surrogate: Decachlorobiphenyl (45-145%)				87.4 %					

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Project Manager

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Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJF0901

Sampled: 06/27/00  
Received: 06/27/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REV QUAL
<b>Sample ID: IJF0901-16 (CAC-34B-DUP - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0G0519	630	ND	12.5	7/5/00	7/7/00	*
Aroclor 1221	EPA 3550/8082	I0G0519	630	ND	12.5	7/5/00	7/7/00	↓
Aroclor 1232	EPA 3550/8082	I0G0519	630	ND	12.5	7/5/00	7/7/00	
Aroclor 1242	EPA 3550/8082	I0G0519	630	ND	12.5	7/5/00	7/7/00	
Aroclor 1248	EPA 3550/8082	I0G0519	630	ND	12.5	7/5/00	7/7/00	
<b>Aroclor 1254</b>	EPA 3550/8082	I0G0519	630	<b>1300</b>	12.5	7/5/00	7/7/00	
Aroclor 1260	EPA 3550/8082	I0G0519	630	ND	12.5	7/5/00	7/7/00	
Surrogate: Decachlorobiphenyl (45-145%)				115 %				ZB
<b>Sample ID: IJF0901-17 (CAC-35B-DUP - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0G0519	250	ND	5	7/5/00	7/7/00	*
Aroclor 1221	EPA 3550/8082	I0G0519	250	ND	5	7/5/00	7/7/00	↓
Aroclor 1232	EPA 3550/8082	I0G0519	250	ND	5	7/5/00	7/7/00	
Aroclor 1242	EPA 3550/8082	I0G0519	250	ND	5	7/5/00	7/7/00	
Aroclor 1248	EPA 3550/8082	I0G0519	250	ND	5	7/5/00	7/7/00	
<b>Aroclor 1254</b>	EPA 3550/8082	I0G0519	250	<b>600</b>	5	7/5/00	7/7/00	
Aroclor 1260	EPA 3550/8082	I0G0519	250	ND	5	7/5/00	7/7/00	
Surrogate: Decachlorobiphenyl (45-145%)				97.0 %				ZB
<b>Sample ID: IJF0901-18 (CAC-40B-DUP - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/7/00	U
Aroclor 1221	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/7/00	↓
Aroclor 1232	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/7/00	
Aroclor 1242	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/7/00	
Aroclor 1248	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/7/00	
<b>Aroclor 1254</b>	EPA 3550/8082	I0G0519	50	<b>75</b>	1	7/5/00	7/7/00	
Aroclor 1260	EPA 3550/8082	I0G0519	50	ND	1	7/5/00	7/7/00	
Surrogate: Decachlorobiphenyl (45-145%)				99.4 %				U

\* = NOT VALIDATED

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Pat Abe  
Project Manager

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IJF0901 < 2 of 5 >

IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0901

Sampled: 06/27/00  
 Received: 06/27/00

### POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	REV QUAL	QUAL CODE
			ug/kg	ug/kg						
<b>Sample ID: IJF0901-04 (CAC-36B - Soil)</b>										
Aroclor 1016	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U		
Aroclor 1221	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00			
Aroclor 1232	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00			
Aroclor 1242	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00			
Aroclor 1248	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00			
<b>Aroclor 1254</b>	EPA 3550/8082	I0F2832	50	<b>150</b>	1	6/28/00	6/29/00			
Aroclor 1260	EPA 3550/8082	I0F2832	50	ND	1	6/28/00	6/29/00	U		
Surrogate: Decachlorobiphenyl (45-145%)				89.2 %						
<b>Sample ID: IJF0901-05 (CAC-37B - Soil)</b>										
Aroclor 1016	EPA 3550/8082	I0F2832	1000	ND	20	6/28/00	6/29/00	*		
Aroclor 1221	EPA 3550/8082	I0F2832	1000	ND	20	6/28/00	6/29/00			
Aroclor 1232	EPA 3550/8082	I0F2832	1000	ND	20	6/28/00	6/29/00			
Aroclor 1242	EPA 3550/8082	I0F2832	1000	ND	20	6/28/00	6/29/00			
Aroclor 1248	EPA 3550/8082	I0F2832	1000	ND	20	6/28/00	6/29/00			
<b>Aroclor 1254</b>	EPA 3550/8082	I0F2832	1000	<b>2100</b>	20	6/28/00	6/29/00			
Aroclor 1260	EPA 3550/8082	I0F2832	1000	ND	20	6/28/00	6/29/00			
Surrogate: Decachlorobiphenyl (45-145%)				100 %						Z3
<b>Sample ID: IJF0901-06 (CAC-38B - Soil)</b>										
Aroclor 1016	EPA 3550/8082	I0F2832	250	ND	5	6/28/00	6/29/00	U		
Aroclor 1221	EPA 3550/8082	I0F2832	250	ND	5	6/28/00	6/29/00			
Aroclor 1232	EPA 3550/8082	I0F2832	250	ND	5	6/28/00	6/29/00			
Aroclor 1242	EPA 3550/8082	I0F2832	250	ND	5	6/28/00	6/29/00			
Aroclor 1248	EPA 3550/8082	I0F2832	250	ND	5	6/28/00	6/29/00			
<b>Aroclor 1254</b>	EPA 3550/8082	I0F2832	250	<b>500</b>	5	6/28/00	6/29/00			
Aroclor 1260	EPA 3550/8082	I0F2832	250	ND	5	6/28/00	6/29/00	U		
Surrogate: Decachlorobiphenyl (45-145%)				107 %						Z3

\*Analysis Not Validated

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 Project Manager

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550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: IJF0189  
Matrix: Soil  
No. of Samples: 18  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: March 12, 2002  
Reviewer: M. Pokorny  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: CAC-1S, CAC-2R, CAC-3ST, CAC-3SB, CAC-4ST, CAC-4SB, CAC-5S, CAC-6ST, CAC-6SB, CAC-7ST, CAC-7SB, CAC-8B, CAC-9R, CAC-11ST, CAC-11SB, CAC-12ST, CAC-12SB, CAC-13R

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	All samples were received intact and in good condition at 4°C. The samples in this SDG were accounted for on the COC.  The soil samples were extracted within the 14 day holding time and analyzed within 40 days of extraction.	No qualifications were required.
4. <u>Method Blanks</u>	Two soil method blanks were analyzed with the samples of this SDG. No target analyte detects were reported in the method blanks.	No qualifications were required.
5. <u>LCS/BS</u>	Two soil blank spikes were analyzed with the samples in this SDG. All percent recoveries were within the laboratory QC limits of 60-115%.	No qualifications were required.
6. <u>Surrogates</u>	All QC and site sample surrogate recoveries were within laboratory QC limits of 45-145%.	No qualifications were required.



	Findings	Qualifications
7. <u>MS/MSDs</u>	The MS/MSD analyses were performed on sample CAC-6ST. The recoveries for Aroclor-1016 and Aroclor-1260 were within the laboratory-established QC limits in both the MS and MSD. The RPD for Aroclor-1260 was above the QC limit of 20% and the RPD for Aroclor-1016 was less than 20%.	No qualifications were required.
8. <u>Field QC Samples</u>  ER: None FB: None Duplicates: None	No field QC samples were associated with this SDG.	No qualifications were required.
9. <u>Other</u>	Reporting limits and results were reported on a wet-weight basis.  Sample CAC- 8B was analyzed at a 5X dilution due to a high concentration of target compounds.	No qualifications were required.
<u>Comments</u>	None	No qualifications were required.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJF0189

Sampled: 06/06/00  
Received: 06/07/00

## POLYCHLORINATED BIPHENYLS (EPA 3550B/8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
				ug/kg	ug/kg				
Sample ID: IJF0189-01 (CAC-1S - Soil) ✓								REV QUAL	QUAL CODE
Aroclor 1016	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U ↓	
Aroclor 1221	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1232	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1242	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1248	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1254	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1260	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Surrogate: Decachlorobiphenyl (45-145%)				92.8 %					
Sample ID: IJF0189-02 (CAC-2R - Soil) ✓									
Aroclor 1016	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U ↓	
Aroclor 1221	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1232	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1242	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1248	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1254	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1260	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Surrogate: Decachlorobiphenyl (45-145%)				105 %					
Sample ID: IJF0189-03 (CAC-3ST - Soil) ✓									
Aroclor 1016	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U ↓	
Aroclor 1221	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1232	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1242	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1248	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1254	EPA 3550/8082	I0F0920	50	54	1	6/9/00	6/10/00		
Aroclor 1260	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Surrogate: Decachlorobiphenyl (45-145%)				85.0 %					

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Pat Abe  
Project Manager

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 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0189

Sampled: 06/06/00  
 Received: 06/07/00

## POLYCHLORINATED BIPHENYLS (EPA 3550B/8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
			ug/kg	ug/kg				REL QUAL	QUAL CODE
Sample ID: IJF0189-04 (CAC-3SB - Soil)									
Aroclor 1016	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U ↓	
Aroclor 1221	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1232	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1242	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1248	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1254	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1260	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Surrogate: Decachlorobiphenyl (45-145%)				88.0 %					
Sample ID: IJF0189-05 (CAC-4ST - Soil)									
Aroclor 1016	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U ↓	
Aroclor 1221	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1232	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1242	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1248	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1254	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1260	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Surrogate: Decachlorobiphenyl (45-145%)				86.8 %					
Sample ID: IJF0189-06 (CAC-4SB - Soil)									
Aroclor 1016	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U ↓	
Aroclor 1221	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1232	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1242	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1248	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1254	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1260	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Surrogate: Decachlorobiphenyl (45-145%)				83.2 %					

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 Project Manager

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IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0189

Sampled: 06/06/00  
 Received: 06/07/00

## POLYCHLORINATED BIPHENYLS (EPA 3550B/8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
			ug/kg	ug/kg				REV QUAL	QUAL CODE
Sample ID: IJF0189-07 (CAC-5S - Soil)									
Aroclor 1016	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U  ↓	
Aroclor 1221	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1232	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1242	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1248	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1254	EPA 3550/8082	I0F0920	50	65	1	6/9/00	6/10/00		
Aroclor 1260	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U	
Surrogate: Decachlorobiphenyl (45-145%)				89.2 %					
Sample ID: IJF0189-08 (CAC-6ST - Soil)									
Aroclor 1016	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U  ↓	
Aroclor 1221	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1232	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1242	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1248	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1254	EPA 3550/8082	I0F0920	50	66	1	6/9/00	6/10/00		
Aroclor 1260	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Surrogate: Decachlorobiphenyl (45-145%)				86.2 %					
Sample ID: IJF0189-09 (CAC-6SB - Soil)									
Aroclor 1016	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U  ↓	
Aroclor 1221	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1232	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1242	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1248	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1254	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Aroclor 1260	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00		
Surrogate: Decachlorobiphenyl (45-145%)				87.4 %					

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 Project Manager

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IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0189

Sampled: 06/06/00  
 Received: 06/07/00

## POLYCHLORINATED BIPHENYLS (EPA 3550B/8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers		
			ug/kg	ug/kg					REV QUAL	QUAL CODE
Sample ID: IJF0189-10 (CAC-7ST - Soil)										
Aroclor 1016	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	↓	U	
Aroclor 1221	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00			
Aroclor 1232	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00			
Aroclor 1242	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00			
Aroclor 1248	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00			
Aroclor 1254	EPA 3550/8082	I0F0920	50	170	1	6/9/00	6/10/00			
Aroclor 1260	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U		
Surrogate: Decachlorobiphenyl (45-145%)				82.6 %						
Sample ID: IJF0189-11 (CAC-7SB - Soil)										
Aroclor 1016	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	↓	U	
Aroclor 1221	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00			
Aroclor 1232	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00			
Aroclor 1242	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00			
Aroclor 1248	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00			
Aroclor 1254	EPA 3550/8082	I0F0920	50	120	1	6/9/00	6/10/00			
Aroclor 1260	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U		
Surrogate: Decachlorobiphenyl (45-145%)				85.6 %						
Sample ID: IJF0189-12 (CAC-8B - Soil)										
Aroclor 1016	EPA 3550/8082	I0F0920	250	ND	5	6/9/00	6/10/00	↓	U	
Aroclor 1221	EPA 3550/8082	I0F0920	250	ND	5	6/9/00	6/10/00			
Aroclor 1232	EPA 3550/8082	I0F0920	250	ND	5	6/9/00	6/10/00			
Aroclor 1242	EPA 3550/8082	I0F0920	250	ND	5	6/9/00	6/10/00			
Aroclor 1248	EPA 3550/8082	I0F0920	250	ND	5	6/9/00	6/10/00			
Aroclor 1254	EPA 3550/8082	I0F0920	250	390	5	6/9/00	6/10/00			
Aroclor 1260	EPA 3550/8082	I0F0920	250	ND	5	6/9/00	6/10/00	U		
Surrogate: Decachlorobiphenyl (45-145%)				97.0 %						

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 Project Manager

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IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0189

Sampled: 06/06/00  
 Received: 06/07/00

## POLYCHLORINATED BIPHENYLS (EPA 3550B/8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REV QUAL
<b>Sample ID: IJF0189-13 (CAC-9R - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1221	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1232	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1242	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1248	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1254	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1260	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Surrogate: Decachlorobiphenyl (45-145%)				81.4 %				
<b>Sample ID: IJF0189-14 (CAC-10B - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0F0920	500	ND	10	6/9/00	6/10/00	*
Aroclor 1221	EPA 3550/8082	I0F0920	500	ND	10	6/9/00	6/10/00	*
Aroclor 1232	EPA 3550/8082	I0F0920	500	ND	10	6/9/00	6/10/00	*
Aroclor 1242	EPA 3550/8082	I0F0920	500	ND	10	6/9/00	6/10/00	*
Aroclor 1248	EPA 3550/8082	I0F0920	500	ND	10	6/9/00	6/10/00	*
<b>Aroclor 1254</b>	EPA 3550/8082	I0F0920	500	<b>1700</b>	10	6/9/00	6/10/00	*
Aroclor 1260	EPA 3550/8082	I0F0920	500	ND	10	6/9/00	6/10/00	*
Surrogate: Decachlorobiphenyl (45-145%)				102 %				
<b>Sample ID: IJF0189-15 (CAC-11-ST - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1221	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1232	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1242	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1248	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1254	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1260	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Surrogate: Decachlorobiphenyl (45-145%)				86.8 %				

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\* = NOT VALIDATED

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 Pat Abe  
 Project Manager

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IJF0189 < 6 of 11 >



IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0189

Sampled: 06/06/00  
 Received: 06/07/00

## POLYCHLORINATED BIPHENYLS (EPA 3550B/8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REL QUAL
<b>Sample ID: IJF0189-16 (CAC-11-SB - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1221	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1232	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1242	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1248	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1254	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1260	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Surrogate: Decachlorobiphenyl (45-145%)				85.0 %				
<b>Sample ID: IJF0189-17 (CAC-12-ST - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1221	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1232	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1242	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1248	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1254	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Aroclor 1260	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/10/00	U
Surrogate: Decachlorobiphenyl (45-145%)				90.4 %				
<b>Sample ID: IJF0189-18 (CAC-12SB - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/11/00	U
Aroclor 1221	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/11/00	U
Aroclor 1232	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/11/00	U
Aroclor 1242	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/11/00	U
Aroclor 1248	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/11/00	U
Aroclor 1254	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/11/00	U
Aroclor 1260	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/11/00	U
Surrogate: Decachlorobiphenyl (45-145%)				85.6 %				

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LEVEL V

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 Project Manager

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IJF0189 < 7 of 11 >



IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0189

Sampled: 06/06/00  
 Received: 06/07/00

## POLYCHLORINATED BIPHENYLS (EPA 3550B/8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
			ug/kg	ug/kg				REL QUAL	QUAL CODE
Sample ID: IJF0189-19 (CAC-13R - Soil)									
Aroclor 1016	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/11/00	U ↓	
Aroclor 1221	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/11/00		
Aroclor 1232	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/11/00		
Aroclor 1242	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/11/00		
Aroclor 1248	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/11/00		
Aroclor 1254	EPA 3550/8082	I0F0920	50	56	1	6/9/00	6/11/00		
Aroclor 1260	EPA 3550/8082	I0F0920	50	ND	1	6/9/00	6/11/00	U	
Surrogate: Decachlorobiphenyl (45-145%)				83.8 %					
Sample ID: IJF0189-20 (CAC-14B - Soil)									
Aroclor 1016	EPA 3550/8082	I0F1210	500	ND	10	6/12/00	6/14/00	X ↓	
Aroclor 1221	EPA 3550/8082	I0F1210	500	ND	10	6/12/00	6/14/00		
Aroclor 1232	EPA 3550/8082	I0F1210	500	ND	10	6/12/00	6/14/00		
Aroclor 1242	EPA 3550/8082	I0F1210	500	ND	10	6/12/00	6/14/00		
Aroclor 1248	EPA 3550/8082	I0F1210	500	ND	10	6/12/00	6/14/00		
Aroclor 1254	EPA 3550/8082	I0F1210	500	900	10	6/12/00	6/14/00		
Aroclor 1260	EPA 3550/8082	I0F1210	500	ND	10	6/12/00	6/14/00		
Surrogate: Decachlorobiphenyl (45-145%)				128 %					

X = NOT VALIDATED

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 Project Manager

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IJF0189 < 8 of 11 >





550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: IJF1026  
Matrix: Soil  
No. of Samples: 3  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: March 12, 2002  
Reviewer: M. Pokorny  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: PC-20, PC-21, PC-22

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	All samples were received intact and in good condition at 3°C. The samples in this SDG were accounted for on the COC.  The soil samples were extracted within the 14 day holding time and analyzed within 40 days of extraction.	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was analyzed with the samples of this SDG. No target analyte detects were reported in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil blank spike was analyzed with the samples in this SDG. All percent recoveries were within the laboratory QC limits of 60-115%.	No qualifications were required.
6. <u>Surrogates</u>	All QC and site sample surrogate recoveries were within laboratory QC limits of 45-145%.	No qualifications were required.
7. <u>MS/MSDs</u>	No MS/MSD was performed with this SDG. Evaluation of method accuracy was based on blank spike results.	No qualifications were required.

	Findings	Qualifications
8. <u>Field QC Samples</u>  ER: None FB: None Duplicates:	No field QC samples were associated with this SDG.	No qualifications were required.
9. <u>Other</u>	Reporting limits and results were reported on a wet-weight basis.	No qualifications were required.
<u>Comments</u>	None	No qualifications were required.

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<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJF1026

Sampled: 06/29/00  
Received: 06/29/00

### POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
			ug/kg	ug/kg				REF QUAL	QUAL CODE
Sample ID: IJF1026-01 (PC-20 - Soil)									
Aroclor 1016	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00	U ↓ U	
Aroclor 1221	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Aroclor 1232	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Aroclor 1242	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Aroclor 1248	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Aroclor 1254	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Aroclor 1260	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Surrogate: Decachlorobiphenyl (45-145%)				73.7 %					
Sample ID: IJF1026-02 (PC-21 - Soil)									
Aroclor 1016	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00	U ↓ U	
Aroclor 1221	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Aroclor 1232	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Aroclor 1242	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Aroclor 1248	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Aroclor 1254	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Aroclor 1260	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Surrogate: Decachlorobiphenyl (45-145%)				88.0 %					
Sample ID: IJF1026-03 (PC-22 - Soil)									
Aroclor 1016	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00	U ↓ U	
Aroclor 1221	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Aroclor 1232	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Aroclor 1242	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Aroclor 1248	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Aroclor 1254	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Aroclor 1260	EPA 3550/8082	I0F3032	50	ND	1	6/30/00	7/5/00		
Surrogate: Decachlorobiphenyl (45-145%)				86.8 %					

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Pat Abe  
Project Manager

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550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: IJK0373  
Matrix: Soil  
No. of Samples: 3  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: March 11, 2002  
Reviewer: M. Pokorny  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: Brandeis-1, Brandeis-1D, Brandeis-2

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	All samples were received intact and in good condition at 4°C. The samples in this SDG were accounted for on the COC.  The soil samples were extracted within the 14 day holding time and analyzed within 40 days of extraction.	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was analyzed with the samples of this SDG. No target analyte detects were reported in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil blank spike was analyzed with the samples in this SDG. All percent recoveries were within the laboratory QC limits of 60-115%.	No qualifications were required.
6. <u>Surrogates</u>	All QC and site sample surrogate recoveries were within laboratory QC limits of 45-145%.	No qualifications were required.

	Findings	Qualifications
7. <u>MS/MSDs</u>	The MS/MSD analyses were performed on sample Brandeis-2. The recoveries for both fortified compounds, Aroclor-1016 and Aroclor 1260, were within the laboratory-established QC limits in both the MS and MSD. The RPDs for the fortified compounds were within the QC limit of 20%.	No qualifications were required.
8. <u>Field QC Samples</u>  ER: None FB: None Duplicates: Brandeis-1 / Brandeis-1D	Aroclor-1254 was detected in both samples of the field duplicate pair with an RPD of 56%.	No qualifications were required.
9. <u>Other</u>	Reporting limits and results were reported on a wet-weight basis.	No qualifications were required.
<u>Comments</u>	None	No qualifications were required.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJK0373

Sampled: 11/09/00  
 Received: 11/09/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting	Sample	Dilution	Date	Date	Data	
			Limit	Result	Factor	Extracted	Analyzed	Qualifiers	
			ug/kg	ug/kg				REV	QUAL
								QUAL	CD
Sample ID: IJK0373-01 (Brandeis-1 - Soil)									
Aroclor 1016	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00	U	
Aroclor 1221	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00		
Aroclor 1232	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00		
Aroclor 1242	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00		
Aroclor 1248	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00		
Aroclor 1254	EPA 3550/8082	I0K0960	50	91	1	11/9/00	11/10/00		
Aroclor 1260	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00	U	
Surrogate: Decachlorobiphenyl (45-145%)				60.5 %					
Sample ID: IJK0373-02 (Brandeis-1D - Soil)									
Aroclor 1016	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00	U	
Aroclor 1221	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00		
Aroclor 1232	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00		
Aroclor 1242	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00		
Aroclor 1248	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00		
Aroclor 1254	EPA 3550/8082	I0K0960	50	51	1	11/9/00	11/10/00		
Aroclor 1260	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00	U	
Surrogate: Decachlorobiphenyl (45-145%)				67.1 %					
Sample ID: IJK0373-03 (Brandeis-2 - Soil)									
Aroclor 1016	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00	U	
Aroclor 1221	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00		
Aroclor 1232	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00		
Aroclor 1242	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00		
Aroclor 1248	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00		
Aroclor 1254	EPA 3550/8082	I0K0960	50	53	1	11/9/00	11/10/00		
Aroclor 1260	EPA 3550/8082	I0K0960	50	ND	1	11/9/00	11/10/00	U	
Surrogate: Decachlorobiphenyl (45-145%)				71.9 %					

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 Pat Abe  
 Project Manager

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IJK0373 <Page 2 of 4>



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303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: IJF0277  
Matrix: Soil  
No. of Samples: 16  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: March 12, 2002  
Reviewer: M. Pokorny  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: CAC-15R, CAC-15B, CAC-28B, CAC-32SW, CAC-31SW, CAC-30B,  
CAC-29B, CAC-16R, CAC-17R, CCC-25B, CAC-18B, CCC-19R, CCC-20B,  
CCC-21B, CCC-22B, CCC-23B

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	All samples were received intact and in good condition at 3°C. The samples in this SDG were accounted for on the COC.  The soil samples were extracted within the 14 day holding time and analyzed within 40 days of extraction.	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was analyzed with the samples of this SDG. No target analyte detects were reported in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil blank spike was analyzed with the samples in this SDG. All percent recoveries were within the laboratory QC limits of 60-115%.	No qualifications were required.
6. <u>Surrogates</u>	All QC and site sample surrogate recoveries were within laboratory QC limits of 45-145%.	No qualifications were required.

	Findings	Qualifications
7. <u>MS/MSDs</u>	The MS/MSD analyses were performed on sample CAC-15B. The recoveries for both fortified compounds, Aroclor 1016 and Aroclor 1260, were within the laboratory-established QC limits in both the MS and MSD. The RPDs for the fortified compounds were less than the QC limit of 20%.	No qualifications were required.
8. <u>Field QC Samples</u>  ER: None FB: None Duplicates: None	No field QC samples were associated with this SDG.	No qualifications were required.
9. <u>Other</u>	Reporting limits and results were reported on a wet-weight basis.  Sample CAC-32SW was analyzed at a 2X dilution and sample CCC-22B was analyzed at a 4X dilution due to high concentrations of target compounds.	No qualifications were required.
<u>Comments</u>	None	No qualifications were required.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJF0277

Sampled: 06/07/00  
Received: 06/08/00

### POLYCHLORINATED BIPHENYLS (EPA 3550B/8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REV QUAL
Sample ID: IJF0277-01 (CAC-15R - Soil)								
Aroclor 1016	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	U
Aroclor 1221	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	↓
Aroclor 1232	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1242	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1248	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1254	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1260	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Surrogate: Decachlorobiphenyl (45-145%)				86.2 %				
Sample ID: IJF0277-02 (CAC-15B - Soil)								
Aroclor 1016	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/13/00	U
Aroclor 1221	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/13/00	↓
Aroclor 1232	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/13/00	
Aroclor 1242	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/13/00	
Aroclor 1248	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/13/00	
Aroclor 1254	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/13/00	
Aroclor 1260	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/13/00	
Surrogate: Decachlorobiphenyl (45-145%)				100 %				
Sample ID: IJF0277-03 (CAC-26B - Soil)								
Aroclor 1016	EPA 3550/8082	I0F1210	250	ND	5	06/12/00	06/14/00	↓
Aroclor 1221	EPA 3550/8082	I0F1210	250	ND	5	06/12/00	06/14/00	
Aroclor 1232	EPA 3550/8082	I0F1210	250	ND	5	06/12/00	06/14/00	
Aroclor 1242	EPA 3550/8082	I0F1210	250	ND	5	06/12/00	06/14/00	
Aroclor 1248	EPA 3550/8082	I0F1210	250	ND	5	06/12/00	06/14/00	
Aroclor 1254	EPA 3550/8082	I0F1210	250	ND	5	06/12/00	06/14/00	
Aroclor 1260	EPA 3550/8082	I0F1210	250	830	5	06/12/00	06/14/00	
Surrogate: Decachlorobiphenyl (45-145%)				102 %	A-01 Z4			

\* = NOT VALIDATED

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Pat Abe  
Project Manager

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IJF0277 &lt; 2 of 13 &gt;



IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0277

Sampled: 06/07/00  
 Received: 06/08/00

## POLYCHLORINATED BIPHENYLS (EPA 3550B/8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REV QUAL
Sample ID: IJF0277-04 (CAC-27B - Soil)								
Aroclor 1016	EPA 3550/8082	I0F1210	250	ND	5	06/12/00	06/14/00	* ↓ A-01 Z4
Aroclor 1221	EPA 3550/8082	I0F1210	250	ND	5	06/12/00	06/14/00	
Aroclor 1232	EPA 3550/8082	I0F1210	250	ND	5	06/12/00	06/14/00	
Aroclor 1242	EPA 3550/8082	I0F1210	250	ND	5	06/12/00	06/14/00	
Aroclor 1248	EPA 3550/8082	I0F1210	250	ND	5	06/12/00	06/14/00	
Aroclor 1254	EPA 3550/8082	I0F1210	250	ND	5	06/12/00	06/14/00	
Aroclor 1260	EPA 3550/8082	I0F1210	250	720	5	06/12/00	06/14/00	
Surrogate: Decachlorobiphenyl (45-145%)				96.4 %				
Sample ID: IJF0277-05 (CAC-28B - Soil)								
Aroclor 1016	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	U ↓ A-01 Z4
Aroclor 1221	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1232	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1242	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1248	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1254	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1260	EPA 3550/8082	I0F1210	50	86	1	06/12/00	06/14/00	
Surrogate: Decachlorobiphenyl (45-145%)				74.9 %				
Sample ID: IJF0277-06 (CAC-32SW - Soil)								
Aroclor 1016	EPA 3550/8082	I0F1210	100	ND	2	06/12/00	06/14/00	U ↓ A-01 Z4
Aroclor 1221	EPA 3550/8082	I0F1210	100	ND	2	06/12/00	06/14/00	
Aroclor 1232	EPA 3550/8082	I0F1210	100	ND	2	06/12/00	06/14/00	
Aroclor 1242	EPA 3550/8082	I0F1210	100	ND	2	06/12/00	06/14/00	
Aroclor 1248	EPA 3550/8082	I0F1210	100	ND	2	06/12/00	06/14/00	
Aroclor 1254	EPA 3550/8082	I0F1210	100	ND	2	06/12/00	06/14/00	
Aroclor 1260	EPA 3550/8082	I0F1210	100	330	2	06/12/00	06/14/00	
Surrogate: Decachlorobiphenyl (45-145%)				96.4 %				

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 Pat Abe  
 Project Manager

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IJF0277 < 3 of 13 >

IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJF0277

Sampled: 06/07/00  
Received: 06/08/00

### POLYCHLORINATED BIPHENYLS (EPA 3550B/8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REV QUAL
Sample ID: IJF0277-07 (CAC-31SW - Soil)								
Aroclor 1016	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	U      U
Aroclor 1221	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1232	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1242	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1248	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1254	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1260	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Surrogate: Decachlorobiphenyl (45-145%)				95.8 %				
Sample ID: IJF0277-08 (CAC-30B - Soil)								
Aroclor 1016	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	U      U
Aroclor 1221	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1232	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1242	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1248	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1254	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1260	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Surrogate: Decachlorobiphenyl (45-145%)				95.8 %				
Sample ID: IJF0277-09 (CAC-29B - Soil)								
Aroclor 1016	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	U      U
Aroclor 1221	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1232	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1242	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1248	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1254	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1260	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Surrogate: Decachlorobiphenyl (45-145%)				82.0 %				

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Project Manager

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IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJF0277

Sampled: 06/07/00  
Received: 06/08/00

# POLYCHLORINATED BIPHENYLS (EPA 3550B/8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
			ug/kg	ug/kg				REV QUAL	QUAL CODE
Sample ID: IJF0277-10 (CAC-16R - Soil)									
Aroclor 1016	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	U	↓
Aroclor 1221	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1232	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1242	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1248	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1254	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1260	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	↓	
Surrogate: Decachlorobiphenyl (45-145%)				86.2 %					
Sample ID: IJF0277-11 (CAC-17R - Soil)									
Aroclor 1016	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	U	↓
Aroclor 1221	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1232	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1242	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1248	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1254	EPA 3550/8082	I0F1210	50	110	1	06/12/00	06/14/00		
Aroclor 1260	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	U	A-01a
Surrogate: Decachlorobiphenyl (45-145%)				91.6 %					
Sample ID: IJF0277-12 (CCC-25B - Soil)									
Aroclor 1016	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	U	↓
Aroclor 1221	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1232	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1242	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1248	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1254	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1260	EPA 3550/8082	I0F1210	50	160	1	06/12/00	06/14/00		A-01
Surrogate: Decachlorobiphenyl (45-145%)				88.0 %					

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Project Manager

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IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0277

Sampled: 06/07/00  
 Received: 06/08/00

## POLYCHLORINATED BIPHENYLS (EPA 3550B/8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	REV	QUAL
			ug/kg	ug/kg					QUAL	CASE
<b>Sample ID: IJF0277-13 (CAC-18B - Soil)</b>										
Aroclor 1016	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	U		
Aroclor 1221	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00			
Aroclor 1232	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00			
Aroclor 1242	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00			
Aroclor 1248	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00			
Aroclor 1254	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00			
Aroclor 1260	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00			
Surrogate: Decachlorobiphenyl (45-145%)				81.4 %						
<b>Sample ID: IJF0277-14 (CCC-19R - Soil)</b>										
Aroclor 1016	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	U		
Aroclor 1221	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00			
Aroclor 1232	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00			
Aroclor 1242	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00			
Aroclor 1248	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00			
Aroclor 1254	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00			
Aroclor 1260	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00			
Surrogate: Decachlorobiphenyl (45-145%)				84.4 %						
<b>Sample ID: IJF0277-15 (CCC-20B - Soil)</b>										
Aroclor 1016	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	U		
Aroclor 1221	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00			
Aroclor 1232	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00			
Aroclor 1242	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00			
Aroclor 1248	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00			
Aroclor 1254	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00			
Aroclor 1260	EPA 3550/8082	I0F1210	50	140	1	06/12/00	06/14/00			A-01
Surrogate: Decachlorobiphenyl (45-145%)				83.2 %						

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 Project Manager

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# Del Mar Analytical

2852 Alton Ave., Irvine, CA 92606 (949) 261-1022 FAX (949) 261-1238  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046  
 16525 Sherman Way, Suite C-11, Van Nuys, CA 91406 (818) 779-1844 FAX (818) 779-1843  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-9596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851

IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0277

Sampled: 06/07/00  
 Received: 06/08/00

## POLYCHLORINATED BIPHENYLS (EPA 3550B/8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
			ug/kg	ug/kg				REV QUAL	QUAL CODE
Sample ID: IJF0277-16 (CCC-21B - Soil)									
Aroclor 1016	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	U      ↓	A-01
Aroclor 1221	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1232	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1242	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1248	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1254	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1260	EPA 3550/8082	I0F1210	50	93	1	06/12/00	06/14/00		
Surrogate: Decachlorobiphenyl (45-145%)				88.0 %					
Sample ID: IJF0277-17 (CCC-22B - Soil)									
Aroclor 1016	EPA 3550/8082	I0F1210	200	ND	4	06/12/00	06/15/00	U      ↓	A-01
Aroclor 1221	EPA 3550/8082	I0F1210	200	ND	4	06/12/00	06/15/00		
Aroclor 1232	EPA 3550/8082	I0F1210	200	ND	4	06/12/00	06/15/00		
Aroclor 1242	EPA 3550/8082	I0F1210	200	ND	4	06/12/00	06/15/00		
Aroclor 1248	EPA 3550/8082	I0F1210	200	ND	4	06/12/00	06/15/00		
Aroclor 1254	EPA 3550/8082	I0F1210	200	ND	4	06/12/00	06/15/00		
Aroclor 1260	EPA 3550/8082	I0F1210	200	250	4	06/12/00	06/15/00		
Surrogate: Decachlorobiphenyl (45-145%)				89.8 %					
Sample ID: IJF0277-18 (CCC-23B - Soil)									
Aroclor 1016	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	U      ↓	A-01
Aroclor 1221	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1232	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1242	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1248	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1254	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00		
Aroclor 1260	EPA 3550/8082	I0F1210	50	86	1	06/12/00	06/14/00		
Surrogate: Decachlorobiphenyl (45-145%)				74.3 %					

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LEVEL V

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 Pat Abe  
 Project Manager

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IJF0277 < 7 of 13 >



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: IJI0967  
Matrix: Soil  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: March 12, 2002  
Reviewer: M. Pokorny  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: PC-43

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	The sample was received intact and in good condition at 5°C. The sample in this SDG was accounted for on the COC.  The soil sample was extracted within the 14 day holding time and analyzed within 40 days of extraction.	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was analyzed with the sample of this SDG. No target analyte detects were reported in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil blank spike was analyzed with the sample in this SDG. All percent recoveries were within the laboratory QC limits of 60-115%.	No qualifications were required.
6. <u>Surrogates</u>	All QC and site sample surrogate recoveries were within laboratory QC limits of 45-145%.	No qualifications were required.

	Findings	Qualifications
7. <u>MS/MSDs</u>	An MS/MSD was not analyzed with this SDG. Method accuracy was evaluated based on blank spike results.	No qualifications were required.
8. <u>Field QC Samples</u>  ER: None FB: None Duplicates: None	No field QC samples were associated with this SDG.	No qualifications were required.
9. <u>Other</u>	Reporting limits and results were reported on a wet-weight basis.	No qualifications were required.
<u>Comments</u>	None	No qualifications were required.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.





IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJI0967

Sampled:09/28/00  
 Received:09/28/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting	Sample	Dilution	Date	Date	Data	
			Limit	Result				Factor	Extracted
			ug/kg	ug/kg				REV	QUAL
Sample ID: IJI0967-01 (PC-42 - Soil)									
Aroclor 1016	EPA 3550/8082	I0I2927	250	ND	5	9/29/00	9/29/00	*	M1
Aroclor 1221	EPA 3550/8082	I0I2927	250	ND	5	9/29/00	9/29/00		
Aroclor 1232	EPA 3550/8082	I0I2927	250	ND	5	9/29/00	9/29/00		
Aroclor 1242	EPA 3550/8082	I0I2927	250	ND	5	9/29/00	9/29/00		
Aroclor 1248	EPA 3550/8082	I0I2927	250	ND	5	9/29/00	9/29/00		
Aroclor 1254	EPA 3550/8082	I0I2927	250	850	5	9/29/00	9/29/00		
Aroclor 1260	EPA 3550/8082	I0I2927	250	ND	5	9/29/00	9/29/00		
Surrogate: Decachlorobiphenyl (45-145%)				114 %		Z3			
Sample ID: IJI0967-02 (PC-43 - Soil)									
Aroclor 1016	EPA 3550/8082	I0I2927	50	ND	1	9/29/00	9/29/00	U	
Aroclor 1221	EPA 3550/8082	I0I2927	50	ND	1	9/29/00	9/29/00		
Aroclor 1232	EPA 3550/8082	I0I2927	50	ND	1	9/29/00	9/29/00		
Aroclor 1242	EPA 3550/8082	I0I2927	50	ND	1	9/29/00	9/29/00		
Aroclor 1248	EPA 3550/8082	I0I2927	50	ND	1	9/29/00	9/29/00		
Aroclor 1254	EPA 3550/8082	I0I2927	50	ND	1	9/29/00	9/29/00		
Aroclor 1260	EPA 3550/8082	I0I2927	50	ND	1	9/29/00	9/29/00		
Surrogate: Decachlorobiphenyl (45-145%)				90.4 %					

\* = NOT VALIDATED

# LEVEL V

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 Pat Abe  
 Project Manager

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550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: IJH0950  
Matrix: Soil  
No. of Samples: 21  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: March 12, 2002  
Reviewer: M. Pokorny  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: CAC-80B, CAC-81B, CAC-82B, CAC-83B, CAC-84B, CAC-85B, CAC-90BE, CAC-86B, CAC-86D, CAC-87B, CAC-88B, CAC-89BW, PC-24, PC-25, CBC-91S, CBC-92S, PC-27, PC-28, CBC-93S, CBC-94SW, PC-28D

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	All samples were received intact and in good condition at 4°C and 5°C. The samples in this SDG were accounted for on the COC.  The soil samples were extracted within the 14 day holding time and analyzed within 40 days of extraction.	No qualifications were required.
4. <u>Method Blanks</u>	Two soil method blanks were analyzed with the samples of this SDG. No target analyte detects were reported in the method blanks.	No qualifications were required.
5. <u>LCS/BS</u>	Two soil blank spikes were analyzed with the samples in this SDG. All percent recoveries were within the laboratory QC limits of 60-115%.	No qualifications were required.
6. <u>Surrogates</u>	All QC and site sample surrogate recoveries were within laboratory QC limits of 45-145%.	No qualifications were required.

	Findings	Qualifications
7. <u>MS/MSDs</u>	The MS/MSD analyses were performed on sample CBC-91S. The recoveries for both fortified compounds, Aroclor 1016 and Aroclor 1260, were within the laboratory-established QC limits in both the MS and MSD. The RPDs for the fortified compounds were within the QC limit of 20%.	No qualifications were required.
8. <u>Field QC Samples</u>  ER: None FB: None Duplicates: CAC-86B/CAC-86D PC-28/PC28D	For the CAC-86B/CAC-86D field duplicate pair, both samples had Aroclor-1254 detects with an RPD of 12%.  For the PC-28/PC28D field duplicate pair, no target compounds were detected in either sample.	No qualifications were required.
9. <u>Other</u>	Reporting limits and results were reported on a wet-weight basis.  Sample CAC-80B was analyzed at a 5X dilution and sample CAC-87B was analyzed at a 10X dilution due to high concentrations of target compounds.	No qualifications were required.
<u>Comments</u>	None	No qualifications were required.

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJH0919

Sampled: 08/25/00  
 Received: 08/25/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit ug/kg	Sample Result ug/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	REV QUAL	QUAL CODE
<b>Sample ID: IJH0919-01 (CAC-79B - Soil)</b>										
Aroclor 1016	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00	*		
Aroclor 1221	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00			
Aroclor 1232	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00			
Aroclor 1242	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00			
Aroclor 1248	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00			
<b>Aroclor 1254</b>	EPA 3550/8082	I0H2832	500	<b>1100</b>	10	8/28/00	9/1/00			
Aroclor 1260	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00			
<i>Surrogate: Decachlorobiphenyl (45-145%)</i>				105 %						Z3
<b>Sample ID: IJH0919-02 (CAC-80B - Soil)</b>										
Aroclor 1016	EPA 3550/8082	I0H2832	250	ND	5	8/28/00	9/5/00	U		
Aroclor 1221	EPA 3550/8082	I0H2832	250	ND	5	8/28/00	9/5/00			
Aroclor 1232	EPA 3550/8082	I0H2832	250	ND	5	8/28/00	9/5/00			
Aroclor 1242	EPA 3550/8082	I0H2832	250	ND	5	8/28/00	9/5/00			
Aroclor 1248	EPA 3550/8082	I0H2832	250	ND	5	8/28/00	9/5/00			
<b>Aroclor 1254</b>	EPA 3550/8082	I0H2832	250	<b>440</b>	5	8/28/00	9/5/00			
Aroclor 1260	EPA 3550/8082	I0H2832	250	ND	5	8/28/00	9/5/00	U		
<i>Surrogate: Decachlorobiphenyl (45-145%)</i>				102 %						Z3
<b>Sample ID: IJH0919-03 (CAC-81B - Soil)</b>										
Aroclor 1016	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U		
Aroclor 1221	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Aroclor 1232	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Aroclor 1242	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Aroclor 1248	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
<b>Aroclor 1254</b>	EPA 3550/8082	I0H2832	50	<b>130</b>	1	8/28/00	9/1/00			
Aroclor 1260	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U		
<i>Surrogate: Decachlorobiphenyl (45-145%)</i>				71.9 %						

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**LEVEL V**

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 Pat Abe  
 Project Manager

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IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJH0919

Sampled: 08/25/00  
 Received: 08/25/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting	Sample	Dilution	Date	Date	Data		
			Limit	Result				Factor	Extracted	Analyzed
			ug/kg	ug/kg					REV	QUAL
									QUAL	CODE
Sample ID: IJH0919-04 (CAC-82B - Soil)										
Aroclor 1016	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U ↓ U		
Aroclor 1221	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Aroclor 1232	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Aroclor 1242	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Aroclor 1248	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Aroclor 1254	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Aroclor 1260	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Surrogate: Decachlorobiphenyl (45-145%)				85.6 %						
Sample ID: IJH0919-05 (CAC-83B - Soil)										
Aroclor 1016	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U ↓ U		
Aroclor 1221	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Aroclor 1232	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Aroclor 1242	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Aroclor 1248	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Aroclor 1254	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Aroclor 1260	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Surrogate: Decachlorobiphenyl (45-145%)				66.5 %						
Sample ID: IJH0919-06 (CAC-84B - Soil)										
Aroclor 1016	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U ↓ U		
Aroclor 1221	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Aroclor 1232	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Aroclor 1242	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Aroclor 1248	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Aroclor 1254	EPA 3550/8082	I0H2832	50	59	1	8/28/00	9/1/00			
Aroclor 1260	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00			
Surrogate: Decachlorobiphenyl (45-145%)				80.2 %						

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IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJH0919

Sampled: 08/25/00  
 Received: 08/25/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting	Sample	Dilution	Date	Date	Data	
			Limit	Result	Factor	Extracted	Analyzed	Qualifiers	
			ug/kg	ug/kg				REV	QUAL
Sample ID: IJH0919-07 (CAC-85B - Soil)									
Aroclor 1016	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U ↓	
Aroclor 1221	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1232	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1242	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1248	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1254	EPA 3550/8082	I0H2832	50	95	1	8/28/00	9/1/00		
Aroclor 1260	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U	
Surrogate: Decachlorobiphenyl (45-145%)				78.4 %					
Sample ID: IJH0919-08 (CAC-90BE - Soil)									
Aroclor 1016	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U ↓	
Aroclor 1221	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1232	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1242	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1248	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1254	EPA 3550/8082	I0H2832	50	51	1	8/28/00	9/1/00		
Aroclor 1260	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U	
Surrogate: Decachlorobiphenyl (45-145%)				74.3 %					
Sample ID: IJH0919-09 (CAC-90BW - Soil)									
Aroclor 1016	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	X ↓	
Aroclor 1221	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1232	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1242	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1248	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1254	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1260	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Surrogate: Decachlorobiphenyl (45-145%)				71.9 %					

\*Analysis Not Validated

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 Project Manager

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 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJH0919

Sampled: 08/25/00  
 Received: 08/25/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
			ug/kg	ug/kg				RAW QUAL	QUAL CASE
Sample ID: IJH0919-10 (CAC-86B - Soil)									
Aroclor 1016	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U ↓	
Aroclor 1221	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1232	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1242	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1248	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1254	EPA 3550/8082	I0H2832	50	87	1	8/28/00	9/1/00		
Aroclor 1260	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U	
Surrogate: Decachlorobiphenyl (45-145%)				73.7 %					
Sample ID: IJH0919-11 (CAC-86D - Soil)									
Aroclor 1016	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U ↓	
Aroclor 1221	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1232	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1242	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1248	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1254	EPA 3550/8082	I0H2832	50	98	1	8/28/00	9/1/00		
Aroclor 1260	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U	
Surrogate: Decachlorobiphenyl (45-145%)				67.1 %					
Sample ID: IJH0919-12 (CAC-87B - Soil)									
Aroclor 1016	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00	U ↓	
Aroclor 1221	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00		
Aroclor 1232	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00		
Aroclor 1242	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00		
Aroclor 1248	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00		
Aroclor 1254	EPA 3550/8082	I0H2832	500	590	10	8/28/00	9/1/00		
Aroclor 1260	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00	U	
Surrogate: Decachlorobiphenyl (45-145%)				89.8 %					

Z3

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 Project Manager

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IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJH0919

Sampled: 08/25/00  
 Received: 08/25/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
			ug/kg	ug/kg				REAL QUAL	QUAL CODE
Sample ID: IJH0919-13 (CAC-88B - Soil)									
Aroclor 1016	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U ↓	
Aroclor 1221	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1232	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1242	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1248	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1254	EPA 3550/8082	I0H2832	50	56	1	8/28/00	9/1/00		
Aroclor 1260	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U	
Surrogate: Decachlorobiphenyl (45-145%)				76.6 %					
Sample ID: IJH0919-14 (CAC-89BE - Soil)									
Aroclor 1016	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00	* ↓	
Aroclor 1221	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00		
Aroclor 1232	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00		
Aroclor 1242	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00		
Aroclor 1248	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00		
Aroclor 1254	EPA 3550/8082	I0H2832	500	550	10	8/28/00	9/1/00		
Aroclor 1260	EPA 3550/8082	I0H2832	500	ND	10	8/28/00	9/1/00		
Surrogate: Decachlorobiphenyl (45-145%)				110 %					
Sample ID: IJH0919-15 (CAC-89BW - Soil)									
Aroclor 1016	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U ↓	
Aroclor 1221	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1232	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1242	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1248	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00		
Aroclor 1254	EPA 3550/8082	I0H2832	50	52	1	8/28/00	9/1/00		
Aroclor 1260	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U	
Surrogate: Decachlorobiphenyl (45-145%)				65.9 %					

\* = NOT VALIDATED

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 Project Manager

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 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJH0919

Sampled: 08/25/00  
 Received: 08/25/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte

Method

Batch

Reporting  
Limit

ug/kg

Sample  
Result

ug/kg

Dilution  
Factor

Date  
Extracted

Date  
Analyzed

Data  
Qualifiers

REV  
QUAL

QUAL  
CODE

### Sample ID: IJH0919-18 (PC-24 - Soil)

Aroclor 1016	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U
Aroclor 1221	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	↓
Aroclor 1232	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	↓
Aroclor 1242	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	↓
Aroclor 1248	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	↓
Aroclor 1254	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	↓
Aroclor 1260	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	↓

Surrogate: Decachlorobiphenyl (45-145%)

89.8 %

### Sample ID: IJH0919-19 (PC-25 - Soil)

Aroclor 1016	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	U
Aroclor 1221	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	↓
Aroclor 1232	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	↓
Aroclor 1242	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	↓
Aroclor 1248	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	↓
Aroclor 1254	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	↓
Aroclor 1260	EPA 3550/8082	I0H2832	50	ND	1	8/28/00	9/1/00	↓

Surrogate: Decachlorobiphenyl (45-145%)

83.8 %

## AMEC VALIDATED

# LEVEL V

Del Mar Analytical, Irvine  
 Pat Abe  
 Project Manager

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IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJH0950

Sampled: 08/28/00  
Received: 08/28/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting	Sample	Dilution	Date	Date	Data		
			Limit	Result				Factor	Extracted	Analyzed
			ug/kg	ug/kg					REV	QUAL
									QUAL	CCDE
Sample ID: IJH0950-01 (CBC-91S - Soil)										
Aroclor 1016	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00	U ↓		
Aroclor 1221	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1232	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1242	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1248	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1254	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1260	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Surrogate: Decachlorobiphenyl (45-145%)				103 %						
Sample ID: IJH0950-02 (CBC-92S - Soil)										
Aroclor 1016	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00	U ↓		
Aroclor 1221	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1232	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1242	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1248	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1254	EPA 3550/8082	I0H2928	50	110	1	8/29/00	9/5/00			
Aroclor 1260	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00	U		
Surrogate: Decachlorobiphenyl (45-145%)				76.0 %						
Sample ID: IJH0950-04 (PC-27 - Soil)										
Aroclor 1016	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00	U ↓		
Aroclor 1221	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1232	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1242	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1248	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1254	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1260	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Surrogate: Decachlorobiphenyl (45-145%)				90.4 %						

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**LEVEL V**

Del Mar Analytical, Irvine  
Pat Abe  
Project Manager

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IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJH0950

Sampled: 08/28/00  
 Received: 08/28/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting	Sample	Dilution	Date	Date	Data	
			Limit	Result	Factor	Extracted	Analyzed	Qualifiers	
			ug/kg	ug/kg				REV	QUAL
								QUAL	CODE
Sample ID: IJH0950-05 (PC-28 - Soil)									
Aroclor 1016	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00	U ↓	
Aroclor 1221	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00		
Aroclor 1232	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00		
Aroclor 1242	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00		
Aroclor 1248	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00		
Aroclor 1254	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00		
Aroclor 1260	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00		
Surrogate: Decachlorobiphenyl (45-145%)				83.8 %					
Sample ID: IJH0950-06 (CBC-93S - Soil)									
Aroclor 1016	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00	U ↓	
Aroclor 1221	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00		
Aroclor 1232	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00		
Aroclor 1242	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00		
Aroclor 1248	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00		
Aroclor 1254	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00		
Aroclor 1260	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00		
Surrogate: Decachlorobiphenyl (45-145%)				85.0 %					
Sample ID: IJH0950-07 (CBC-94SW - Soil)									
Aroclor 1016	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	8/31/00	U ↓	
Aroclor 1221	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	8/31/00		
Aroclor 1232	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	8/31/00		
Aroclor 1242	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	8/31/00		
Aroclor 1248	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	8/31/00		
Aroclor 1254	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	8/31/00		
Aroclor 1260	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	8/31/00		
Surrogate: Decachlorobiphenyl (45-145%)				89.8 %					

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**LEVEL V**

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 Pat Abe  
 Project Manager

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IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJH0950

Sampled: 08/28/00  
 Received: 08/28/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting	Sample	Dilution	Date	Date	Data		
			Limit	Result				Factor	Extracted	Analyzed
			ug/kg	ug/kg					REV	QUA
									QUAL	COD
Sample ID: IJH0950-08 (CBC-51SW - Soil)										
Aroclor 1016	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00	↓	*	
Aroclor 1221	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1232	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1242	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1248	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1254	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1260	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Surrogate: Decachlorobiphenyl (45-145%)				88.6 %						
Sample ID: IJH0950-16 (PC-28D - Soil)										
Aroclor 1016	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00	↓	U	
Aroclor 1221	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1232	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1242	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1248	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1254	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Aroclor 1260	EPA 3550/8082	I0H2928	50	ND	1	8/29/00	9/5/00			
Surrogate: Decachlorobiphenyl (45-145%)				89.2 %						

\* = NOT VALIDATED

AMEC VALIDATED

# LEVEL V

Del Mar Analytical, Irvine  
 Pat Abe  
 Project Manager

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IJH0950 <Page 4 of 9>



# **DATA VALIDATION REPORT**

## **Rocketdyne Former Sodium Disposal Facility Site Sampling Program**

**ANALYSIS: PCB Congeners**

**SAMPLE DELIVERY GROUP: IJH0950**

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: Former Sodium Disposal Facility Site Sampling Program  
Contract Task Order #: 313150008  
SDG#: IJH0950  
Project Manager: D. Hambrick  
Matrix: Soil  
Analysis: PCB Congeners  
QC Level: IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: H. Chang  
Date of Review: March 12, 2002

The samples listed in Table 1 were validated based on the guidelines outlined in the USEPA CLP *National Functional Guidelines For Organic Data Review* (2/94) and USEPA Method 1668, Revision A (12/99). Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
CAC-66BC	CAC-66BC	268-92-11	soil	1668M
CAC-69BC	CAC-69BC	268-92-12	soil	1668M

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples were received at both Del Mar Analytical and Triangle Laboratories intact and within the temperature limits of 4°C " 2°C. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC from the field to Del Mar Analytical was legible and was signed by field and laboratory personnel. The COC accounted for the samples in the SDG. Although there was no specific information regarding the custody seals, the COC noted that the sample integrity was intact. There was no COC from Del Mar Analytical to Triangle Laboratories; however, the Triangle's Login-in Record showed that the custody seals and sample seals were present and intact. No qualifications were required based on custody information.

#### 2.1.3 Holding Times

There are no established holding times for this method. The Method 1668 allows up to one year for the extraction and analyses of the dioxin-like PCBs. Both samples were extracted and analyzed within 1 year of sampling; therefore, no qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

The laboratory analyzed a retention windows check at prior to initial calibration analyses. The retention windows check contained the first and last eluting isomers for level of chlorination, establishing the windows for the total CBs. The laboratory utilized a DB-35 column for which there are no evaluation criteria for the compound specificity and the laboratory did not perform any check for GC column separation of the target compounds. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable. M/Z 218.98565 and M/Z 263.9871 were used as the PFK reference ion. No qualifications were required.

### 2.3 CALIBRATION



Following are findings associated with calibrations.

### 2.3.1 Initial Calibration

There were two initial calibrations associated with this SDG, dated 09/22/00 and 10/02/00. The %RSDs were less than 20% for all compounds. All reported ion abundance ratios were within the QC limits and the signal-to-noise ratios (S/N) were greater than 10 for all target compounds. A representative number of %RSDs, average RRFs, and ion abundance ratios were calculated by the reviewer. No calculation or transcription errors were noted. No qualifications were applied.

The laboratory utilized ions other than those listed in the Method 1668 for several of the homologues. The ion abundance ratios were evaluated using the windows provided by the laboratory.

### 2.3.2 Continuing Calibration

Although the laboratory provided summary reports for two continuing calibrations, they were both mid-level standards (CS3) analyzed as part of the initial calibrations, and not separate continuing calibration verifications. Since the samples were analyzed within 12 hours of the initial calibration analyses, a separate beginning continuing calibration verification was not deemed necessary. The laboratory did not analyze a continuing calibration verification at the end of the 12 hour sequence. No qualifications were required.

## 2.4 BLANKS

One method blank was extracted and analyzed with the samples of this SDG. There were detects for 2,2',3,4,4',5,5'-heptaCB, total triCB, total tetraCB, total hexaCB, and total heptaCB. The detects in the associated samples were at concentrations greater than five times those in the blank, therefore, no qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

There was one pair of LCS/LCSD extracted and analyzed with the samples in this SDG. The laboratory did not provide any QC limits. The QC limits of 50-150% for the native and 35-135% for the labeled compounds listed in Method 1668 were used for the data validation purposes. The limit of 20% for the RPDs was utilized. All LCS/LCSD recoveries and RPDs were within these QC limits with the exception of the 2,2',3,3',4,4',5-heptaCB recovery in the LCSD above QC limits and the 2,3,3',4,4',5-hexaCB RPD. No qualifications were required. The recoveries were calculated from the raw data and no calculation or transcription errors were found.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed on any of the samples. Evaluation of method accuracy and

precision was based on the LCS/LCSD results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples were evaluated and, if necessary, qualified based on method blanks only (see Section 2.4). Remaining detects were then used to qualify the samples. The following are findings associated with field QC samples:

### 2.7.1 Field Blanks and Equipment Rinsates

There were no identified field QC samples associated with the samples in this SDG. No qualifications were required.

### 2.7.2 Field Duplicates

There were no field duplicates identified in this SDG. No qualifications were required.

## 2.8 INTERNAL STANDARDS PERFORMANCE

The laboratory utilized 12 carbon-13 labeled PCB congeners as the internal standards. All internal standard recoveries were within the QC limits of 25-150% with the exception of 13C-2,2',4,5,5'-pentaCB and 13C-3,3',4,4',5,5'-hexaCB which were recovered above the upper limit in both samples. Since 13C-2,2',4,5,5'-pentaCB was utilized for quantitation of only the unknown CBs, total pentaCB was qualified as estimated, "J." 13C-3,3',4,4',5,5'-hexaCB was utilized for quantitation of all named hexaCBs, therefore, the detects for 2,3,4,4',5,5'-HexaCB, 2,3,3',4,4',5-hexaCB, 2,3,3',4,4',5-hexaCB, and total hexaCB were qualified as estimated, "J." No other qualifications were required.

## 2.9 TARGET COMPOUND IDENTIFICATION

The laboratory analyzed for 14 dioxin-like PCB congeners by high resolution GC/MS. Although there was no specific reference to any published method, the guidelines in Method 1668 and Method 8290 were utilized for the validation. Identification of the reported detects was verified from the raw data for a representative number of samples. The detects met the criteria for the signal-to-noise ratio and ion abundance ratios. However, the quantitation ions should reach maximum simultaneously (within "2 seconds) for all detects for positive identification. As the laboratory did not record retention times in any of the spectra and the summary quantitation report recorded the retention time of only one of the two ions, this identification criteria could not be verified.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

The compound quantitations were verified from the raw data for a representative number of reported detects and no errors were noted. The compounds denoted with the laboratory qualifier, "J," were detects reported below the lower method calibration limit (MCL). The concentrations of 2,3,4,4',5-pentaCB, two

unknown pentaCB and two unknown hexaCB in sample CAC-69BC exceeded the linear range of the calibration. The results for 2,3,4,4',5-pentaCB, total pentaCB and total hexaCB were qualified as estimated, "J."

The reported detection limits were compound-specific detection limits calculated based on 2.5 times the height of the noise. The detection limit calculations were also verified from the raw data and no errors were noted.

The compounds reported only at the "Estimated Maximum Possible Concentration" (EMPC) on the associated sample results summary forms were qualified as estimated nondetects, "UJ." The compounds reported at the EMPC, by definition, are signals which do not meet the ion abundance ratio identification criteria (although retention time and signal to noise criteria are met); therefore, all EMPCs are considered nondetects. Any reported total results which were also reported as EMPCs were qualified as estimated, "J," since those results include at least one or more individual target compound congener results meeting all identification criteria, as well as peaks not meeting criteria.

# Del Mar Analytical

TLI Project: **51765B**  
 Client Sample: **IJH0950-12**

WHO Polychlorinated Biphenyls Analysis  
 Analysis File: **W001902**

Client Project: <b>IJH0950</b>	Date Received: <b>08/30/2000</b>	Spike File: <b>SPPCB810</b>
Sample Matrix: <b>SOIL</b>	Date Extracted: <b>09/08/2000</b>	ICal: <b>WPC9220</b>
TLI ID: <b>268-92-11</b>	Date Analyzed: <b>09/23/2000</b>	ConCal: <b>W001888</b>
Sample Size: <b>10.010 g</b>	Dilution Factor: <b>n/a</b>	% Moisture: <b>2.9</b>
Dry Weight: <b>9.720 g</b>	Blank File: <b>W001979</b>	% Lipid: <b>n/a</b>
GC Column: <b>DB-35</b>	Analyst: <b>JMM</b>	% Solids: <b>97.1</b>

Analytes	Conc. (ppb)	NumFor	DL	EMPC	Rev Qual	Qual Code	Ratio	RT	Flags
3,4,4',5-TetraCB (#81)	0.08						0.84	17:34	—
3,3',4,4'-TetraCB (#77)	EMPC			0.06	UJ	Y10			—
2,3,4,4',5-PentaCB (#114)	0.74						0.60	18:27	—
2,3',4,4',5-PentaCB (#118)	1.5						0.61	18:41	—
2',3,4,4',5-PentaCB (#123)	0.08						0.65	19:23	—
2,3,3',4,4'-PentaCB (#105)	0.55						0.62	20:15	—
3,3',4,4',5-PentaCB (#126)	0.03				J		0.54	21:32	J
2,3',4,4',5,5'-HexaCB (#167)	0.16				J	T	1.25	21:51	Q
2,3,3',4,4',5-HexaCB (#156)	0.18				J	I	1.24	23:15	Q
2,3,3',4,4',5'-HexaCB (#157)	0.10				J	I	1.25	23:35	Q
3,3',4,4',5,5'-HexaCB (#169)	ND		0.004		U				—
2,2',3,4,4',5,5'-HeptaCB (#180)	1.6						0.99	23:27	—
2,2',3,3',4,4',5-HeptaCB (#170)	1.4						0.98	25:27	—
2,3,3',4,4',5,5'-HeptaCB (#189)	0.07						1.06	26:50	—
Total MonoCB	EMPC			0.004	UJ	Y10			—
Total DiCB	0.14	3		0.15	J	Y10			—
Total TriCB	0.17	9		0.19	↓	↓			—
Total TetraCB	1.5	17		1.7	↓	↓			—
Total PentaCB	9.8	23		10.0	J	I			Q
Total HexaCB	19.1	25		19.1	J	I			—
Total HeptaCB	7.3	16							—
Total OctaCB	0.70	7		0.72	J	Y10			—
Total NonaCB	0.08	2							—
DecaCB (#209)	ND		0.04		U				—

# LEVEL IV

## AMEC VALIDATED

# Del Mar Analytical

TLI Project: **51765B**  
 Client Sample: **IJH0950-13**

WHO Polychlorinated Biphenyls Analysis  
 Analysis File: **W001903**

Client Project: <b>IJH0950</b>	Date Received: <b>08/30/2000</b>	Spike File: <b>SPPCB810</b>
Sample Matrix: <b>SOIL</b>	Date Extracted: <b>09/08/2000</b>	ICal: <b>WPC9220</b>
TLI ID: <b>268-92-12</b>	Date Analyzed: <b>09/23/2000</b>	ConCal: <b>W001888</b>
Sample Size: <b>10.000 g</b>	Dilution Factor: <b>n/a</b>	% Moisture: <b>2.5</b>
Dry Weight: <b>9.750 g</b>	Blank File: <b>W001979</b>	% Lipid: <b>n/a</b>
GC Column: <b>DB-35</b>	Analyst: <b>JMM</b>	% Solids: <b>97.5</b>

Analytes	Conc. (ppb)	NumPer	DL	EMPC	Rev Qual	Qual Code	Ratio	RT	Flags
3,4,4',5-TetraCB (#81)	0.20						0.88	17:35	—
3,3',4,4'-TetraCB (#77)	EMPC			0.24	J				—
2,3,4,4',5-PentaCB (#114)	5.1						0.61	18:27	—
2,3',4,4',5-PentaCB (#118)	23.0				J	#10	0.62	18:41	E
2',3,4,4',5-PentaCB (#123)	0.50						0.60	19:23	—
2,3,3',4,4'-PentaCB (#105)	9.0						0.62	20:16	—
3,3',4,4',5-PentaCB (#126)	0.06						0.62	21:32	—
2,3',4,4',5,5'-HexaCB (#167)	0.41				J	I	1.13	21:51	Q
2,3,3',4,4',5-HexaCB (#156)	1.0				J	I	1.18	23:15	Q
2,3,3',4,4',5'-HexaCB (#157)	0.27				J	I	1.18	23:35	Q
3,3',4,4',5,5'-HexaCB (#169)	ND		0.005		u				—
2,2',3,4,4',5,5'-HeptaCB (#180)	4.7						0.98	23:27	—
2,2',3,3',4,4',5-HeptaCB (#170)	4.0						0.98	25:27	—
2,3,3',4,4',5,5'-HeptaCB (#189)	0.21						1.05	26:50	—
Total MonoCB	0.003	1							—
Total DiCB	0.13	3		0.14	J	#10			—
Total TriCB	0.49	13							—
Total TetraCB	10.3	22		10.8	J	#10			—
Total PentaCB	81.1	25		81.6	J	I, #10			QE
Total HexaCB	55.7	27		55.7	J	I, #10			E
Total HeptaCB	20.9	15							—
Total OctaCB	2.3	9							—
Total NonaCB	0.23	3							—
DecaCB (#209)	ND		0.08		u				—

LEVEL IV

AMEC VALIDATED



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303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: IJF0313  
Matrix: Soil  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: March 13, 2002  
Reviewer: M. Pokorny  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: CCC-24B

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	The sample was received intact and in good condition at 4°C. The sample in this SDG was accounted for on the COC.  The soil sample was extracted within the 14 day holding time and analyzed within 40 days of extraction.	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was analyzed with the sample of this SDG. No target analyte detects were reported in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil blank spike was analyzed with the sample in this SDG. All percent recoveries were within the laboratory QC limits of 60-115%.	No qualifications were required.
6. <u>Surrogates</u>	All QC and site sample surrogate recoveries were within laboratory QC limits of 45-145%.	No qualifications were required.
7. <u>MS/MSDs</u>	An MS/MSD was not analyzed with this SDG. Method accuracy was evaluated based on blank spike results.	No qualifications were required.

	Findings	Qualifications
8. <u>Field QC Samples</u>  ER: None FB: None Duplicates: None	No field QC samples were associated with this SDG.	No qualifications were required.
9. <u>Other</u>	Reporting limits and results were reported on a wet-weight basis.	No qualifications were required.
<u>Comments</u>	None	No qualifications were required.

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<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJF0313

Sampled: 06/08/00  
Received: 06/08/00

## POLYCHLORINATED BIPHENYLS (EPA 3550B/8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REV QUAL
Sample ID: IJF0313-01 (CCC-24B - Soil)								QUAL CODE
Aroclor 1016	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	U
Aroclor 1221	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1232	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1242	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1248	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1254	EPA 3550/8082	I0F1210	50	ND	1	06/12/00	06/14/00	
Aroclor 1260	EPA 3550/8082	I0F1210	50	200	1	06/12/00	06/14/00	A-01
Surrogate: Decachlorobiphenyl (45-145%)				89.2 %				

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Del Mar Analytical, Irvine  
Pat Abe  
Project Manager

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IJF0313 < 2 of 4>





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## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: IJG0192  
Matrix: Soil  
No. of Samples: 6  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: March 13, 2002  
Reviewer: M. Pokorny  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: CBC-49S, CBC-50S, CBC-52SW, CBC-56SW, CBC-57SW, CBC-55S

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	All samples were received intact and in good condition at 4°C. The samples in this SDG were accounted for on the COC.  The soil samples were extracted within the 14 day holding time and analyzed within 40 days of extraction.	No qualifications were required.
4. <u>Method Blanks</u>	Two soil method blanks were analyzed with the samples of this SDG. No target analyte detects were reported in the method blanks.	No qualifications were required.
5. <u>LCS/BS</u>	Two soil blank spikes were analyzed with the samples in this SDG. All percent recoveries were within the laboratory QC limits of 60-115%.	No qualifications were required.
6. <u>Surrogates</u>	All QC and site sample surrogate recoveries were within laboratory QC limits of 45-145%.	No qualifications were required.
7. <u>MS/MSDs</u>	An MS/MSD was not analyzed with this SDG. Method accuracy was evaluated based on blank spike results.	No qualifications were required.

	Findings	Qualifications
8. <u>Field QC Samples</u>  ER: None FB: None Duplicates: None	No field QC samples were associated with this SDG.	No qualifications were required.
9. <u>Other</u>	Reporting limits and results were reported on a wet-weight basis.	No qualifications were required.
<u>Comments</u>	None	No qualifications were required.

---

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJG0192

Sampled: 07/10/00  
 Received: 07/10/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers		
				ug/kg	ug/kg	REV QUAL QUAL CODE				
Sample ID: IJG0192-01 (CBC-48S - Soil)										
Aroclor 1016	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	* ↓		
Aroclor 1221	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1232	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1242	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1248	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1254	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1260	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Surrogate: Decachlorobiphenyl (45-145%)				84.4 %						
Sample ID: IJG0192-02 (CBC-49S - Soil)										
Aroclor 1016	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	U ↓		
Aroclor 1221	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1232	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1242	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1248	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1254	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1260	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Surrogate: Decachlorobiphenyl (45-145%)				81.4 %						
Sample ID: IJG0192-03 (CBC-50S - Soil)										
Aroclor 1016	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	U ↓		
Aroclor 1221	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1232	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1242	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1248	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1254	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1260	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Surrogate: Decachlorobiphenyl (45-145%)				89.2 %						

\* = NOT VALIDATED

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 Project Manager

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601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJG0192

Sampled: 07/10/00  
Received: 07/10/00

### POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	REV QUAL	QUAI CODE
<b>Sample ID: IJG0192-04 (CBC-52SW - Soil)</b>				ug/kg	ug/kg					
Aroclor 1016	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	U		
Aroclor 1221	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1232	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1242	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1248	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1254	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1260	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Surrogate: Decachlorobiphenyl (45-145%)					86.8 %					
<b>Sample ID: IJG0192-05 (CBC-54SW - Soil)</b>										
Aroclor 1016	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	*		
Aroclor 1221	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1232	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1242	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1248	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1254	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1260	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Surrogate: Decachlorobiphenyl (45-145%)					84.4 %					
<b>Sample ID: IJG0192-06 (CBC-56SW - Soil)</b>										
Aroclor 1016	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	U		
Aroclor 1221	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1232	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1242	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1248	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1254	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Aroclor 1260	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00			
Surrogate: Decachlorobiphenyl (45-145%)					93.4 %					

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 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJG0192

Sampled: 07/10/00  
 Received: 07/10/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REL QUAL QUAL CODE
<b>Sample ID: IJG0192-07 (CBC-57SW - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	U ↓
Aroclor 1221	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	
Aroclor 1232	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	
Aroclor 1242	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	
Aroclor 1248	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	
Aroclor 1254	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	
Aroclor 1260	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	
Surrogate: Decachlorobiphenyl (45-145%)				83.2 %				

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LEVEL V

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 Project Manager

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 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJG0104

Sampled: 07/06/00  
 Received: 07/06/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			ug/kg	ug/kg				REV QUAL
<b>Sample ID: IJG0104-03 (CBC-53S - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	*
Aroclor 1221	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	*
Aroclor 1232	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	*
Aroclor 1242	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	*
Aroclor 1248	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	*
Aroclor 1254	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	*
Aroclor 1260	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	*
Surrogate: Decachlorobiphenyl (45-145%)				93.4 %				
<b>Sample ID: IJG0104-05 (CBC-55S - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	U
Aroclor 1221	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	U
Aroclor 1232	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	U
Aroclor 1242	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	U
Aroclor 1248	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	U
Aroclor 1254	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	U
Aroclor 1260	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	U
Surrogate: Decachlorobiphenyl (45-145%)				89.2 %				
<b>Sample ID: IJG0104-08 (CBC-58SW - Soil)</b>								
Aroclor 1016	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	*
Aroclor 1221	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	*
Aroclor 1232	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	*
Aroclor 1242	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	*
Aroclor 1248	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	*
Aroclor 1254	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	*
Aroclor 1260	EPA 3550/8082	I0G1236	50	ND	1	7/12/00	7/13/00	*
Surrogate: Decachlorobiphenyl (45-145%)				77.2 %				

\* = NOT VALIDATED

AMEC VALIDATED

LEVEL V

Del Mar Analytical, Irvine  
 Pat Abe  
 Project Manager

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## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: PCBs by EPA Method 8082  
QC Level: V<sup>1</sup>  
SDG: IJI0055  
Matrix: Soil  
No. of Samples: 6  
No. of Reanalyses/Dilutions: 0  
Date Reviewed: March 13, 2002  
Reviewer: M. Pokorny  
Reference: National Functional Guidelines For Organic Data Review (2/94)  
Samples Reviewed: CAC-95B, CBC-96SW, CBC-97SW, CBC-98S, CBC-99SW, CBC-97SWD

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	All samples were received intact and in good condition at 4°C. The samples in this SDG were accounted for on the COC.  The soil samples were extracted within the 14 day holding time and analyzed within 40 days of extraction.	No qualifications were required.
4. <u>Method Blanks</u>	One soil method blank was analyzed with the samples of this SDG. No target analyte detects were reported in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One soil blank spike was analyzed with the samples in this SDG. All percent recoveries were within the laboratory QC limits of 60-115%.	No qualifications were required.
6. <u>Surrogates</u>	All QC and site sample surrogate recoveries were within laboratory QC limits of 45-145%.	No qualifications were required.
7. <u>MS/MSDs</u>	An MS/MSD was not analyzed with this SDG. Method accuracy was evaluated based on blank spike results.	No qualifications were required.

	Findings	Qualifications
8. <u>Field QC Samples</u>  ER: None FB: None Duplicates: CBC-97SW/CBC-97SWD	Neither of the field duplicate samples had any target compound detects.	No qualifications were required.
9. <u>Other</u>	Reporting limits and results were reported on a wet-weight basis.	No qualifications were required.
<u>Comments</u>	None	No qualifications were required.

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<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJI0055

Sampled: 09/01/00  
 Received: 09/01/00

### POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting	Sample	Dilution	Date	Date	Data		
			Limit	Result				Factor	Extracted	Analyzed
			ug/kg	ug/kg					REV	QUAL
									QUAL	CODE
Sample ID: IJI0055-04 (CBC-98S - Soil)										
Aroclor 1016	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00	U ↓		
Aroclor 1221	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1232	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1242	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1248	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1254	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1260	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Surrogate: Decachlorobiphenyl (45-145%)				82.0 %						
Sample ID: IJI0055-05 (CBC-99SW - Soil)										
Aroclor 1016	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00	U ↓		
Aroclor 1221	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1232	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1242	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1248	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1254	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1260	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Surrogate: Decachlorobiphenyl (45-145%)				79.0 %						
Sample ID: IJI0055-06 (CBC-97SWD - Soil)										
Aroclor 1016	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00	U ↓		
Aroclor 1221	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1232	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1242	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1248	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1254	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1260	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Surrogate: Decachlorobiphenyl (45-145%)				75.4 %						

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 Project Manager

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IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJI0055

Sampled: 09/01/00  
 Received: 09/01/00

## POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	REV QUAL	QUAL CODE
			ug/kg	ug/kg						
Sample ID: IJI0055-01 (CAC-95B - Soil)										
Aroclor 1016	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00	U		
Aroclor 1221	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1232	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1242	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1248	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1254	EPA 3550/8082	I0I0523	50	98	1	9/5/00	9/6/00			
Aroclor 1260	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00	U		
Surrogate: Decachlorobiphenyl (45-145%)				68.3 %						
Sample ID: IJI0055-02 (CBC-96SW - Soil)										
Aroclor 1016	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00	U		
Aroclor 1221	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1232	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1242	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1248	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1254	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1260	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Surrogate: Decachlorobiphenyl (45-145%)				92.2 %						
Sample ID: IJI0055-03 (CBC-97SW - Soil)										
Aroclor 1016	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00	U		
Aroclor 1221	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1232	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1242	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1248	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1254	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Aroclor 1260	EPA 3550/8082	I0I0523	50	ND	1	9/5/00	9/6/00			
Surrogate: Decachlorobiphenyl (45-145%)				82.6 %						

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# **DATA VALIDATION REPORT**

## **Rocketdyne Former Sodium Disposal Facility Site Sampling Program**

**ANALYSIS: SEMIVOLATILES**

**SAMPLE DELIVERY GROUP: IJI0547**

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: Rocketdyne  
Former Sodium Disposal Facility Site Sampling Program  
Contract Task Order #: 313150008  
SDG#: IJI0547  
Project Manager: D. Hambrick  
Matrix: Soil  
Analysis: Semivolatiles  
QC Level: IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: D. Buckheister  
Date of Review: March 6, 2002

The samples listed in Table 1 were validated based on the guidelines outlined in the AMEC *Project Procedures Manual* data validation procedure for semivolatile organics (DVP-3, Rev. 2), (USEPA SW-846 Method 8270, and data validation guidelines outlined in the USEPA CLP *National Functional Guidelines For Organic Data Review* (2/94). Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
PCS-29	PCS-29	IJI0547-01	soil	8270C
PCS-31	PCS-31	IJI0547-04	soil	8270C

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The COC noted that the samples in this SDG were received intact and within the temperature limits of 4°C " 2°C. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was legible and was signed by field and laboratory personnel. The case narrative noted that the cooler was received with custody seals. The COC accounted for the samples in the SDG. No qualifications were required based on sample receipt information.

#### 2.1.3 Holding Times

The samples were extracted within 14 days of sample collection and analyzed within forty days of extraction. No qualifications were required.

### 2.2 GC/MS TUNING

The DFTPP tunes associated with this SDG met the SW-846 Method 8270C ion abundance criteria. The sample analyses were performed within 12 hours of the DFTPP injection time. DFTPP calculations were checked from the raw data for a representative number of ion ratios and no calculation errors were found. No qualifications were required.

### 2.3 CALIBRATION

For the evaluation of initial calibrations, the SW-846 Method 8270C QC limit of 15%RSD was used for target compounds which were quantitated using average fit. When linear or quadratic fit was used, the AMEC Data Validation Procedure criteria of 0.995 was used as a minimum  $r^2$  value, rather than the less stringent SW-846 Method requirement of 0.990. For the evaluation of continuing calibrations, the QC limit of 20%D was used for all target compounds. A minimum 0.05 average RRF for initial calibrations, and 0.05 RRF for continuing calibrations was used for the evaluation of all target compounds.

#### 2.3.1 Initial Calibration

There was one initial calibration associated with this SDG, dated 08/24/00. All %RSD values were less than 15%, with the exception of the %RSD values for benzoic acid, 4-chloro-3-methylphenol, 2,4-dichlorophenol, 4,6-dinitro-2-methylphenol, 2,4-dinitrophenol, di-n-octylphthalate, 4-nitroaniline, 4-nitrophenol, N-nitrosodiphenylamine, pentachlorophenol, 2,4,5-trichlorophenol, and 2,4,6-trichlorophenol. 2,4-Dinitrophenol was reprocessed using quadratic fit. Benzoic acid, 4,6-dinitro-2-methylphenol, 4-T703SV1

nitrophenol, and 2,4,5-trichlorophenol were reprocessed using a linear regression calculation. The  $r^2$  value for 4,6-dinitro-2-methylphenol was  $\geq 0.995$ . The  $r^2$  values for benzoic acid and 2,4,5-trichlorophenol were not presented with the raw data and were calculated by the reviewer. The  $r^2$  values for benzoic acid, 4,6-dinitro-2-methylphenol, 2,4-dinitrophenol, 4-nitrophenol, and 2,4,5-trichlorophenol were all  $< 0.995$ . Nondetect results for benzoic acid, 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2,4-dinitrophenol, di-n-octylphthalate, 4-nitroaniline, 4-nitrophenol, N-nitrosodiphenylamine, pentachlorophenol, 2,4,5-trichlorophenol, and 2,4,6-trichlorophenol were qualified as estimated, "UJ," in both of the samples in this SDG. Calculations of average RRFs and %RSDs were checked from the raw data for a representative number of compounds and no calculation errors were found. No further qualifications were required.

### 2.3.2 Continuing Calibration

There was one continuing calibration analyzed 09/19/00 associated with the samples of this SDG. All RRFs were greater than or equal to 0.05, and all %Ds were less than 20% with the exception of the %Ds for benzoic acid, 4-nitrophenol, and pyrene. Nondetect results for the aforementioned compounds were qualified as estimated, "UJ," in both of the samples in this SDG. Calculations of RRFs and %Ds were checked from the raw data for a representative number of compounds and no calculation errors were found. No further qualifications were required.

## 2.4 BLANKS

There was one method blank (I0I1929-BLK1) associated with this SDG. No target compounds were reported in the method blank. TICs were not reported in the data package (see section 2.12). The raw data was reviewed for false negatives and none were found. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

There was one blank spike (I0I1929-BS1) associated with the sample in this SDG. Recoveries for all spiked target compounds were within the laboratory-established QC limits. A representative number of percent recoveries were calculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

All sample surrogate recoveries were within the laboratory-established QC limits. A representative number of percent recoveries were calculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Although a sample was analyzed as the MS/MSD with this extraction batch, it was not associated with one of the site samples in this SDG. All recoveries were within the laboratory QC limits of 20-140% in both the MS and MSD, and all RPDs were less than QC limit of 40%. Although batch accuracy and precision

were demonstrated, the MS/MSD results are not necessarily representative of this client's samples. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated and, if necessary, qualified based on method blanks only (see Section 2.4). Remaining detects were then used to qualify the samples. The following are findings associated with field QC samples:

### 2.8.1 Field Blanks and Equipment Rinsates

There were no field blank or equipment rinsate samples analyzed by Method 8270C associated with the samples in this SDG. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate pairs associated with this package. Field duplicates are required at a rate of 10% per matrix for site samples only; therefore, field duplicates are not required in every package. No qualifications were required.

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standards area counts and retention times for all site samples were within the SW-846 Method 8270C control limits of +100%/-50% and " 30 seconds established by the continuing calibration standards. Internal standard areas and retention times were checked from the raw data, and no problems were noted. No qualifications were required.

## 2.10 TARGET COMPOUND IDENTIFICATION

The laboratory analyzed for a semivolatile target compound list of 68 compounds listed in Method 8270C as compounds which can be analyzed by that method. Chromatograms, retention times, and spectra were examined, and no problems were noted. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

The reporting limits were consistent with the SW-846 Method 8270C quantitation limits. Reporting limits were not adjusted for sample percent moisture. As there were no reported detects in the samples in this SDG, compound quantification was verified by recalculating a representative number of surrogate and blank spike concentrations. No calculation errors were noted. No qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

TICs were not reported with the samples of this SDG. No qualifications were required.



## **2.13 SYSTEM PERFORMANCE**

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJI0547

Sampled:09/15/00  
Received:09/15/00

### SEMI-VOLATILE ORGANICS BY GC/MS (EPA 8270C)

Analyte	Method	Batch	Reporting	Sample	Dilution	Date	Date	Data	
			Limit	Result				Qualifiers	
			ug/kg	ug/kg				Rev	Qual
Sample ID: IJI0547-01 (PCS-29 - Soil)									
Acenaphthene	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00	u	
Acenaphthylene	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00		
Aniline	EPA 8270C	I0I1929	150	ND	1	9/19/00	9/19/00		
Anthracene	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00		
Azobenzene	EPA 8270C	I0I1929	150	ND	1	9/19/00	9/19/00		
Benizidine	EPA 8270C	I0I1929	1000	ND	1	9/19/00	9/19/00		
Benzoic acid	EPA 8270C	I0I1929	500	ND	1	9/19/00	9/19/00	u	c
Benzo(a)anthracene	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00	u	
Benzo(b)fluoranthene	EPA 8270C	I0I1929	200	ND	1	9/19/00	9/19/00		
Benzo(k)fluoranthene	EPA 8270C	I0I1929	200	ND	1	9/19/00	9/19/00		
Benzo(g,h,i)perylene	EPA 8270C	I0I1929	150	ND	1	9/19/00	9/19/00		
Benzo(a)pyrene	EPA 8270C	I0I1929	200	ND	1	9/19/00	9/19/00		
Benzyl alcohol	EPA 8270C	I0I1929	200	ND	1	9/19/00	9/19/00		
Bis(2-chloroethoxy)methane	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00		
Bis(2-chloroethyl)ether	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00		
Bis(2-chloroisopropyl)ether	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00		
Bis(2-ethylhexyl)phthalate	EPA 8270C	I0I1929	500	ND	1	9/19/00	9/19/00		
4-Bromophenyl phenyl ether	EPA 8270C	I0I1929	150	ND	1	9/19/00	9/19/00		
Butyl benzyl phthalate	EPA 8270C	I0I1929	500	ND	1	9/19/00	9/19/00		
4-Chloroaniline	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00		
2-Chloronaphthalene	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00		
4-Chloro-3-methylphenol	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00	u	c
2-Chlorophenol	EPA 8270C	I0I1929	250	ND	1	9/19/00	9/19/00	u	
4-Chlorophenyl phenyl ether	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00		
Chrysene	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00		
Dibenz(a,h)anthracene	EPA 8270C	I0I1929	250	ND	1	9/19/00	9/19/00		
Dibenzofuran	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00		
Di-n-butyl phthalate	EPA 8270C	I0I1929	250	ND	1	9/19/00	9/19/00		
1,3-Dichlorobenzene	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00		
1,4-Dichlorobenzene	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00		
1,2-Dichlorobenzene	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00		
3,3-Dichlorobenzidine	EPA 8270C	I0I1929	500	ND	1	9/19/00	9/19/00		
2,4-Dichlorophenol	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00	u	c
Diethyl phthalate	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00	u	
2,4-Dimethylphenol	EPA 8270C	I0I1929	250	ND	1	9/19/00	9/19/00		
Dimethyl phthalate	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00		
4,6-Dinitro-2-methylphenol	EPA 8270C	I0I1929	250	ND	1	9/19/00	9/19/00		
2,4-Dinitrophenol	EPA 8270C	I0I1929	250	ND	1	9/19/00	9/19/00	u	c
2,4-Dinitrotoluene	EPA 8270C	I0I1929	100	ND	1	9/19/00	9/19/00	u	

Del Mar Analytical, Irvine  
Pat Abe  
Project Manager

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601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne

870071

Report Number: IJ10547

Sampled:09/15/00

Received:09/15/00

## SEMI-VOLATILE ORGANICS BY GC/MS (EPA 8270C)

Analyte	Method	Batch	Reporting Limit ug/kg	Sample Result ug/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers Rev Qual Qual Code
Sample ID: IJ10547-01 (PCS-29 - Soil)								
2,6-Dinitrotoluene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u u
Di-n-octyl phthalate	EPA 8270C	I011929	500	ND	1	9/19/00	9/19/00	u u c
Fluoranthene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u
Fluorene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u
Hexachlorobenzene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u
Hexachlorobutadiene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u
Hexachlorocyclopentadiene	EPA 8270C	I011929	500	ND	1	9/19/00	9/19/00	u
Hexachloroethane	EPA 8270C	I011929	200	ND	1	9/19/00	9/19/00	u
Indeno(1,2,3-cd)pyrene	EPA 8270C	I011929	200	ND	1	9/19/00	9/19/00	u
Isophorone	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u
2-Methylnaphthalene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u
2-Methylphenol	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	u
4-Methylphenol	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	u
Naphthalene	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	u
2-Nitroaniline	EPA 8270C	I011929	200	ND	1	9/19/00	9/19/00	u
3-Nitroaniline	EPA 8270C	I011929	200	ND	1	9/19/00	9/19/00	u
4-Nitroaniline	EPA 8270C	I011929	500	ND	1	9/19/00	9/19/00	u
Nitrobenzene	EPA 8270C	I011929	500	ND	1	9/19/00	9/19/00	u c
2-Nitrophenol	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u
4-Nitrophenol	EPA 8270C	I011929	500	ND	1	9/19/00	9/19/00	u c
n-Nitrosodiphenylamine	EPA 8270C	I011929	200	ND	1	9/19/00	9/19/00	u c
n-Nitroso-di-n-propylamine	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	u c
Pentachlorophenol	EPA 8270C	I011929	500	ND	1	9/19/00	9/19/00	u c
Phenanthrene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u
Phenol	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	u
Pyrene	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	u c
1,2,4-Trichlorobenzene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u
2,4,5-Trichlorophenol	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	u c
2,4,6-Trichlorophenol	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	u
Surrogate: 2-Fluorophenol (25-110%)				61.0 %				u
Surrogate: Phenol-d6 (30-110%)				56.0 %				u
Surrogate: 2,4,6-Tribromophenol (45-130%)				79.5 %				u
Surrogate: Nitrobenzene-d5 (30-110%)				61.9 %				u
Surrogate: 2-Fluorobiphenyl (30-110%)				62.1 %				u
Surrogate: Terphenyl-d14 (45-145%)				86.9 %				u

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Project Manager

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IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJ10547

Sampled:09/15/00  
Received:09/15/00

### SEMI-VOLATILE ORGANICS BY GC/MS (EPA 8270C)

Analyte	Method	Batch	Reporting	Sample	Dilution	Date	Date	Data	
			Limit	Result				Qualifiers	
			ug/kg	ug/kg		Extracted	Analyzed	Rev	Qual
Sample ID: IJ10547-04 (PCS-31 - Soil)									
Acenaphthene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
Acenaphthylene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
Aniline	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	u	
Anthracene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
Azobenzene	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	u	
Benizidine	EPA 8270C	I011929	1000	ND	1	9/19/00	9/19/00	u	
Benzoic acid	EPA 8270C	I011929	500	ND	1	9/19/00	9/19/00	u	
Benzo(a)anthracene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
Benzo(b)fluoranthene	EPA 8270C	I011929	200	ND	1	9/19/00	9/19/00	u	
Benzo(k)fluoranthene	EPA 8270C	I011929	200	ND	1	9/19/00	9/19/00	u	
Benzo(g,h,i)perylene	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	u	
Benzo(a)pyrene	EPA 8270C	I011929	200	ND	1	9/19/00	9/19/00	u	
Benzyl alcohol	EPA 8270C	I011929	200	ND	1	9/19/00	9/19/00	u	
Bis(2-chloroethoxy)methane	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
Bis(2-chloroethyl)ether	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
Bis(2-chloroisopropyl)ether	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
Bis(2-ethylhexyl)phthalate	EPA 8270C	I011929	500	ND	1	9/19/00	9/19/00	u	
4-Bromophenyl phenyl ether	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	u	
Butyl benzyl phthalate	EPA 8270C	I011929	500	ND	1	9/19/00	9/19/00	u	
4-Chloroaniline	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
2-Chloronaphthalene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
4-Chloro-3-methylphenol	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
2-Chlorophenol	EPA 8270C	I011929	250	ND	1	9/19/00	9/19/00	u	
4-Chlorophenyl phenyl ether	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
Chrysene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
Dibenz(a,h)anthracene	EPA 8270C	I011929	250	ND	1	9/19/00	9/19/00	u	
Dibenzofuran	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
Di-n-butyl phthalate	EPA 8270C	I011929	250	ND	1	9/19/00	9/19/00	u	
1,3-Dichlorobenzene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
1,4-Dichlorobenzene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
1,2-Dichlorobenzene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
3,3-Dichlorobenzidine	EPA 8270C	I011929	500	ND	1	9/19/00	9/19/00	u	
2,4-Dichlorophenol	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
Diethyl phthalate	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
2,4-Dimethylphenol	EPA 8270C	I011929	250	ND	1	9/19/00	9/19/00	u	
Dimethyl phthalate	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	
4,6-Dinitro-2-methylphenol	EPA 8270C	I011929	250	ND	1	9/19/00	9/19/00	u	
2,4-Dinitrophenol	EPA 8270C	I011929	250	ND	1	9/19/00	9/19/00	u	
2,4-Dinitrotoluene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u	

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Pat Abe  
Project Manager

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LEVEL IV

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IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJ10547

Sampled:09/15/00  
 Received:09/15/00

## SEMI-VOLATILE ORGANICS BY GC/MS (EPA 8270C)

Analyte	Method	Batch	Reporting Limit ug/kg	Sample Result ug/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IJ10547-04 (PCS-31 - Soil)								
2,6-Dinitrotoluene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u
Di-n-octyl phthalate	EPA 8270C	I011929	500	ND	1	9/19/00	9/19/00	u
Fluoranthene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u
Fluorene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u
Hexachlorobenzene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	
Hexachlorobutadiene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	
Hexachlorocyclopentadiene	EPA 8270C	I011929	500	ND	1	9/19/00	9/19/00	
Hexachloroethane	EPA 8270C	I011929	200	ND	1	9/19/00	9/19/00	
Indeno(1,2,3-cd)pyrene	EPA 8270C	I011929	200	ND	1	9/19/00	9/19/00	
Isophorone	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	
2-Methylnaphthalene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	
2-Methylphenol	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	
4-Methylphenol	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	
Naphthalene	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	
2-Nitroaniline	EPA 8270C	I011929	200	ND	1	9/19/00	9/19/00	
3-Nitroaniline	EPA 8270C	I011929	200	ND	1	9/19/00	9/19/00	
4-Nitroaniline	EPA 8270C	I011929	500	ND	1	9/19/00	9/19/00	u
Nitrobenzene	EPA 8270C	I011929	500	ND	1	9/19/00	9/19/00	u
2-Nitrophenol	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u
4-Nitrophenol	EPA 8270C	I011929	500	ND	1	9/19/00	9/19/00	u
n-Nitrosodiphenylamine	EPA 8270C	I011929	200	ND	1	9/19/00	9/19/00	u
n-Nitroso-di-n-propylamine	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	u
Pentachlorophenol	EPA 8270C	I011929	500	ND	1	9/19/00	9/19/00	u
Phenanthrene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u
Phenol	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	u
Pyrene	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	u
1,2,4-Trichlorobenzene	EPA 8270C	I011929	100	ND	1	9/19/00	9/19/00	u
2,4,5-Trichlorophenol	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	u
2,4,6-Trichlorophenol	EPA 8270C	I011929	150	ND	1	9/19/00	9/19/00	u
Surrogate: 2-Fluorophenol (25-110%)				72.5 %				
Surrogate: Phenol-d6 (30-110%)				68.0 %				
Surrogate: 2,4,6-Tribromophenol (45-130%)				83.5 %				
Surrogate: Nitrobenzene-d5 (30-110%)				72.2 %				
Surrogate: 2-Fluorobiphenyl (30-110%)				73.3 %				
Surrogate: Terphenyl-d14 (45-145%)				101 %				

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 Project Manager

# LEVEL IV

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303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: General Minerals by 300.0  
QC Level: V<sup>1</sup>  
SDG: IJJ0179  
Matrix: Soil  
No. of Samples: 2  
Date Reviewed: March 08, 2002  
Reviewer: P. Meeks  
Reference: USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (2/94)  
Samples Reviewed: PCS-46B, PCS-47B

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	Temperatures were within the temperature limits of 4°±2°C. The COC matched the samples and accounted for the analyses. No custody seals information was provided. The 28 day holding time for perchlorate was met.	No qualifications were required.
3. <u>Method Blanks</u>	One method blank was analyzed with the samples in this SDG. Perchlorate was not detected in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One LCS was analyzed with the samples in this SDG. The perchlorate recovery was within the laboratory-established control limits of 90-110%.	No qualifications were required.
6. <u>Duplicates</u> Performed for PCS-46B	The RPD was less than the QC limit of 20%.	No qualifications were required.
7. <u>MS/MSDs</u> Performed for PCS-46B	The %Rs were within the laboratory-established control limits of 80-120%.	No qualifications were required.

	Findings	Qualifications
10. <u>Other</u>	The results were reported on a wet weight basis.	No qualifications were required.
11. <u>Field QC Samples</u> Field duplicates: none	None	No qualifications were required.
<u>Comments</u>	None	None

---

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



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IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJJ0179

Sampled: 10/04/00  
Received: 10/05/00

## INORGANICS

Analyte	Method	Batch	Reporting Limit mg/kg	Sample Result mg/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers Rev Qual Code
<b>Sample ID: IJJ0179-01 (PCS-46B - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0J0952	0.040	ND	1	10/9/00	10/9/00	U
<b>Sample ID: IJJ0179-02 (PCS-47B - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0J0952	0.040	ND	1	10/9/00	10/9/00	U
<b>Sample ID: IJJ0179-03 (BR-35 - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0J0952	0.040	ND	1	10/9/00	10/9/00	*

\*Analysis Not Validated

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## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: General Minerals by 300.0  
QC Level: V<sup>1</sup>  
SDG: IJH0606  
Matrix: Soil  
No. of Samples: 1  
Date Reviewed: March 08, 2002  
Reviewer: P. Meeks  
Reference: USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (2/94)  
Samples Reviewed: CBC-80S

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	Temperatures were within the temperature limits of 4°±2°C. The COC matched the sample and accounted for the analysis. No custody seal information was provided, but the COC noted that sample was received intact. The 28 day holding time for perchlorate was met.	No qualifications were required.
3. <u>Method Blanks</u>	One method blank was analyzed with the sample in this SDG. Perchlorate was not detected in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One LCS was analyzed with the sample in this SDG. The perchlorate recovery was within the laboratory-established control limits of 90-110%.	No qualifications were required.
6. <u>Duplicates</u> None	None	No qualifications were required.
7. <u>MS/MSDs</u> None	None	No qualifications were required.

	Findings	Qualifications
10. <u>Other</u>	The results were reported on a wet weight basis.	No qualifications were required.
11. <u>Field QC Samples</u> Field duplicates: none	None	No qualifications were required.
<u>Comments</u>	None	None

---

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



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 601 S. Glenoaks Boulevard, Suite 314  
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 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJH0606

Sampled: 08/17/00  
 Received: 08/17/00

## INORGANICS

Analyte	Method	Reporting Batch Limit mg/kg	Sample Result mg/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers Rev Qual Code
<b>Sample ID: IJH0606-02 (CBC-79SW - Soil)</b>							
Perchlorate	EPA 300.0 MOD.I0H2015	0.040	ND	1	8/20/00	8/20/00	*
<b>Sample ID: IJH0606-03 (CBC-79SWD - Soil)</b>							
Perchlorate	EPA 300.0 MOD.I0H2015	0.040	ND	1	8/20/00	8/20/00	*
<b>Sample ID: IJH0606-04 (CBC-80S - Soil)</b>							
Perchlorate	EPA 300.0 MOD.I0H2015	0.040	ND	1	8/20/00	8/20/00	U

\*Analysis Not Validated

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## LEVEL V

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 Pat Abe  
 Project Manager

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# **DATA VALIDATION REPORT**

**ROCKETDYNE**  
Former Sodium Disposal Facility Site Sampling

**ANALYSIS: GENERAL MINERALS**  
**SAMPLE DELIVERY GROUP: IJF0961**

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Project:	Rocketdyne Former Sodium Disposal Facility Site Sampling
Contract Task Order #:	313150008
SDG#:	IJF0961
Project Manager:	D. Hambrick
Matrix:	Soil
Analysis:	General Minerals
QC Level:	IV
No. of Samples:	23
No. of Reanalyses/Dilutions:	0
Reviewer:	P. Meeks
Date of Review:	March 06, 2002

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedures SOP DVP-6*, Rev. 2, Wet Chemistry Analysis and the *National Functional Guidelines for Inorganic Data Review* (2/94). Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on the Sample Result Forms with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
PC-1	PC-1	IJF0961-01	soil	perchlorate
PC-3	PC-3	IJF0961-03	soil	perchlorate
PC-4	PC-4	IJF0961-04	soil	perchlorate
PC-5	PC-5	IJF0961-05	soil	perchlorate
PC-6	PC-6	IJF0961-06	soil	perchlorate
PC-7	PC-7	IJF0961-07	soil	perchlorate
PC-8	PC-8	IJF0961-08	soil	perchlorate
PC-9	PC-9	IJF0961-09	soil	perchlorate
PC-10	PC-10	IJF0961-10	soil	perchlorate
PC-11	PC-11	IJF0961-11	soil	perchlorate
PC-12	PC-12	IJF0961-12	soil	perchlorate
PC-13B	PC-13B	IJF0961-13	soil	perchlorate
PC-14B	PC-14B	IJF0961-14	soil	perchlorate
PC-13T	PC-13T	IJF0961-15	soil	perchlorate
PC-14T	PC-14T	IJF0961-16	soil	perchlorate
PC-15T	PC-15T	IJF0961-17	soil	perchlorate
PC-15B	PC-15B	IJF0961-18	soil	perchlorate
PC-16T	PC-16T	IJF0961-19	soil	perchlorate
PC-16B	PC-16B	IJF0961-20	soil	perchlorate
PC-16BD	PC-16BD	IJF0961-21	soil	perchlorate
PC-17B	PC-17B	IJF0961-22	soil	perchlorate
PC-17T	PC-17T	IJF0961-23	soil	perchlorate
PC-19	PC-19	IJF0961-25	soil	perchlorate

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples arrived within the temperature limit of 4°C ± 2°C. No sample preservation, handling, or transport problems were noted, and no qualifications were required.

#### 2.1.2 Chain of Custody

The COCs in the package were legible, were signed by the field and laboratory personnel, and accounted for the analyses presented in the data package. There were no sample condition questions on the COCs, and no sample receiving checklist was included. No cooler or sample container custody seal information was provided. The case narrative, however, stated that the samples were received intact. No qualifications were required.

#### 2.1.3 Holding Times

Holding times were assessed by comparing the dates of collection with the dates of analysis. The 28 day holding time for the perchlorate analyses was met. No qualifications were necessary.

### 2.2 CALIBRATION

All perchlorate IPC, ICV, and CCV results in the raw data showed acceptable %Rs, 90-110%. The ICV was also reported as the laboratory control sample (LCS) for analytical batch IJG0537, which was associated with most of the samples in this SDG. This is permissible, according to the laboratory SOP. Additionally, a low-end calibration curve check standard was run prior to the ICV. According to the laboratory SOP, this standard may be reprepared and reanalyzed, once, if the %R falls outside the control limits of 75-125%. For the samples in this SDG, this calibration check standard was run twice with recoveries of 74.4% and 81.5%, respectively. No qualifications were required based on the calibration information.

### 2.3 BLANKS

The perchlorate results reported on the summary form and in the raw data for blank analyses associated with these samples were nondetects at the reporting limit. The ICB was also reported as the method blank for analytical batch I0G0537, which was associated with most of the samples in this SDG. This is permissible, according to the laboratory SOP, and no qualifications were necessary.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The perchlorate laboratory control samples (LCS) %Rs for these analyses were within laboratory-established control limits of 90 - 110%. The LCS for analytical batch I0G0537, which was associated with most of the samples in this SDG, was also reported as the ICV (see section 2.2). No qualifications were required.

## 2.5 LABORATORY DUPLICATES

The MS/MSD analyses were performed on samples PC-1 and PC-16BD in association with the site soil samples in this SDG. The RPD was within the established limits of "20%. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The MS/MSD analyses were performed on samples PC-1 and PC-16BD in association with the site soil samples in this SDG. The %Rs were within the laboratory-established control limits of 80-120%. No qualifications were required.

## 2.8 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for all samples in this data package. Calculations were verified, sample results reported on the Form Is were verified against the raw data, and no transcription errors or calculations errors were noted. The samples in this SDG were reported on a wet weight basis. No qualifications were necessary.

## 2.9 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.9.1 Field Blanks and Equipment Rinsates

The samples in this SDG had no associated field QC samples. No qualifications were necessary.

### 2.9.2 Field Duplicates

Samples PC-16B/PC-16BD were identified as the field duplicate pair for the samples in this SDG. Qualifications are not assigned to sample results on the basis of field duplicate pairs; however, RPDs are calculated between results for these samples. If RPDs are greater than 50% for soils, the RPDs and affected analytes are noted in the data validation report. Control limits of "4H the reporting limit is used for soil sample values <5H the reporting limit. Perchlorate was not detected in either sample.





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 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0961

Sampled: 06/28/00  
 Received: 06/28/00

## INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			mg/kg	mg/kg				Rev Qual   Qual Codes
Sample ID: IJF0961-01 (PC-1 - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	U
Sample ID: IJF0961-02 (PC-2 - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	*
Sample ID: IJF0961-03 (PC-3 - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	U
Sample ID: IJF0961-04 (PC-4 - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	↓
Sample ID: IJF0961-05 (PC-5 - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	↓
Sample ID: IJF0961-06 (PC-6 - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	↓
Sample ID: IJF0961-07 (PC-7 - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	↓
Sample ID: IJF0961-08 (PC-8 - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	↓

\*Analysis Not Validated

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 Project Manager

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 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0961

Sampled: 06/28/00  
 Received: 06/28/00

## INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			mg/kg	mg/kg				Rev Qual
Sample ID: IJF0961-09 (PC-9 - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	U
Sample ID: IJF0961-10 (PC-10 - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	
Sample ID: IJF0961-11 (PC-11 - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	
Sample ID: IJF0961-12 (PC-12 - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	
Sample ID: IJF0961-13 (PC-13B - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	
Sample ID: IJF0961-14 (PC-14B - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	
Sample ID: IJF0961-15 (PC-13T - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	
Sample ID: IJF0961-16 (PC-14T - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	

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IT Corporation/Emcon - Burbank  
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 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJF0961

Sampled: 06/28/00  
 Received: 06/28/00

## INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			mg/kg	mg/kg				Rev Qual   Qual Code
<b>Sample ID: IJF0961-17 (PC-15T - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	U
<b>Sample ID: IJF0961-18 (PC-15B - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	
<b>Sample ID: IJF0961-19 (PC-16T - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	
<b>Sample ID: IJF0961-20 (PC-16B - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0G0537	0.040	ND	1	7/5/00	7/5/00	
<b>Sample ID: IJF0961-21 (PC-16BD - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0G0552	0.040	ND	1	7/5/00	7/5/00	
<b>Sample ID: IJF0961-22 (PC-17B - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0G0552	0.040	ND	1	7/5/00	7/5/00	
<b>Sample ID: IJF0961-23 (PC-17T - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0G0552	0.040	ND	1	7/5/00	7/5/00	
<b>Sample ID: IJF0961-24 (PC-18 - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0G0552	0.040	ND	1	7/5/00	7/5/00	*

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Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJF0961

Sampled: 06/28/00  
Received: 06/28/00

## INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			mg/kg	mg/kg				Rev Qual
Sample ID: IJF0961-25 (PC-19 - Soil)								Qual Code
Perchlorate	EPA 300.0 MOD.	I0G0552	0.040	ND	1	7/5/00	7/5/00	U

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## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: General Minerals by 300.0  
QC Level: V<sup>1</sup>  
SDG: IJI0547  
Matrix: Soil  
No. of Samples: 2  
Date Reviewed: March 08, 2002  
Reviewer: P. Meeks  
Reference: USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (2/94)  
Samples Reviewed: PCS-29, PCS-31

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	Temperatures were within the temperature limits of 4°±2°C. The COC matched the samples and accounted for the analyses. No custody seal information was provided, but the COC noted that samples were received intact. The 28 day holding time for perchlorate was met.	No qualifications were required.
3. <u>Method Blanks</u>	One method blank was analyzed with the samples in this SDG. Perchlorate was not detected in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One LCS was analyzed with the samples in this SDG. The perchlorate recovery was within the laboratory-established control limits of 90-110%.	No qualifications were required.
6. <u>Duplicates</u> Performed for PCS-29	The RPD was less than the control limit of 20%.	No qualifications were required.

	Findings	Qualifications
7. <u>MS/MSDs</u> Performed for PCS-29	The MS recovery was within the laboratory-established control limits of 80-120%, but the MSD was recovered above the upper control limit.	As perchlorate was not detected in the associated site samples, no qualifications were required.
10. <u>Other</u>	The results were reported on a wet weight basis.	No qualifications were required.
11. <u>Field QC Samples</u> Field duplicates: none	None	No qualifications were required.
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

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 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJI0547

Sampled:09/15/00  
 Received:09/15/00

## INORGANICS

Analyte	Method	Batch	Reporting Limit mg/kg	Sample Result mg/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IJI0547-01 (PCS-29 - Soil)								Rev Qual
Perchlorate	EPA 300.0 MOD. I011622	0.040	ND	1	9/16/00	9/16/00	U	M
Sample ID: IJI0547-02 (PCS-30 - Soil)								
Perchlorate	EPA 300.0 MOD. I011622	0.040	0.44	1	9/16/00	9/16/00	*	
Sample ID: IJI0547-03 (PCS-32 - Soil)								
Perchlorate	EPA 300.0 MOD. I011622	0.040	0.75	1	9/16/00	9/16/00	*	
Sample ID: IJI0547-04 (PCS-31 - Soil)								
Perchlorate	EPA 300.0 MOD. I011622	0.040	ND	1	9/16/00	9/16/00	U	
Sample ID: IJI0547-05 (PCS-33B - Soil)								
Perchlorate	EPA 300.0 MOD. I011622	0.040	0.46	1	9/16/00	9/16/00	*	

PM 03/08/02

\*Analysis Not Validated

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## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: General Minerals by 300.0  
QC Level: V<sup>1</sup>  
SDG: IJI0778  
Matrix: Soil  
No. of Samples: 1  
Date Reviewed: March 08, 2002  
Reviewer: P. Meeks  
Reference: USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (2/94)  
Samples Reviewed: PCS-34

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	Temperatures were within the temperature limits of 4°±2°C. The COC matched the sample and accounted for the analysis. No custody seal information was provided, but the COC noted that the sample was received intact. The 28 day holding time for perchlorate was met.	No qualifications were required.
3. <u>Method Blanks</u>	One method blank was analyzed with the samples in this SDG. Perchlorate was not detected in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One LCS was analyzed with the samples in this SDG. The perchlorate recovery was within the laboratory-established control limits of 90-110%.	No qualifications were required.
6. <u>Duplicates</u> Performed for PCS-34	The RPD was less than the control limit of 20%.	No qualifications were required.



	Findings	Qualifications
7. <u>MS/MSDs</u> Performed for PCS-34	The MS recovery was within the laboratory-established control limits of 80-120%, but the MSD was recovered above the upper control limit.	As perchlorate was not detected in the associated site samples, no qualifications were required.
10. <u>Other</u>	The results were reported on a wet weight basis.	No qualifications were required.
11. <u>Field QC Samples</u> Field duplicates: none	None	No qualifications were required.
<u>Comments</u>	None	None

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Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJI0778

Sampled:09/22/00  
Received:09/22/00

## INORGANICS

Analyte	Method	Batch	Reporting Limit mg/kg	Sample Result mg/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IJI0778-01 (PCS-34 - Soil)								Per Qual
Perchlorate	EPA 300.0 MOD. I012258		0.040	ND	1	9/22/00	9/22/00	U
Sample ID: IJI0778-02 (PCS-35 - Soil)								Per Qual
Perchlorate	EPA 300.0 MOD. I012258		0.080	1.3	2	9/22/00	9/23/00	*

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## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: General Minerals by 300.0  
QC Level: V<sup>1</sup>  
SDG: IJI0915  
Matrix: Soil  
No. of Samples: 3  
Date Reviewed: March 08, 2002  
Reviewer: P. Meeks  
Reference: USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (2/94)  
Samples Reviewed: PCS-39, PCS-40, PCS-41

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	Temperatures were within the temperature limits of 4°±2°C. The COC matched the samples and accounted for the analyses. No custody seal information was provided, but the COC noted that the samples were received intact. The 28 day holding time for perchlorate was met.	No qualifications were required.
3. <u>Method Blanks</u>	One method blank was analyzed with the samples in this SDG. Perchlorate was not detected in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One LCS was analyzed with the samples in this SDG. The perchlorate recovery was within the laboratory-established control limits of 90-110%.	No qualifications were required.
6. <u>Duplicates</u> Performed for PCS-39	The RPD was less than the control limit of 20%.	No qualifications were required.

	Findings	Qualifications
7. <u>MS/MSDs</u> Performed for PCS-39	The MS/MSD recoveries were within the laboratory-established control limits of 80-120%.	No qualifications were required.
10. <u>Other</u>	The results were reported on a wet weight basis.	No qualifications were required.
11. <u>Field QC Samples</u> Field duplicates: none	None	No qualifications were required.
<u>Comments</u>	None	None

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Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJI0915

Sampled:09/26/00  
Received:09/27/00

## INORGANICS

Analyte	Method	Batch	Reporting	Sample	Dilution	Date	Date	Data	
			Limit					Qualifiers	
			mg/kg	mg/kg				Rev	Qual
								Qual	Code
Sample ID: IJI0915-01 (PCS-39 - Soil)									
Perchlorate	EPA 300.0 MOD. I0I2831	0.040	ND	1	9/28/00	9/28/00	U		
Sample ID: IJI0915-02 (PCS-40 - Soil)									
Perchlorate	EPA 300.0 MOD. I0I2831	0.040	ND	1	9/28/00	9/28/00	U		
Sample ID: IJI0915-03 (PCS-41 - Soil)									
Perchlorate	EPA 300.0 MOD. I0I2831	0.040	ND	1	9/28/00	9/28/00	U		

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## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: General Minerals by 300.0  
QC Level: V<sup>1</sup>  
SDG: IJF1026  
Matrix: Soil  
No. of Samples: 3  
Date Reviewed: March 08, 2002  
Reviewer: P. Meeks  
Reference: USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (2/94)  
Samples Reviewed: PC-20, PC-21, PS-22

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	Temperatures were within the temperature limits of 4°±2°C. The COC matched the samples and accounted for the analyses. No custody seal information was provided, but the COC noted that the samples were received intact. The 28 day holding time for perchlorate was met.	No qualifications were required.
3. <u>Method Blanks</u>	One method blank was analyzed with the samples in this SDG. Perchlorate was not detected in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One LCS was analyzed with the samples in this SDG. The perchlorate recovery was within the laboratory-established control limits of 90-110%.	No qualifications were required.
6. <u>Duplicates</u> None	None	No qualifications were required.
7. <u>MS/MSDs</u>	None	No qualifications were required.

	Findings	Qualifications
10. <u>Other</u>	The results were reported on a wet weight basis.	No qualifications were required.
11. <u>Field QC Samples</u> Field duplicates: none	None	No qualifications were required.
<u>Comments</u>	None	None

---

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Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJF1026

Sampled: 06/29/00  
Received: 06/29/00

## INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			mg/kg	mg/kg				Rev Qual
Sample ID: IJF1026-01 (PC-20 - Soil)								Qual Code
Perchlorate	EPA 300.0 MOD.	I0G0552	0.040	ND	1	7/5/00	7/5/00	0
Sample ID: IJF1026-02 (PC-21 - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0552	0.040	ND	1	7/5/00	7/5/00	
Sample ID: IJF1026-03 (PC-22 - Soil)								
Perchlorate	EPA 300.0 MOD.	I0G0552	0.040	ND	1	7/5/00	7/5/00	

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## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: General Minerals by 300.0  
QC Level: V<sup>1</sup>  
SDG: IJF0277  
Matrix: Soil  
No. of Samples: 2  
Date Reviewed: March 08, 2002  
Reviewer: P. Meeks  
Reference: USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (2/94)  
Samples Reviewed: CAC-31SW, CAC-32SW

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	Temperatures were within the temperature limits of 4°±2°C. The COC matched the samples and accounted for the analyses. No custody seal information was provided, but the COC noted that the samples were received intact. The 28 day holding time for perchlorate was met.	No qualifications were required.
3. <u>Method Blanks</u>	One method blank was analyzed with the samples in this SDG. Perchlorate was not detected in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One LCS was analyzed with the samples in this SDG. The perchlorate recovery was within the laboratory-established control limits of 90-110%.	No qualifications were required.
6. <u>Duplicates</u> Performed for CAC-32SW	The RPD was within the control limit of 20%.	No qualifications were required.
7. <u>MS/MSDs</u> Performed for CAC-32SW	The %Rs were within the laboratory-established control limits of 80-120%	No qualifications were required.

	Findings	Qualifications
10. <u>Other</u>	The results were reported on a wet weight basis.	No qualifications were required.
11. <u>Field QC Samples</u> Field duplicates: none	None	No qualifications were required.
<u>Comments</u>	None	None

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Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJF0277

Sampled: 06/07/00  
Received: 06/08/00

## INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			mg/kg	mg/kg				Per Qual   Qual Code
Sample ID: IJF0277-06 (CAC-32SW - Soil)								
Perchlorate	EPA 300.0 MOD.	I0F1632	0.040	ND	1	06/16/00	06/16/00	U
Sample ID: IJF0277-07 (CAC-31SW - Soil)								
Perchlorate	EPA 300.0 MOD.	I0F1632	0.040	ND	1	06/16/00	06/16/00	U

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## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: General Minerals by 300.0  
QC Level: V<sup>1</sup>  
SDG: IJH0950  
Matrix: Soil  
No. of Samples: 12  
Date Reviewed: March 08, 2002  
Reviewer: P. Meeks  
Reference: USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (2/94)  
Samples Reviewed: CBC-91S, CBC-92S, PC-26, PC-27, PC-28, CBC-93S, CBC-94SW, PC-28D, CAC-90BE, CAC-89BW, PC-24, PC-25

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	Temperatures were within the temperature limits of 4°±2°C. The COC matched the samples and accounted for the analyses. No custody seal information was provided, but the COC noted that the samples were received intact. The 28 day holding time for perchlorate was met.	No qualifications were required.
3. <u>Method Blanks</u>	One method blank was analyzed with the samples in this SDG. Perchlorate was not detected in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One LCS was analyzed with the samples in this SDG. The perchlorate recovery was within the laboratory-established control limits of 90-110%.	No qualifications were required.
6. <u>Duplicates</u> Performed for CAC-90BE	The RPD was within the control limit of 20%.	No qualifications were required.

	Findings	Qualifications
7. <u>MS/MSDs</u> Performed for CAC-90BE	The %Rs were within the laboratory-established control limits of 80-120%	No qualifications were required.
10. <u>Other</u>	The results were reported on a wet weight basis.	No qualifications were required.
11. <u>Field QC Samples</u> Field duplicates: none	None	No qualifications were required.
<u>Comments</u>	None	None

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.



IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJH0950

Sampled: 08/28/00  
 Received: 08/28/00

## INORGANICS

Analyte	Method	Batch	Reporting	Sample	Dilution	Date	Date	Data	
			Limit					Qualifiers	
			mg/kg	mg/kg				Rev	Qual
<b>Sample ID: IJH0950-01 (CBC-91S - Soil)</b>									
Perchlorate	EPA 300.0 MOD.I0H2949		0.040	ND	1	8/29/00	8/29/00	U	
<b>Sample ID: IJH0950-02 (CBC-92S - Soil)</b>									
Perchlorate	EPA 300.0 MOD.I0H2949		0.040	ND	1	8/29/00	8/29/00		
<b>Sample ID: IJH0950-03 (PC-26 - Soil)</b>									
Perchlorate	EPA 300.0 MOD.I0H2949		0.040	ND	1	8/29/00	8/29/00		
<b>Sample ID: IJH0950-04 (PC-27 - Soil)</b>									
Perchlorate	EPA 300.0 MOD.I0H2949		0.040	ND	1	8/29/00	8/29/00		
<b>Sample ID: IJH0950-05 (PC-28 - Soil)</b>									
Perchlorate	EPA 300.0 MOD.I0H2949		0.040	ND	1	8/29/00	8/29/00		
<b>Sample ID: IJH0950-06 (CBC-93S - Soil)</b>									
Perchlorate	EPA 300.0 MOD.I0H2949		0.040	ND	1	8/29/00	8/29/00		
<b>Sample ID: IJH0950-07 (CBC-94SW - Soil)</b>									
Perchlorate	EPA 300.0 MOD.I0H2949		0.040	ND	1	8/29/00	8/29/00		
<b>Sample ID: IJH0950-08 (CBC-51SW - Soil)</b>									
Perchlorate	EPA 300.0 MOD.I0H2949		0.040	ND	1	8/29/00	8/29/00	*	

\*Analysis Not Validated

**AMEC VALIDATED**  
**LEVEL V**

Del Mar Analytical, Irvine  
 Pat Abe  
 Project Manager

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IT Corporation/Emcon - Burbank  
601 S. Glenoaks Boulevard, Suite 314  
Burbank, CA 91502  
Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
870071  
Report Number: IJH0950

Sampled: 08/28/00  
Received: 08/28/00

## INORGANICS

Analyte	Method	Batch	Reporting Limit mg/kg	Sample Result mg/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers <div>Rev Qual</div> <div>Qual Code</div>
Sample ID: IJH0950-16 (PC-28D - Soil)								
Perchlorate	EPA 300.0 MOD.10H2949		0.040	ND	1	8/29/00	8/29/00	U

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Project Manager

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 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJH0919

Sampled: 08/25/00  
 Received: 08/25/00

## INORGANICS

Analyte	Method	Reporting Batch	Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			mg/kg	mg/kg				Rw Qual   Qual Code
<b>Sample ID: IJH0919-08 (CAC-90BE - Soil)</b>								
Perchlorate	EPA 300.0 MOD.I0H2949		0.040	ND	1	8/29/00	8/29/00	U
<b>Sample ID: IJH0919-09 (CAC-90BW - Soil)</b>								
Perchlorate	EPA 300.0 MOD.I0H2949		0.040	ND	1	8/29/00	8/29/00	X
<b>Sample ID: IJH0919-14 (CAC-89BE - Soil)</b>								
Perchlorate	EPA 300.0 MOD.I0H2949		0.040	ND	1	8/29/00	8/29/00	X
<b>Sample ID: IJH0919-15 (CAC-89BW - Soil)</b>								
Perchlorate	EPA 300.0 MOD.I0H2949		0.040	ND	1	8/29/00	8/29/00	U
<b>Sample ID: IJH0919-18 (PC-24 - Soil)</b>								
Perchlorate	EPA 300.0 MOD.I0H2949		0.040	ND	1	8/29/00	8/29/00	U
<b>Sample ID: IJH0919-19 (PC-25 - Soil)</b>								
Perchlorate	EPA 300.0 MOD.I0H2949		0.040	ND	1	8/29/00	8/29/00	U

\*Analysis Not Validated

AMEC VALIDATED

LEVEL V

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 Pat Abe  
 Project Manager

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550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: General Minerals by 300.0  
QC Level: V<sup>1</sup>  
SDG: IJI0967  
Matrix: Soil  
No. of Samples: 3  
Date Reviewed: March 08, 2002  
Reviewer: P. Meeks  
Reference: USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (2/94)  
Samples Reviewed: PCS-43, PCS-44, PCS-45

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	Temperatures were within the temperature limits of 4°±2°C. The COC matched the samples and accounted for the analyses. No custody seal information was provided, but the COC noted that the samples were received intact. The 28 day holding time for perchlorate was met.	No qualifications were required.
3. <u>Method Blanks</u>	One method blank was analyzed with the samples in this SDG. Perchlorate was not detected in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One LCS was analyzed with the samples in this SDG. The perchlorate recovery was within the laboratory-established control limits of 90-110%.	No qualifications were required.
6. <u>Duplicates</u> None	None	No qualifications were required.
7. <u>MS/MSDs</u> None	None	No qualifications were required.

	Findings	Qualifications
10. <u>Other</u>	The results were reported on a wet weight basis.	No qualifications were required.
11. <u>Field QC Samples</u> Field duplicates: None	None	No qualifications were required.
<u>Comments</u>	None	None

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<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJI0967

Sampled:09/28/00  
 Received:09/28/00

## INORGANICS

Analyte	Method	Batch	Reporting Limit mg/kg	Sample Result mg/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IJI0967-03 (PCS-43 - Soil)								Per Qual Code
Perchlorate	EPA 300.0 MOD. I0I2831	0.040	ND	1	9/28/00	9/28/00	U	
Sample ID: IJI0967-04 (PCS-44 - Soil)								
Perchlorate	EPA 300.0 MOD. I0I2831	0.040	ND	1	9/28/00	9/29/00	U	
Sample ID: IJI0967-05 (PCS-45 - Soil)								
Perchlorate	EPA 300.0 MOD. I0I2831	0.040	ND	1	9/28/00	9/29/00	U	

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 Pat Abe  
 Project Manager

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303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: General Minerals by 300.0  
QC Level: V<sup>1</sup>  
SDG: IJG0192  
Matrix: Soil  
No. of Samples: 6  
Date Reviewed: March 08, 2002  
Reviewer: P. Meeks  
Reference: USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (2/94)  
Samples Reviewed: CBC-49S, CBC-50S, CBC-52SW, CBC-55S, CBC-56SW, CBC-57SW

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	Temperatures were within the temperature limits of 4°±2°C. The COC matched the samples and accounted for the analyses. No custody seal information was provided, but the COC noted that the samples were received intact. The 28 day holding time for perchlorate was met.	No qualifications were required.
3. <u>Method Blanks</u>	One method blank was analyzed with the samples in this SDG. Perchlorate was not detected in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One LCS was analyzed with the samples in this SDG. The perchlorate recovery was within the laboratory-established control limits of 90-110%.	No qualifications were required.
6. <u>Duplicates</u> None	None	No qualifications were required.
7. <u>MS/MSDs</u> None	None	No qualifications were required.

	Findings	Qualifications
10. <u>Other</u>	The results were reported on a wet weight basis.	No qualifications were required.
11. <u>Field QC Samples</u> Field duplicates: None	None	No qualifications were required.
<u>Comments</u>	None	None

---

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJG0192

Sampled: 07/10/00  
 Received: 07/10/00

## INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			mg/kg	mg/kg				Rev Qual
<b>Sample ID: IJG0192-01 (CBC-48S - Soil)</b>								Qual
Perchlorate	EPA 300.0 MOD.	I0G1447	0.040	ND	1	7/14/00	7/15/00	*
<b>Sample ID: IJG0192-02 (CBC-49S - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0G1447	0.040	ND	1	7/14/00	7/15/00	U
<b>Sample ID: IJG0192-03 (CBC-50S - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0G1447	0.040	ND	1	7/14/00	7/15/00	U
<b>Sample ID: IJG0192-04 (CBC-52SW - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0G1447	0.040	ND	1	7/14/00	7/15/00	U
<b>Sample ID: IJG0192-05 (CBC-54SW - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0G1447	0.040	ND	1	7/14/00	7/15/00	*
<b>Sample ID: IJG0192-06 (CBC-56SW - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0G1447	0.040	ND	1	7/14/00	7/15/00	U
<b>Sample ID: IJG0192-07 (CBC-57SW - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0G1447	0.040	ND	1	7/14/00	7/15/00	U

\*Analysis Not Validated

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**LEVEL V**

Del Mar Analytical, Irvine  
 Pat Abe  
 Project Manager

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IJG0192 < 6 of 10 >

IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJG0104

Sampled: 07/06/00  
 Received: 07/06/00

## INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
			mg/kg	mg/kg				Rw Qual
<b>Sample ID: IJG0104-03 (CBC-53S - Soil)</b>								Qual
Perchlorate	EPA 300.0 MOD.	I0G1447	0.040	ND	1	7/14/00	7/15/00	*
<b>Sample ID: IJG0104-05 (CBC-55S - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0G1447	0.040	ND	1	7/14/00	7/15/00	U
<b>Sample ID: IJG0104-08 (CBC-58SW - Soil)</b>								
Perchlorate	EPA 300.0 MOD.	I0G1447	0.040	ND	1	7/14/00	7/15/00	*

\*Analysis Not Validated

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**LEVEL V**

Del Mar Analytical, Irvine  
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 Project Manager

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IJG0104 < 4 of 8 >



550 South Wadsworth Boulevard, Suite 500, Lakewood, CO 80026  
303.935.6505, Fax 303.935.6575

## DATA ASSESSMENT FORM

Project Title: Rocketdyne Former Sodium Disposal Facility Site Sampling  
Project Manager: D. Hambrick  
Analysis/Method: General Minerals by 300.0  
QC Level: V<sup>1</sup>  
SDG: IJI0055  
Matrix: Soil  
No. of Samples: 5  
Date Reviewed: March 08, 2002  
Reviewer: P. Meeks  
Reference: USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (2/94)  
Samples Reviewed: CBC-96SW, CBC-97SW, CBC-98S, CBC-99SW, CBC-97SWD

### Data Validation Findings

	Findings	Qualifications
1. <u>Sample Management</u>	Temperatures were within the temperature limits of 4°±2°C. The COC matched the samples and accounted for the analyses. No custody seal information was provided. The 28 day holding time for perchlorate was met.	No qualifications were required.
3. <u>Method Blanks</u>	One method blank was analyzed with the samples in this SDG. Perchlorate was not detected in the method blank.	No qualifications were required.
5. <u>LCS/BS</u>	One LCS was analyzed with the samples in this SDG. The perchlorate recovery was within the laboratory-established control limits of 90-110%.	No qualifications were required.
6. <u>Duplicates</u> None	None	No qualifications were required.
7. <u>MS/MSDs</u> None	None	No qualifications were required.



	Findings	Qualifications
10. <u>Other</u>	The results were reported on a wet weight basis.	No qualifications were required.
11. <u>Field QC Samples</u>  Field duplicates: CBC-97SW/CBC-97SWD	There were no field QC samples associated with the samples in this SDG. Perchlorate was not detected in either field duplicate sample.	No qualifications were required.
<u>Comments</u>	None	None

---

<sup>1</sup> Level V validation consists of cursory review of the summary forms only. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

IT Corporation/Emcon - Burbank  
 601 S. Glenoaks Boulevard, Suite 314  
 Burbank, CA 91502  
 Attention: Sally Bilodeau

Client Project ID: Boeing/Rocketdyne  
 870071  
 Report Number: IJI0055

Sampled: 09/01/00  
 Received: 09/01/00

### INORGANICS

Analyte	Method	Batch	Reporting Limit mg/kg	Sample Result mg/kg	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers Rev Qual Code
<b>Sample ID: IJI0055-02 (CBC-96SW - Soil)</b>								
Perchlorate	EPA 300.0 MOD. I0I0540		0.040	ND	1	9/5/00	9/5/00	U
<b>Sample ID: IJI0055-03 (CBC-97SW - Soil)</b>								
Perchlorate	EPA 300.0 MOD. I0I0540		0.040	ND	1	9/5/00	9/5/00	
<b>Sample ID: IJI0055-04 (CBC-98S - Soil)</b>								
Perchlorate	EPA 300.0 MOD. I0I0540		0.040	ND	1	9/5/00	9/5/00	
<b>Sample ID: IJI0055-05 (CBC-99SW - Soil)</b>								
Perchlorate	EPA 300.0 MOD. I0I0540		0.040	ND	1	9/5/00	9/5/00	
<b>Sample ID: IJI0055-06 (CBC-97SWD - Soil)</b>								
Perchlorate	EPA 300.0 MOD. I0I0540		0.040	ND	1	9/5/00	9/5/00	J

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**LEVEL V**

**Del Mar Analytical, Irvine**  
 Pat Abe  
 Project Manager

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IJI0055 <Page 3 of 6>

**SOIL – NOT VALIDATED**

**WORK ORDER NO: 4276**

Quanterra Incorporated  
5815 Middlebrook Pike  
Knoxville, Tennessee 37921

615 588-6401 Telephone  
615 584-4315 Fax

ICF Kaiser Environment and Energy Group  
10 Universal City Plaza, Suite 2400  
Universal City, CA 91608-1097  
Attn: Tom Watson

October 3, 1995

Job Numbers: 4276 (Corrected Certificate)

This is the Certificate of Analysis for the following samples:

Client Project ID:	Rocketdyne FSDF / 66280-002-00
Date Received by Lab:	July 26, 1995
Number of Samples:	Twenty (20)
Sample Type:	Soil - seventeen (17); Water - three (3)

### **I. Introduction**

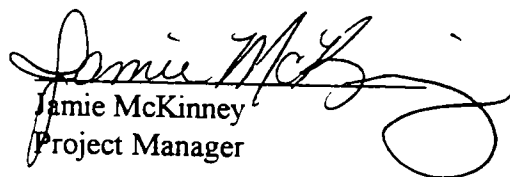
On July 26, 1995, seventeen (17) soil samples and three (3) water samples arrived at Quanterra Environmental Services, Knoxville, Tennessee, from ICF Kaiser Environment and Energy Group, Universal City, California. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

### **II. Analytical Results/Methodology**

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results.

The samples were analyzed for volatile and semivolatile organic compounds by gas chromatography/mass spectroscopy (GC/MS) based on EPA SW-846 3rd edition methods 8260 and 8270, respectively.

Reviewed and Approved:

  
Jamie McKinney  
Project Manager

Client Project ID: Rocketdyne FSDF / 66280-002-00

Job Number: 4276 (Corrected Certificate)

## **II. Analytical Results/Methodology (Continued)**

The samples were analyzed for requested metals by cold vapor atomic absorption spectroscopy (CVAA) and supertrace by inductively coupled argon plasma spectroscopy (ICP) based on EPA methods 7470, 7471 and 6010.

The samples were analyzed for PCBs by gas chromatography/electron capture detection (GC/ECD) based on EPA SW-846 3rd edition method 8080.

The samples were analyzed for total high boiling petroleum hydrocarbons as diesel fuel by gas chromatography/flame ionization detection (GC/FID) using California LUFT method 8015.

The samples were analyzed for total low boiling petroleum hydrocarbons as gasoline by gas chromatography/flame ionization detection (GC/FID) based on California LUFT method 8015.

The samples were analyzed for dioxins by Quanterra Environmental Services, Knoxville, Tennessee, and will be reported separately.

## **III. Quality Control**

### **Volatiles**

Samples 20246220SVL0, 20230331SVL0, 20546500SVL0, 20846220SVL0, 21513070SVL0, 40206390SVL2, and 40206390SVL0 exhibited matrix interferences with the surrogate standards and/or the internal standards. Re-analyses were performed to confirm the matrix affects; both sets of data were submitted.

### **Semivolatiles**

Samples 20246220SOC0 and 20330281SOC0 had high percent recoveries for surrogate terphenyl-d14; however, since no targets were detected above the reporting limits for these samples, this anomaly does not affect the data.

### **Total Low Boiling Petroleum Hydrocarbons**

No problems were encountered during the analysis of these samples.

### **Total High Boiling Petroleum Hydrocarbons**

Samples 21431330SOC0, 20546500SOC0, 20846220SOC0, 21516170SOC0, 21513070SOC0, 40206390SOC0 and 22046220SOC0 had surrogates outside of laboratory control limits. This is due to coelution of the surrogate with hydrocarbons present in the sample. This is to be expected with samples containing hydrocarbons. The data should be unaffected.

## CHAIN OF CUSTODY RECORD

No 0557

FOR LABORATORY USE ONLY

Laboratory Project No.:  
Storage Refrigerator ID: Yes  
Storage Freezer ID: No

Project Name: Rockefeller FSD Project #: 66280-002-00 Sampler: Per Anderson

Received By: Per Anderson Date: 7/26/95 Time: 0830  
Received By: Per Anderson Date: 7/26/95 Time: 0830  
Received By: Per Anderson Date: 7/26/95 Time: 0830

SHIP TO LAB: QUANTERIA KNOXVILLE, TN Method of Shipment: FEDEX Shipment ID: 688238823

Sample ID Number	Date	Time	Description	Circle or Add Analyst(s) Requested	601/8010 (Halogenated Volatiles-GC)	602/8020 (Aromatic Volatiles-GC)	604/8040 (Phenols-GC)	608/8080 (Pesticides-GC)	610/8100 (PNA-GC)	624/8240 (Volatiles-GC/MS)	625/8250 (PNA-GC/MS)	TPH/G (Gasoline-GC)	TPH/D (Diesel-GC)	418.1 (TPH-IR)	8015 Modified (GC)	Metals Total *	Metals Soluble *	Fluoride/Nitrate	Chloride/PH	TDS/Percent Solid	Specific Conductivity (EG)	8260 VOCs	8015 Mod. Diesel	8290 Diokst Furan	Container(s) Type	Lab ID
1 20146220	7/24	10:55	SD1																							
2 20146220	7/24	10:55	SD1																							
3 20146220	7/24	10:55	SD1																							
4 20346310	7/24	14:25	SD1																							
5 20346310	7/24	14:25	SD1																							
6 20130331	7/24	9:55	SD1																							
7 20130331	7/24	9:55	SD1																							
8 20130331	7/24	9:55	SD1																							
9 20346310	7/24	14:25	SD1																							
10 20346310	7/24	14:25	SD1																							

Special Instructions/Comments: Metals per list on 8/26/95 from ICFK to Quanteria dated 12/28/94

FOR LABORATORY USE ONLY: Sample Condition Upon Receipt: Intact

SEND DOCUMENTATION AND RESULTS TO:  
ATTENTION: Per Anderson  
ICF KAISER ENGINEERS  
10 UNIVERSAL CITY PLAZA  
SUITE 2400  
UNIVERSAL CITY, CALIFORNIA 91608  
(818) 509-3100 FAX (818) 509-3137

WCS# 4210  
RL# 4208

# ICF KAISER ENGINEERS



W8#4276  
R#4277

CHEM  
2-02

## CHAIN OF CUSTODY RECORD

Nº 0558

FOR LABORATORY USE ONLY

Laboratory Project No.: \_\_\_\_\_ Secured: \_\_\_\_\_  
Storage Refrigerator ID: \_\_\_\_\_ Yes \_\_\_\_\_  
Storage Freezer ID: \_\_\_\_\_ No \_\_\_\_\_

Project Name: Rockledge FSD Project #: 66250-002-00 Sampler: Maurizio Date: 7/24/95 Time: 06:30

Received by: [Signature] Date: 7/24/95 Time: 06:30

Received by: [Signature] Date: 7/24/95 Time: 06:30

Received by: [Signature] Date: 7/24/95 Time: 06:30

Received by: [Signature] Date: 7/24/95 Time: 06:30

SHIP TO LAB: QUANTERA A Knoxville TN Method of Shipment: 750 54

Shipment ID: 688338223

Sample ID Number	Sample Description		Description	Analytes																				Container(s)		FOR LAB USE ONLY																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	Date	Time		601/8010 (Halogenated Volatiles-GC)	602/8020 (Aromatic Volatiles-GC)	604/8040 (Phenols-GC)	608/8080 (Pesticides-GC)	610/8100 (PNA-GC)	624/8240 (Volatiles-GC/MS)	625/8250 (BNA-GC/MS)	TPH/G (Gasoline-GC)	TPH/D (Diesel-GC)	418.1 (TPH-R)	8015 Modified (GC) Gasoline	Metals-Total	Metals-Soluble	Fluoride/Nitrate	Chloride/pH	TDS/Percent Solid	Specific Conductivity (EG)	#	Type	Lab ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
1	20246220	7/24	1310	SVL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

Special Instructions/Comments: Metals per list on page 10 ICF K&E to Quantera dated 12/28/94

Sample Archive/Disposal: ☐ Laboratory Standard ☐ Other

FOR LABORATORY USE ONLY: Sample Condition Upon Receipt: \_\_\_\_\_

SEND DOCUMENTATION AND RESULTS TO:  
ATTENTION: ICF KAISER ENGINEERS

ICF KAISER ENGINEERS  
10 UNIVERSAL CITY PLAZA  
SUITE 2400  
UNIVERSAL CITY, CALIFORNIA 91608  
(818) 509-3100 FAX (818) 509-3137



**FOR LABORATORY USE ONLY**

Laboratory Project No.: \_\_\_\_\_

Storage Refrigerator ID: \_\_\_\_\_

Storage Freezer ID: \_\_\_\_\_

Laboratory Project No.: \_\_\_\_\_ Secured: \_\_\_\_\_  
Storage Refrigerator ID: \_\_\_\_\_ Yes \_\_\_\_\_  
Storage Freezer ID: \_\_\_\_\_ No \_\_\_\_\_

Planchard

Date: 4/26/45 Time: 08:30

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

25

**a=identity specific meta**

requested under Special Instructions.

12

Container(s)	FOR LAB USE ONLY

TAT #	Type	Lab ID

DATE	TIME	TYPE	LAND ID
01	1	0	

36	13	
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[illegible]

13	with risk
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	0	with carrying se
1	0	
2	0	

1	63	10 fact.
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1	3	738
2	5	738

15
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[illegible]

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

11.10	
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	V	19	
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3) 1=24 hours 2=48 hours 3=1 week 4=2 weeks

**V=VOA Vial    A=1-Liter Amber    G=Glass Jar    C=Casse**

---

ON AND RESULTS TO:

# ENGINEERS

RRSAL CITY PLAZA

AL CITY, CALIFORNIA 91608

3100 FAX (818) 509-3137

•



W084240  
R#4211

## CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No.: \_\_\_\_\_  
 Storage Refrigerator ID: \_\_\_\_\_  
 Storage Freezer ID: \_\_\_\_\_

Secured: \_\_\_\_\_  
 Yes \_\_\_\_\_  
 No \_\_\_\_\_

Project Name: 24th Street 4972 - ESD Project #: 06280-002-00 Sampler: John P. 1/15/05

Requested by: John P. 1/15/05 Date: 9/26/05 Time: 08:30

Received by: John P. 1/15/05 Date: \_\_\_\_\_ Time: \_\_\_\_\_

Requested by: John P. 1/15/05 Date: \_\_\_\_\_ Time: \_\_\_\_\_

Received by: John P. 1/15/05 Date: \_\_\_\_\_ Time: \_\_\_\_\_

Requested by: John P. 1/15/05 Date: \_\_\_\_\_ Time: \_\_\_\_\_

Received by: John P. 1/15/05 Date: \_\_\_\_\_ Time: \_\_\_\_\_

SHIP TO LAB: 24th Street

Method of Shipment: 450 5X  
 Shipment ID: 06033812

Sample ID Number	Sample Description		Date	Time	Description	Analytes														TAT	Container(s)		FOR LAB USE ONLY
						801/8010 (Halogenated Volatiles-GC)	802/8020 (Aromatic Volatiles-GC)	804/8040 (Pesticides-GC)	805/8050 (Pesticides-GC)	810/8100 (Pesticides-GC)	824/8240 (Volatile Organics-GC)	825/8250 (Pesticides-GC)	TPH/G (Gasol.)	TPH/D (Diesel)	41&1 (TPH-Hg)	8015 Modified Monomers-Total	Monomers-Soluble	Fluoride/Silicate	Chloride/Nitrate		TDS/Percent Solids	Specific Conductivity	
1	2/4/3/33P		7-24-16	16:30	Water																2	✓	
2	2/4/3/33P																				2	✓	
3	2/4/3/33P																				2	✓	
4	2/4/3/33P																				2	✓	
5	2/4/3/33P																				2	✓	
6	2/4/3/33P		7/24/16	16:30	Water																1	✓	
7	2/4/3/33P		7/24/16	16:30	Water																1	✓	
8	2/4/3/33P																				1	✓	
9	2/4/3/33P																				1	✓	
10	2/4/3/33P																				1	✓	

Special Instructions/Comments: \_\_\_\_\_

Sample Archive/Dispose: \_\_\_\_\_

☐ Laboratory Standard

☐ Other \_\_\_\_\_

TAT (Analytical Turn-Around Times) 1=24 hours 2=48 hours 3=1 week 4=2 weeks

Container Types: B=Brass Tube V=VOA Vial A=1-Liter Amber G=Glass Jar C=Cassette

O=Other \_\_\_\_\_

FOR LABORATORY USE ONLY: Sample Condition Upon Receipt: \_\_\_\_\_

SEND DOCUMENTATION AND RESULTS TO: \_\_\_\_\_

ATTENTION: John P. 1/15/05

ICF KAISER ENGINEERS  
 10 UNIVERSAL CITY PLAZA  
 SUITE 2400  
 UNIVERSAL CITY, CALIFORNIA 91608  
 (818) 509-3100 FAX (818) 509-3137



# ICF KAISER ENGINEERS

COC NO.  
"0004854"

## CHAIN OF CUSTODY RECORD

Project Name: PERLSTON Project # 68375334

Sampler: MAURYAN

FOR LABORATORY USE ONLY

Laboratory Project No.: \_\_\_\_\_

Storage Refrigerator ID: \_\_\_\_\_

Storage Freezer ID: \_\_\_\_\_

Sacred: \_\_\_\_\_

Yes \_\_\_\_\_

No \_\_\_\_\_

Received By: MAURYAN Date: 9/26/95 Time: 6830

Received By: MAURYAN Date: \_\_\_\_\_ Time: \_\_\_\_\_

Received By: MAURYAN Date: \_\_\_\_\_ Time: \_\_\_\_\_

Received By: MAURYAN Date: \_\_\_\_\_ Time: \_\_\_\_\_

SHIP TO LAB: CLINTON Method of Shipment: FBI

Shipment ID: 68375334

Sample ID				Sample Description		Circle or Add Analyte(s) Requested																								Container(s)		FOR LAB USE ONLY	
Number	Date	Time	Description	601/6010 (Halogenated Volatiles-GC)	602/6020 (Aromatic Volatiles-GC)	604/6040 (Phenols-GC)	606/6060 (Phenols/PCB-GC)	610/6100 (PAH-GC)	624/6240 (Volatiles-GC/MS)	625/6250 (BPA-GC/MS)	TPH/G (Gasoline-GC)	TPH/D (Diesel-GC)	418.1 (TPH-F)	8015 Modified (GC)	Metals - Total	Metals - Soluble *	Fluoride/Nitrate	Chloride/pH	TDS/Percent Solid	Specific Conductivity (EC)	8290/8291-Fluor.	8290/8291-VOL	TAT	#	Type	Lab ID							
1	7/25	9:00	SD L																					3 hr	1	13	Reid at 20C						
2	7/25	9:00	SD L																					1	13	with custody							
3	7/25	9:00	SD L																					1	13	Seals intact.							
4	7/25	9:00	SD L																					1	13	Bea 9/26/95							
5	7/25	9:00	SD L																					1	13								
6	7/25	9:00	SD L																					1	13								
7	7/25	9:00	SD L																					1	13								
8	7/25	9:00	SD L																					1	13								
9	7/25	9:00	SD L																					1	13								
10	7/25	9:00	SD L																					1	13								

Special Instructions/Comments: \_\_\_\_\_

Sample Archive/Disposal: \_\_\_\_\_

Container Types: B=Brass Tube V=VOA Vial A=1-Liter Amber G=Glass Jar C=Cassette

O=Other \_\_\_\_\_

SEND DOCUMENTATION AND RESULTS TO:

ATTENTION: ICF KAISER ENGINEERS

ICF KAISER ENGINEERS

10 UNIVERSAL CITY PLAZA

SUITE 2400

UNIVERSAL CITY, CALIFORNIA 91608

(818) 509-3100 FAX (818) 509-3137

W0 #4276  
R L #4211

# CHAIN OF CUSTODY RECORD

W044276  
RL#4211

**FOR LABORATORY USE ONLY**

Laboratory Project No.: \_\_\_\_\_ Secured: \_\_\_\_\_  
 Storage Refrigerator ID: \_\_\_\_\_ Yes \_\_\_\_\_  
 Storage Freezer ID: \_\_\_\_\_ No \_\_\_\_\_

Project Name: W044276 Project #: 68280-002-00 Sampler: MAURITZ

Requested by: ICF KAISER ENGINEERS Requested by: ICF KAISER ENGINEERS Date: 7/26/95 Time: 08:30

Received by: ICF KAISER ENGINEERS Received by: ICF KAISER ENGINEERS Date: \_\_\_\_\_ Time: \_\_\_\_\_

Requested by: ICF KAISER ENGINEERS Requested by: ICF KAISER ENGINEERS Date: \_\_\_\_\_ Time: \_\_\_\_\_

Method of Shipment: FEDEX Shipment ID: 6363753334

Sample ID Number	Sample Description			a-Identify specific metals requested under Special Instructions																FOR LAB USE ONLY		
	Date	Time	Description	801/8010 (Hydrogenated Volatiles-GC)	802/8020 (Aromatic Volatiles-GC)	804/8040 (Phenols-GC)	806/8060 (Benzodioxins/PCB-GC)	810/8100 (PMA-GC)	824/8240 (Volatiles-GC/MS)	826/8260 (BNA-GC/MS)	TPH/TPH (Gasoline-GC)	418/418 (Diesel-GC)	8015 Modified GC	Metals-Total *	Metals-Soluble *	Fluoride/Nitrate	Chloride/pH	TDS/Percent Solid	Specific Conductivity (EC)	TAT	Container(s)	Lab ID
1	7/26/95	1445	5012																		13	Field at goe
2	7/26/95	1445	5000																		13	with custody
3	7/26/95	1445	5000	X																	13	Seals intact.
4	7/26/95	1445	5000																			BGA 7/26/95
5																						
6																						
7																						
8																						
9																						
10																						

Special Instructions/Comments: \_\_\_\_\_

Sample Archive/Disposal: ☐ Laboratory Standard ☐ Other \_\_\_\_\_

TA/T (Analytical Turn-Around Times) 1=24 hours 2=48 hours 3=1 week 4=2 weeks

Container Types: B=Brass Tube V=VOA Vial A=1-Liter Amber G=Glass Jar C=Cassette

SEND DOCUMENTATION AND RESULTS TO:

ATTENTION: ICF KAISER ENGINEERS

ICF KAISER ENGINEERS  
 10 UNIVERSAL CITY PLAZA  
 SUITE 2400  
 UNIVERSAL CITY, CALIFORNIA 91608  
 (818) 509-3100 FAX (818) 509-3137

FOR LABORATORY USE ONLY: Sample Condition Upon Receipt: \_\_\_\_\_

**CERTIFICATE OF ANALYSIS**  
**ROCKETDYNE**

Page 4 B of 320 B  
August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20246220SMM0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2020/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204305  
Retest:  
Prep Date: 08/01/95  
Prep Batch: 18796

Lab Method: 176  
Lab Method Blank: AG2785  
Analysis Date: 08/01/95 13:04  
Dilution: 1

**MERCURY (HG) BY CVAAS-SOLID**  
**EPA 7471**  
**Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
7439-97-6	MERCURY	.11	U	.11	MG/KG		TARG

**CERTIFICATE OF ANALYSIS**  
**ROCKETDYNE**

Page 7 B of 320 B

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20146220SMM0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2035/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204407  
Retest:  
Prep Date: 08/01/95  
Prep Batch: 18796

Lab Method: 176  
Lab Method Blank: AG2785  
Analysis Date: 08/01/95 13:16  
Dilution: 1

**MERCURY (HG) BY CVAAS-SOLID**  
**EPA 7471**  
**Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
7439-97-6	MERCURY	.11	U	.11	MG/KG		TARG



**CERTIFICATE OF ANALYSIS**  
**ROCKETDYNE**

Page 8 B of 320 B

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20130331SMM0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2041/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204444  
Retest:  
Prep Date: 08/01/95  
Prep Batch: 18796

Lab Method: 176  
Lab Method Blank: AG2785  
Analysis Date: 08/01/95 13:18  
Dilution: 1

**MERCURY (HG) BY CVAAS-SOLID**  
**EPA 7471**  
**Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
7439-97-6	MERCURY	.25		.10	MG/KG		TARG

**CERTIFICATE OF ANALYSIS**  
**ROCKETDYNE**

Page 9 B of 320 B

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20346310SMM0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2042/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204450  
Retest:  
Prep Date: 08/01/95  
Prep Batch: 18796

Lab Method: 176  
Lab Method Blank: AG2785  
Analysis Date: 08/01/95 13:20  
Dilution: 1

**MERCURY (HG) BY CVAAS-SOLID**  
**EPA 7471**  
**Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
7439-97-6	MERCURY	.16		.10	MG/KG		TARG

**CERTIFICATE OF ANALYSIS**

Page 10 B of 320 B

**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20446370SMM0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2051/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204478  
Retest:  
Prep Date: 08/01/95  
Prep Batch: 18796

Lab Method: 176  
Lab Method Blank: AG2785  
Analysis Date: 08/01/95 13:22  
Dilution: 1

**MERCURY (HG) BY CVAAS-SOLID  
EPA 7471  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
7439-97-6	MERCURY	.14		.10	MG/KG		TARG

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20246220SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2011/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204270  
Retest:  
Prep Date: 07/31/95  
Prep Batch: 18899

Lab Method: 2922  
Lab Method Blank: AG3145  
Analysis Date: 07/31/95 11:49  
Dilution: 1

**NONHALOGENATED VOA'S BY P&T GC/FID  
EPA 8015A  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
IT15-52-3 28-8	LOW BOILING PETROLEUM HYDROCAR A,A,A-TRIFLUOROTOLUENE	5.6	U	5.6	MG/KG	90	TARG SURR



Environmental  
Services

# CERTIFICATE OF ANALYSIS

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ROCKETDYNE

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20146220SOC0

Client Matrix: SOIL

Collection Date: 07/24/95

Lab Sample: AG2033/ORIGINAL

Lab Matrix: SOIL

Received Date: 07/26/95

Test: 204382

Retest:

Prep Date: 07/31/95

Prep Batch: 18899

Lab Method: 2922

Lab Method Blank: AG3145

Analysis Date: 07/31/95 13:26

Dilution: 1

## NONHALOGENATED VOA'S BY P&T GC/FID

EPA 8015A

### Primary Result

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
IT15-52-3 28-8	LOW BOILING PETROLEUM HYDROCAR A,A,A-TRIFLUOROTOLUENE	5.7	U	5.7	MG/KG	102	TARG SURR

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20346310SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2036/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204418  
Retest:  
Prep Date: 07/31/95  
Prep Batch: 18899

Lab Method: 2922  
Lab Method Blank: AG3145  
Analysis Date: 07/31/95 13:59  
Dilution: 1

**NONHALOGENATED VOA'S BY P&T GC/FID  
EPA 8015A  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
IT15-52-3 08-8	LOW BOILING PETROLEUM HYDROCAR A,A,A-TRIFLUOROTOLUENE	5.4	U	5.4	MG/KG	110	TARG SURR



Environmental  
Services

# CERTIFICATE OF ANALYSIS

Page 72 B of 320 B

ROCKETDYNE

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20130331SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2039/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204434  
Retest:  
Prep Date: 07/31/95  
Prep Batch: 18899

Lab Method: 2922  
Lab Method Blank: AG3145  
Analysis Date: 07/31/95 14:31  
Dilution: 1

## NONHALOGENATED VOA'S BY P&T GC/FID EPA 8015A Primary Result

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
IT15-52-3	LOW BOILING PETROLEUM HYDROCAR	6.0	U	6.0	MG/KG		TARG
78-8	A,A,A-TRIFLUOROTOLUENE					100	SURR

**CERTIFICATE OF ANALYSIS**

Page 74 B of 320 B

**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20446370SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2053/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204492  
Retest:  
Prep Date: 07/31/95  
Prep Batch: 18899

Lab Method: 2922  
Lab Method Blank: AG3145  
Analysis Date: 07/31/95 15:04  
Dilution: 1

**NONHALOGENATED VOA'S BY P&T GC/FID  
EPA 8015A  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
IT15-52-3 78-8	LOW BOILING PETROLEUM HYDROCAR A,A,A-TRIFLUOROTOLUENE	5.2	U	5.2	MG/KG	107	TARG SURR



## CERTIFICATE OF ANALYSIS

Page 94 B of 320 B

ROCKETDYNE

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20246220SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2011/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204275  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18620

Lab Method: 2924  
Lab Method Blank: AG2129  
Analysis Date: 08/01/95 00:54  
Dilution: 1

NONHALOG.VOA MOD.FOR H.BOIL PET.HYD  
EPA 8015M  
Primary Result

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
IT15-47-3	HIGH BOILING PETROLEUM HYDROCA	5.6	U	5.6	MG/KG		TARG
67-5	TRICOSANE					106	SURR

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20146220SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2033/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204384  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18620

Lab Method: 2924  
Lab Method Blank: AG2129  
Analysis Date: 08/01/95 07:12  
Dilution: 1

**NONHALOG.VOA MOD.FOR H.BOIL PET.HYD  
EPA 8015M  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
1115-47-3	HIGH BOILING PETROLEUM HYDROCA	6.0	B	5.7	MG/KG		TARG
67-5	TRICOSANE					113	SURR

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20346310SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2036/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204420  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18620

Lab Method: 2924  
Lab Method Blank: AG2129  
Analysis Date: 08/03/95 03:34  
Dilution: 1

**NONHALOG.VOA MOD.FOR H.BOIL PET.HYD  
EPA 8015M  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
IT15-47-3	HIGH BOILING PETROLEUM HYDROCA	75.	B	27	MG/KG		TARG
67-5	TRICOSANE					74	SURR

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20130331SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2039/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204436  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18620

Lab Method: 2924  
Lab Method Blank: AG2129  
Analysis Date: 08/01/95 04:34  
Dilution: 1

**NONHALOG.VOA MOD.FOR H.BOIL PET.HYD  
EPA 8015M  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
IT15-47-3	HIGH BOILING PETROLEUM HYDROCA	6.0	U	6.0	MG/KG		TARG
67-5	TRICOSANE					106	SURR

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20446370SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2053/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204494  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18620

Lab Method: 2924  
Lab Method Blank: AG2129  
Analysis Date: 08/01/95 07:43  
Dilution: 1

**NONHEALOG.VOA MOD.FOR H.BOIL PET.HYD  
EPA 8015M  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
IT15-47-3 67-5	HIGH BOILING PETROLEUM HYDROCA TRICOSANE	5.4	B	5.2	MG/KG	125	TARG SURR

# CERTIFICATE OF ANALYSIS

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20246220SVL0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2010/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 209262  
Retest: 1  
Prep Date: 08/03/95  
Prep Batch: 18952

Lab Method: 2932  
Lab Method Blank: AG3482  
Analysis Date: 08/03/95 23:09  
Dilution: 1

**VOLATILES (VOA) - P&T GCMS-CAPIL.COL.**  
**EPA 8260**  
**Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
74-87-3	CHLOROMETHANE	6.	U	6.	UG/KG		TARG
74-71-8	DICHLORODIFLUOROMETHANE	6.	U	6.	UG/KG		TARG
74-83-9	BROMOMETHANE	6.	U	6.	UG/KG		TARG
75-01-4	VINYL CHLORIDE	6.	U	6.	UG/KG		TARG
75-00-3	CHLOROETHANE	6.	U	6.	UG/KG		TARG
75-09-2	METHYLENE CHLORIDE	1.	J	6.	UG/KG		TARG
75-69-4	TRICHLOROFLUOROMETHANE	6.	U	6.	UG/KG		TARG
75-35-4	1,1-DICHLOROETHENE	6.	U	6.	UG/KG		TARG
75-34-3	1,1-DICHLOROETHANE	6.	U	6.	UG/KG		TARG
156-59-2	CIS-1,2-DICHLOROETHENE	6.	U	6.	UG/KG		TARG
156-60-5	TRANS-1,2-DICHLOROETHENE	6.	U	6.	UG/KG		TARG
594-20-7	SEC-DICHLOROPROPANE	6.	U	6.	UG/KG		TARG
67-66-3	CHLOROFORM	6.	U	6.	UG/KG		TARG
563-58-6	1,1-DICHLOROPROPENE	6.	U	6.	UG/KG		TARG
107-06-2	1,2-DICHLOROETHANE	6.	U	6.	UG/KG		TARG
71-55-6	1,1,1-TRICHLOROETHANE	6.	U	6.	UG/KG		TARG
56-23-5	CARBON TETRACHLORIDE	6.	U	6.	UG/KG		TARG
75-27-4	BROMODICHLOROMETHANE	6.	U	6.	UG/KG		TARG
74-97-5	BROMOCHLOROMETHANE	6.	U	6.	UG/KG		TARG
74-95-3	DIBROMOMETHANE	6.	U	6.	UG/KG		TARG
142-28-9	1,3-DICHLOROPROPANE	6.	U	6.	UG/KG		TARG
106-93-4	1,2-DIBROMOETHANE	6.	U	6.	UG/KG		TARG
630-20-6	1,1,1,2-TETRACHLOROETHANE	6.	U	6.	UG/KG		TARG
98-82-8	CUMENE	6.	U	6.	UG/KG		TARG
108-86-1	BROMOBENZENE	6.	U	6.	UG/KG		TARG
96-18-4	1,2,3-TRICHLOROPROPANE	6.	U	6.	UG/KG		TARG
103-65-1	N-PROPYLBENZENE	6.	U	6.	UG/KG		TARG
74-97-5	1,2-DICHLOROPROPANE	6.	U	6.	UG/KG		TARG
74-01-6	TRICHLOROETHENE	6.	U	6.	UG/KG		TARG
124-48-1	DIBROMOCHLOROMETHANE	6.	U	6.	UG/KG		TARG
79-00-5	1,1,2-TRICHLOROETHANE	6.	U	6.	UG/KG		TARG

# CERTIFICATE OF ANALYSIS

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20246220SVL0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2010/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 209262  
Retest: 1  
Prep Date: 08/03/95  
Prep Batch: 18952

Lab Method: 2932  
Lab Method Blank: AG3482  
Analysis Date: 08/03/95 23:09  
Dilution: 1

## VOLATILES (VOA) - P&T GCMS-CAPIL.COL. EPA 8260 Primary Result

Cas Number	Analyte	Result	Qualifier	Report Limit	Units	% Rec	Type
71-43-2	BENZENE	6.	U	6.	UG/KG		TARG
101-01-5	CIS-1,3-DICHLOROPROPENE	6.	U	6.	UG/KG		TARG
101-02-6	TRANS-1,3-DICHLOROPROPENE	6.	U	6.	UG/KG		TARG
75-25-2	BROMOFORM	6.	U	6.	UG/KG		TARG
127-18-4	TETRACHLOROETHENE	6.	U	6.	UG/KG		TARG
79-34-5	1,1,2,2-TETRACHLOROETHANE	6.	U	6.	UG/KG		TARG
108-88-3	TOLUENE	6.	U	6.	UG/KG		TARG
108-90-7	CHLOROBENZENE	6.	U	6.	UG/KG		TARG
100-41-4	ETHYLBENZENE	6.	U	6.	UG/KG		TARG
100-42-5	STYRENE	6.	U	6.	UG/KG		TARG
95-47-6	O-XYLENE	6.	U	6.	UG/KG		TARG
108-88-3	M/P-XYLENE	11.	U	11	UG/KG		TARG
541-73-1	1,3-DICHLOROBENZENE	6.	U	6.	UG/KG		TARG
106-46-7	1,4-DICHLOROBENZENE	6.	U	6.	UG/KG		TARG
95-50-1	1,2-DICHLOROBENZENE	6.	U	6.	UG/KG		TARG
95-49-8	O-CHLOROTOLUENE	6.	U	6.	UG/KG		TARG
106-43-4	P-CHLOROTOLUENE	6.	U	6.	UG/KG		TARG
108-67-8	1,3,5-TRIMETHYLBENZENE	6.	U	6.	UG/KG		TARG
98-06-6	TERT-BUTYLBENZENE	6.	U	6.	UG/KG		TARG
95-63-6	1,2,4-TRIMETHYLBENZENE	6.	U	6.	UG/KG		TARG
135-98-8	SEC-BUTYLBENZENE	6.	U	6.	UG/KG		TARG
99-87-6	P-CYMENE	6.	U	6.	UG/KG		TARG
104-51-8	N-BUTYLBENZENE	6.	U	6.	UG/KG		TARG
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	6.	U	6.	UG/KG		TARG
120-82-1	1,2,4-TRICHLOROBENZENE	6.	U	6.	UG/KG		TARG
87-68-3	HEXACHLOROBUTADIENE	6.	U	6.	UG/KG		TARG
21-20-3	NAPHTHALENE	6.	U	6.	UG/KG		TARG
101-1-6	1,2,3-TRICHLOROBENZENE	6.	U	6.	UG/KG		TARG
2057-26-5	TOLUENE-D8					101.	SURR
460-00-4	P-BROMOFLUOROBENZENE					88.0	SURR
1868-53-7	DIBROMOFLUOROMETHANE					107.	SURR

# CERTIFICATE OF ANALYSIS

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20246220SVL0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2010/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204262  
Retest:  
Prep Date: 08/03/95  
Prep Batch: 18952

Lab Method: 2932  
Lab Method Blank: AG3482  
Analysis Date: 08/03/95 21:16  
Dilution: 1

## VOLATILES (VOA) - P&T GCMS-CAPIL.COL. EPA 8260 Primary Result

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
74-87-3	CHLOROMETHANE	6.	U	6.	UG/KG		TARG
71-8	DICHLORODIFLUOROMETHANE	6.	U	6.	UG/KG		TARG
3-9	BROMOMETHANE	6.	U	6.	UG/KG		TARG
75-01-4	VINYL CHLORIDE	6.	U	6.	UG/KG		TARG
75-00-3	CHLOROETHANE	6.	U	6.	UG/KG		TARG
75-09-2	METHYLENE CHLORIDE	2.	J	6.	UG/KG		TARG
75-69-4	TRICHLOROFLUOROMETHANE	6.	U	6.	UG/KG		TARG
75-35-4	1,1-DICHLOROETHENE	6.	U	6.	UG/KG		TARG
75-34-3	1,1-DICHLOROETHANE	6.	U	6.	UG/KG		TARG
156-59-2	CIS-1,2-DICHLOROETHENE	6.	U	6.	UG/KG		TARG
156-60-5	TRANS-1,2-DICHLOROETHENE	6.	U	6.	UG/KG		TARG
594-20-7	SEC-DICHLOROPROPANE	6.	U	6.	UG/KG		TARG
67-66-3	CHLOROFORM	6.	U	6.	UG/KG		TARG
563-58-6	1,1-DICHLOROPROPENE	6.	U	6.	UG/KG		TARG
107-06-2	1,2-DICHLOROETHANE	6.	U	6.	UG/KG		TARG
71-55-6	1,1,1-TRICHLOROETHANE	6.	U	6.	UG/KG		TARG
56-23-5	CARBON TETRACHLORIDE	6.	U	6.	UG/KG		TARG
75-27-4	BROMODICHLOROMETHANE	6.	U	6.	UG/KG		TARG
74-97-5	BROMOCHLOROMETHANE	1.	J	6.	UG/KG		TARG
74-95-3	DIBROMOMETHANE	6.	U	6.	UG/KG		TARG
142-28-9	1,3-DICHLOROPROPANE	6.	U	6.	UG/KG		TARG
106-93-4	1,2-DIBROMOETHANE	6.	U	6.	UG/KG		TARG
630-20-6	1,1,1,2-TETRACHLOROETHANE	6.	U	6.	UG/KG		TARG
98-82-8	CUMENE	6.	U	6.	UG/KG		TARG
108-86-1	BROMOBENZENE	6.	U	6.	UG/KG		TARG
96-18-4	1,2,3-TRICHLOROPROPANE	6.	U	6.	UG/KG		TARG
103-65-1	N-PROPYLBENZENE	6.	U	6.	UG/KG		TARG
7-5	1,2-DICHLOROPROPANE	6.	U	6.	UG/KG		TARG
01-6	TRICHLOROETHENE	6.	U	6.	UG/KG		TARG
124-48-1	DIBROMOCHLOROMETHANE	6.	U	6.	UG/KG		TARG
79-00-5	1,1,2-TRICHLOROETHANE	6.	U	6.	UG/KG		TARG



# CERTIFICATE OF ANALYSIS

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20246220SVL0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2010/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204262  
Retest:  
Prep Date: 08/03/95  
Prep Batch: 18952

Lab Method: 2932  
Lab Method Blank: AG3482  
Analysis Date: 08/03/95 21:16  
Dilution: 1

## VOLATILES (VOA) - P&T GCMS-CAPIL.COL. EPA 8260 Primary Result

Cas Number	Analyte	Result	Qualifier	Report Limit	Units	% Rec	Type
71-43-2	BENZENE	6.	U	6.	UG/KG		TARG
61-01-5	CIS-1,3-DICHLOROPROPENE	6.	U	6.	UG/KG		TARG
61-02-6	TRANS-1,3-DICHLOROPROPENE	6.	U	6.	UG/KG		TARG
75-25-2	BROMOFORM	6.	U	6.	UG/KG		TARG
127-18-4	TETRACHLOROETHENE	6.	U	6.	UG/KG		TARG
79-34-5	1,1,2,2-TETRACHLOROETHANE	6.	U	6.	UG/KG		TARG
108-88-3	TOLUENE	6.	U	6.	UG/KG		TARG
108-90-7	CHLOROBENZENE	6.	U	6.	UG/KG		TARG
100-41-4	ETHYLBENZENE	6.	U	6.	UG/KG		TARG
100-42-5	STYRENE	6.	U	6.	UG/KG		TARG
95-47-6	O-XYLENE	6.	U	6.	UG/KG		TARG
108-88-3	M/P-XYLENE	11.	U	11	UG/KG		TARG
541-73-1	1,3-DICHLOROBENZENE	6.	U	6.	UG/KG		TARG
106-46-7	1,4-DICHLOROBENZENE	6.	U	6.	UG/KG		TARG
95-50-1	1,2-DICHLOROBENZENE	6.	U	6.	UG/KG		TARG
95-49-8	O-CHLOROTOLUENE	6.	U	6.	UG/KG		TARG
106-43-4	P-CHLOROTOLUENE	6.	U	6.	UG/KG		TARG
108-67-8	1,3,5-TRIMETHYLBENZENE	6.	U	6.	UG/KG		TARG
98-06-6	TERT-BUTYLBENZENE	6.	U	6.	UG/KG		TARG
95-63-6	1,2,4-TRIMETHYLBENZENE	6.	U	6.	UG/KG		TARG
135-98-8	SEC-BUTYLBENZENE	6.	U	6.	UG/KG		TARG
99-87-6	P-CYMENE	6.	U	6.	UG/KG		TARG
104-51-8	N-BUTYLBENZENE	6.	U	6.	UG/KG		TARG
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	6.	U	6.	UG/KG		TARG
120-82-1	1,2,4-TRICHLOROBENZENE	6.	U	6.	UG/KG		TARG
87-68-3	HEXACHLOROBUTADIENE	6.	U	6.	UG/KG		TARG
21-20-3	NAPHTHALENE	6.	U	6.	UG/KG		TARG
61-6	1,2,3-TRICHLOROBENZENE	6.	U	6.	UG/KG		TARG
37-26-5	TOLUENE-D8					97.0	SURR
460-00-4	P-BROMOFLUOROBENZENE		*			70.0	SURR
1868-53-7	DIBROMOFLUOROMETHANE					109.	SURR

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20146220SVL0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2031/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 208636  
Retest: 1  
Prep Date: 08/07/95  
Prep Batch: 18998

Lab Method: 2932  
Lab Method Blank: AG3622  
Analysis Date: 08/07/95 16:55  
Dilution: 1

**VOLATILES (VOA) - P&T GCMS-CAPIL.COL.  
EPA 8260  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
74-87-3	CHLOROMETHANE	6.	U	6.	UG/KG		TARG
71-8	DICHLORODIFLUOROMETHANE	6.	U	6.	UG/KG		TARG
73-9	BROMOMETHANE	6.	U	6.	UG/KG		TARG
75-01-4	VINYL CHLORIDE	6.	U	6.	UG/KG		TARG
75-00-3	CHLOROETHANE	6.	U	6.	UG/KG		TARG
75-09-2	METHYLENE CHLORIDE	2.	J	6.	UG/KG		TARG
75-69-4	TRICHLOROFLUOROMETHANE	6.	U	6.	UG/KG		TARG
75-35-4	1,1-DICHLOROETHENE	6.	U	6.	UG/KG		TARG
75-34-3	1,1-DICHLOROETHANE	6.	U	6.	UG/KG		TARG
156-59-2	CIS-1,2-DICHLOROETHENE	6.	U	6.	UG/KG		TARG
156-60-5	TRANS-1,2-DICHLOROETHENE	6.	U	6.	UG/KG		TARG
594-20-7	SEC-DICHLOROPROPANE	6.	U	6.	UG/KG		TARG
67-66-3	CHLOROFORM	6.	U	6.	UG/KG		TARG
563-58-6	1,1-DICHLOROPROPENE	6.	U	6.	UG/KG		TARG
107-06-2	1,2-DICHLOROETHANE	6.	U	6.	UG/KG		TARG
71-55-6	1,1,1-TRICHLOROETHANE	6.	U	6.	UG/KG		TARG
56-23-5	CARBON TETRACHLORIDE	6.	U	6.	UG/KG		TARG
75-27-4	BROMODICHLOROMETHANE	6.	U	6.	UG/KG		TARG
74-97-5	BROMOCHLOROMETHANE	6.	U	6.	UG/KG		TARG
74-95-3	DIBROMOMETHANE	6.	U	6.	UG/KG		TARG
142-28-9	1,3-DICHLOROPROPANE	6.	U	6.	UG/KG		TARG
106-93-4	1,2-DIBROMOETHANE	6.	U	6.	UG/KG		TARG
630-20-6	1,1,1,2-TETRACHLOROETHANE	6.	U	6.	UG/KG		TARG
98-82-8	CUMENE	6.	U	6.	UG/KG		TARG
108-86-1	BROMOBENZENE	6.	U	6.	UG/KG		TARG
96-18-4	1,2,3-TRICHLOROPROPANE	6.	U	6.	UG/KG		TARG
103-65-1	N-PROPYLBENZENE	6.	U	6.	UG/KG		TARG
77-5	1,2-DICHLOROPROPANE	6.	U	6.	UG/KG		TARG
77-01-6	TRICHLOROETHENE	6.	U	6.	UG/KG		TARG
124-48-1	DIBROMOCHLOROMETHANE	6.	U	6.	UG/KG		TARG
79-00-5	1,1,2-TRICHLOROETHANE	6.	U	6.	UG/KG		TARG

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20146220SVL0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2031/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 208636  
Retest: 1  
Prep Date: 08/07/95  
Prep Batch: 18998

Lab Method: 2932  
Lab Method Blank: AG3622  
Analysis Date: 08/07/95 16:55  
Dilution: 1

**VOLATILES (VOA) - P&T GCMS-CAPIL.COL.  
EPA 8260  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
71-43-2	BENZENE	6.	U	6.	UG/KG		TARG
61-01-5	CIS-1,3-DICHLOROPROPENE	6.	U	6.	UG/KG		TARG
1-02-6	TRANS-1,3-DICHLOROPROPENE	6.	U	6.	UG/KG		TARG
75-25-2	BROMOFORM	6.	U	6.	UG/KG		TARG
127-18-4	TETRACHLOROETHENE	6.	U	6.	UG/KG		TARG
79-34-5	1,1,2,2-TETRACHLOROETHANE	6.	U	6.	UG/KG		TARG
108-88-3	TOLUENE	6.	U	6.	UG/KG		TARG
108-90-7	CHLOROBENZENE	6.	U	6.	UG/KG		TARG
100-41-4	ETHYLBENZENE	6.	U	6.	UG/KG		TARG
100-42-5	STYRENE	6.	U	6.	UG/KG		TARG
95-47-6	O-XYLENE	6.	U	6.	UG/KG		TARG
108-88-3	M/P-XYLENE	11.	U	11	UG/KG		TARG
541-73-1	1,3-DICHLOROBENZENE	6.	U	6.	UG/KG		TARG
106-46-7	1,4-DICHLOROBENZENE	6.	U	6.	UG/KG		TARG
95-50-1	1,2-DICHLOROBENZENE	6.	U	6.	UG/KG		TARG
95-49-8	O-CHLOROTOLUENE	6.	U	6.	UG/KG		TARG
106-43-4	P-CHLOROTOLUENE	6.	U	6.	UG/KG		TARG
108-67-8	1,3,5-TRIMETHYLBENZENE	6.	U	6.	UG/KG		TARG
98-06-6	TERT-BUTYLBENZENE	6.	U	6.	UG/KG		TARG
95-63-6	1,2,4-TRIMETHYLBENZENE	6.	U	6.	UG/KG		TARG
135-98-8	SEC-BUTYLBENZENE	6.	U	6.	UG/KG		TARG
99-87-6	P-CYME	6.	U	6.	UG/KG		TARG
104-51-8	N-BUTYLBENZENE	6.	U	6.	UG/KG		TARG
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	6.	U	6.	UG/KG		TARG
120-82-1	1,2,4-TRICHLOROBENZENE	6.	U	6.	UG/KG		TARG
87-68-3	HEXACHLOROBUTADIENE	6.	U	6.	UG/KG		TARG
21-20-3	NAPHTHALENE	6.	U	6.	UG/KG		TARG
1-6	1,2,3-TRICHLOROBENZENE	6.	U	6.	UG/KG		TARG
2657-26-5	TOLUENE-D8					98	SURR
460-00-4	P-BROMOFLUOROBENZENE					91	SURR
1868-53-7	DIBROMOFLUOROMETHANE					99	SURR

# CERTIFICATE OF ANALYSIS

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20346310SVL0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2037/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204424  
Retest:  
Prep Date: 08/03/95  
Prep Batch: 18953

Lab Method: 2932  
Lab Method Blank: AG3484  
Analysis Date: 08/03/95 23:39  
Dilution: 1

## VOLATILES (VOA) - P&T GCMS-CAPIL.COL. EPA 8260 Primary Result

<u>Gas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
74-87-3	CHLOROMETHANE	5.	U	5.	UG/KG		TARG
71-8	DICHLORODIFLUOROMETHANE	5.	U	5.	UG/KG		TARG
3-9	BROMOMETHANE	5.	U	5.	UG/KG		TARG
75-01-4	VINYL CHLORIDE	5.	U	5.	UG/KG		TARG
75-00-3	CHLOROETHANE	5.	U	5.	UG/KG		TARG
75-09-2	METHYLENE CHLORIDE	5.	U	5.	UG/KG		TARG
75-69-4	TRICHLOROFLUOROMETHANE	5.	U	5.	UG/KG		TARG
75-35-4	1,1-DICHLOROETHENE	5.	U	5.	UG/KG		TARG
75-34-3	1,1-DICHLOROETHANE	5.	U	5.	UG/KG		TARG
156-59-2	CIS-1,2-DICHLOROETHENE	5.	U	5.	UG/KG		TARG
156-60-5	TRANS-1,2-DICHLOROETHENE	5.	U	5.	UG/KG		TARG
594-20-7	SEC-DICHLOROPROPANE	5.	U	5.	UG/KG		TARG
67-66-3	CHLOROFORM	5.	U	5.	UG/KG		TARG
563-58-6	1,1-DICHLOROPROPENE	5.	U	5.	UG/KG		TARG
107-06-2	1,2-DICHLOROETHANE	5.	U	5.	UG/KG		TARG
71-55-6	1,1,1-TRICHLOROETHANE	5.	U	5.	UG/KG		TARG
56-23-5	CARBON TETRACHLORIDE	5.	U	5.	UG/KG		TARG
75-27-4	BROMODICHLOROMETHANE	5.	U	5.	UG/KG		TARG
74-97-5	BROMOCHLOROMETHANE	5.	U	5.	UG/KG		TARG
74-95-3	DIBROMOMETHANE	5.	U	5.	UG/KG		TARG
142-28-9	1,3-DICHLOROPROPANE	5.	U	5.	UG/KG		TARG
106-93-4	1,2-DIBROMOETHANE	5.	U	5.	UG/KG		TARG
630-20-6	1,1,1,2-TETRACHLOROETHANE	5.	U	5.	UG/KG		TARG
98-82-8	CUMENE	5.	U	5.	UG/KG		TARG
108-86-1	BROMOBENZENE	5.	U	5.	UG/KG		TARG
96-18-4	1,2,3-TRICHLOROPROPANE	5.	U	5.	UG/KG		TARG
103-65-1	N-PROPYLBENZENE	5.	U	5.	UG/KG		TARG
7-5	1,2-DICHLOROPROPANE	5.	U	5.	UG/KG		TARG
7-01-6	TRICHLOROETHENE	5.	U	5.	UG/KG		TARG
124-48-1	DIBROMOCHLOROMETHANE	5.	U	5.	UG/KG		TARG
79-00-5	1,1,2-TRICHLOROETHANE	5.	U	5.	UG/KG		TARG

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20346310SVL0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2037/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204424  
Retest:  
Prep Date: 08/03/95  
Prep Batch: 18953

Lab Method: 2932  
Lab Method Blank: AG3484  
Analysis Date: 08/03/95 23:39  
Dilution: 1

**VOLATILES (VOA) - P&T GCMS-CAPIL.COL.**  
**EPA 8260**  
**Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
71-43-2	BENZENE	5.	U	5.	UG/KG		TARG
61-01-5	CIS-1,3-DICHLOROPROPENE	5.	U	5.	UG/KG		TARG
1-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U	5.	UG/KG		TARG
75-25-2	BROMOFORM	5.	U	5.	UG/KG		TARG
127-18-4	TETRACHLOROETHENE	5.	U	5.	UG/KG		TARG
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U	5.	UG/KG		TARG
108-88-3	TOLUENE	5.	U	5.	UG/KG		TARG
108-90-7	CHLOROBENZENE	5.	U	5.	UG/KG		TARG
100-41-4	ETHYLBENZENE	5.	U	5.	UG/KG		TARG
100-42-5	STYRENE	5.	U	5.	UG/KG		TARG
95-47-6	O-XYLENE	5.	U	5.	UG/KG		TARG
108-88-3	M/P-XYLENE	11.	U	11	UG/KG		TARG
541-73-1	1,3-DICHLOROBENZENE	5.	U	5.	UG/KG		TARG
106-46-7	1,4-DICHLOROBENZENE	5.	U	5.	UG/KG		TARG
95-50-1	1,2-DICHLOROBENZENE	5.	U	5.	UG/KG		TARG
95-49-8	O-CHLOROTOLUENE	5.	U	5.	UG/KG		TARG
106-43-4	P-CHLOROTOLUENE	5.	U	5.	UG/KG		TARG
108-67-8	1,3,5-TRIMETHYLBENZENE	5.	U	5.	UG/KG		TARG
98-06-6	TERT-BUTYLBENZENE	5.	U	5.	UG/KG		TARG
95-63-6	1,2,4-TRIMETHYLBENZENE	5.	U	5.	UG/KG		TARG
135-98-8	SEC-BUTYLBENZENE	5.	U	5.	UG/KG		TARG
99-87-6	P-CYME	5.	U	5.	UG/KG		TARG
104-51-8	N-BUTYLBENZENE	5.	U	5.	UG/KG		TARG
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	5.	U	5.	UG/KG		TARG
120-82-1	1,2,4-TRICHLOROBENZENE	5.	U	5.	UG/KG		TARG
87-68-3	HEXACHLOROBUTADIENE	5.	U	5.	UG/KG		TARG
21-20-3	NAPHTHALENE	5.	U	5.	UG/KG		TARG
61-6	1,2,3-TRICHLOROBENZENE	5.	U	5.	UG/KG		TARG
57-26-5	TOLUENE-D8					101	SURR
460-00-4	P-BROMOFLUOROBENZENE					89	SURR
1868-53-7	DIBROMOFLUOROMETHANE					105	SURR

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20130331SVL0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2038/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204426  
Retest:  
Prep Date: 08/02/95  
Prep Batch: 18871

Lab Method: 2932  
Lab Method Blank: AG3079  
Analysis Date: 08/02/95 21:59  
Dilution: 1

**VOLATILES (VOA) - P&T GCMS-CAPIL.COL.  
EPA 8260  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
74-87-3	CHLOROMETHANE	6.	U	6.	UG/KG		TARG
71-8	DICHLORODIFLUOROMETHANE	6.	U	6.	UG/KG		TARG
3-9	BROMOMETHANE	6.	U	6.	UG/KG		TARG
75-01-4	VINYL CHLORIDE	6.	U	6.	UG/KG		TARG
75-00-3	CHLOROETHANE	6.	U	6.	UG/KG		TARG
75-09-2	METHYLENE CHLORIDE	1.	J	6.	UG/KG		TARG
75-69-4	TRICHLOROFLUOROMETHANE	6.	U	6.	UG/KG		TARG
75-35-4	1,1-DICHLOROETHENE	6.	U	6.	UG/KG		TARG
75-34-3	1,1-DICHLOROETHANE	6.	U	6.	UG/KG		TARG
156-59-2	CIS-1,2-DICHLOROETHENE	6.	U	6.	UG/KG		TARG
156-60-5	TRANS-1,2-DICHLOROETHENE	6.	U	6.	UG/KG		TARG
594-20-7	SEC-DICHLOROPROPANE	6.	U	6.	UG/KG		TARG
67-66-3	CHLOROFORM	6.	U	6.	UG/KG		TARG
563-58-6	1,1-DICHLOROPROPENE	6.	U	6.	UG/KG		TARG
107-06-2	1,2-DICHLOROETHANE	6.	U	6.	UG/KG		TARG
71-55-6	1,1,1-TRICHLOROETHANE	6.	U	6.	UG/KG		TARG
56-23-5	CARBON TETRACHLORIDE	6.	U	6.	UG/KG		TARG
75-27-4	BROMODICHLOROMETHANE	6.	U	6.	UG/KG		TARG
74-97-5	BROMOCHLOROMETHANE	6.	U	6.	UG/KG		TARG
74-95-3	DIBROMOMETHANE	6.	U	6.	UG/KG		TARG
142-28-9	1,3-DICHLOROPROPANE	6.	U	6.	UG/KG		TARG
106-93-4	1,2-DIBROMOETHANE	6.	U	6.	UG/KG		TARG
630-20-6	1,1,1,2-TETRACHLOROETHANE	6.	U	6.	UG/KG		TARG
98-82-8	CUMENE	6.	U	6.	UG/KG		TARG
108-86-1	BROMOBENZENE	6.	U	6.	UG/KG		TARG
96-18-4	1,2,3-TRICHLOROPROPANE	6.	U	6.	UG/KG		TARG
103-65-1	N-PROPYLBENZENE	6.	U	6.	UG/KG		TARG
7-5	1,2-DICHLOROPROPANE	6.	U	6.	UG/KG		TARG
79-01-6	TRICHLOROETHENE	6.	U	6.	UG/KG		TARG
124-48-1	DIBROMOCHLOROMETHANE	6.	U	6.	UG/KG		TARG
79-00-5	1,1,2-TRICHLOROETHANE	6.	U	6.	UG/KG		TARG

# CERTIFICATE OF ANALYSIS

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20130331SVL0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2038/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204426  
Retest:  
Prep Date: 08/02/95  
Prep Batch: 18871

Lab Method: 2932  
Lab Method Blank: AG3079  
Analysis Date: 08/02/95 21:59  
Dilution: 1

**VOLATILES (VOA) - P&T GCMS-CAPIL.COL.**  
**EPA 8260**  
**Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
71-43-2	BENZENE	6.	U	6.	UG/KG		TARG
61-01-5	CIS-1,3-DICHLOROPROPENE	6.	U	6.	UG/KG		TARG
1-02-6	TRANS-1,3-DICHLOROPROPENE	6.	U	6.	UG/KG		TARG
75-25-2	BROMOFORM	6.	U	6.	UG/KG		TARG
127-18-4	TETRACHLOROETHENE	6.	U	6.	UG/KG		TARG
79-34-5	1,1,2,2-TETRACHLOROETHANE	6.	U	6.	UG/KG		TARG
108-88-3	TOLUENE	6.	U	6.	UG/KG		TARG
108-90-7	CHLOROBENZENE	6.	U	6.	UG/KG		TARG
100-41-4	ETHYLBENZENE	6.	U	6.	UG/KG		TARG
100-42-5	STYRENE	6.	U	6.	UG/KG		TARG
95-47-6	O-XYLENE	6.	U	6.	UG/KG		TARG
108-88-3	M/P-XYLENE	12.	U	12	UG/KG		TARG
541-73-1	1,3-DICHLOROBENZENE	6.	U	6.	UG/KG		TARG
106-46-7	1,4-DICHLOROBENZENE	6.	U	6.	UG/KG		TARG
95-50-1	1,2-DICHLOROBENZENE	6.	U	6.	UG/KG		TARG
95-49-8	O-CHLOROTOLUENE	6.	U	6.	UG/KG		TARG
106-43-4	P-CHLOROTOLUENE	6.	U	6.	UG/KG		TARG
108-67-8	1,3,5-TRIMETHYLBENZENE	6.	U	6.	UG/KG		TARG
98-06-6	TERT-BUTYLBENZENE	6.	U	6.	UG/KG		TARG
95-63-6	1,2,4-TRIMETHYLBENZENE	6.	U	6.	UG/KG		TARG
135-98-8	SEC-BUTYLBENZENE	6.	U	6.	UG/KG		TARG
99-87-6	P-CYMENE	6.	U	6.	UG/KG		TARG
104-51-8	N-BUTYLBENZENE	6.	U	6.	UG/KG		TARG
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	6.	U	6.	UG/KG		TARG
120-82-1	1,2,4-TRICHLOROBENZENE	6.	U	6.	UG/KG		TARG
87-68-3	HEXACHLOROBUTADIENE	6.	U	6.	UG/KG		TARG
21-20-3	NAPHTHALENE	6.	U	6.	UG/KG		TARG
1-6	1,2,3-TRICHLOROBENZENE	6.	U	6.	UG/KG		TARG
2657-26-5	TOLUENE-D8					101	SURR
460-00-4	P-BROMOFLUOROBENZENE					88	SURR
1868-53-7	DIBROMOFLUOROMETHANE					101	SURR

# CERTIFICATE OF ANALYSIS

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20446370SVL0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2049/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204472  
Retest:  
Prep Date: 08/02/95  
Prep Batch: 18871

Lab Method: 2932  
Lab Method Blank: AG3079  
Analysis Date: 08/02/95 22:27  
Dilution: 1

## VOLATILES (VOA) - P&T GCMS-CAPIL.COL. EPA 8260 Primary Result

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
74-87-3	CHLOROMETHANE	5.	U	5.	UG/KG		TARG
71-8	DICHLORODIFLUOROMETHANE	5.	U	5.	UG/KG		TARG
3-9	BROMOMETHANE	5.	U	5.	UG/KG		TARG
75-01-4	VINYL CHLORIDE	5.	U	5.	UG/KG		TARG
75-00-3	CHLOROETHANE	5.	U	5.	UG/KG		TARG
75-09-2	METHYLENE CHLORIDE	1.	J	5.	UG/KG		TARG
75-69-4	TRICHLOROFLUOROMETHANE	5.	U	5.	UG/KG		TARG
75-35-4	1,1-DICHLOROETHENE	5.	U	5.	UG/KG		TARG
75-34-3	1,1-DICHLOROETHANE	5.	U	5.	UG/KG		TARG
156-59-2	CIS-1,2-DICHLOROETHENE	5.	U	5.	UG/KG		TARG
156-60-5	TRANS-1,2-DICHLOROETHENE	5.	U	5.	UG/KG		TARG
594-20-7	SEC-DICHLOROPROPANE	5.	U	5.	UG/KG		TARG
67-66-3	CHLOROFORM	5.	U	5.	UG/KG		TARG
563-58-6	1,1-DICHLOROPROPENE	5.	U	5.	UG/KG		TARG
107-06-2	1,2-DICHLOROETHANE	5.	U	5.	UG/KG		TARG
71-55-6	1,1,1-TRICHLOROETHANE	5.	U	5.	UG/KG		TARG
56-23-5	CARBON TETRACHLORIDE	5.	U	5.	UG/KG		TARG
75-27-4	BROMODICHLOROMETHANE	5.	U	5.	UG/KG		TARG
74-97-5	BROMOCHLOROMETHANE	5.	U	5.	UG/KG		TARG
74-95-3	DIBROMOMETHANE	5.	U	5.	UG/KG		TARG
142-28-9	1,3-DICHLOROPROPANE	5.	U	5.	UG/KG		TARG
106-93-4	1,2-DIBROMOETHANE	5.	U	5.	UG/KG		TARG
630-20-6	1,1,1,2-TETRACHLOROETHANE	5.	U	5.	UG/KG		TARG
98-82-8	CUMENE	5.	U	5.	UG/KG		TARG
108-86-1	BROMOBENZENE	5.	U	5.	UG/KG		TARG
96-18-4	1,2,3-TRICHLOROPROPANE	5.	U	5.	UG/KG		TARG
103-65-1	N-PROPYLBENZENE	5.	U	5.	UG/KG		TARG
7-5	1,2-DICHLOROPROPANE	5.	U	5.	UG/KG		TARG
7-01-6	TRICHLOROETHENE	5.	U	5.	UG/KG		TARG
124-48-1	DIBROMOCHLOROMETHANE	5.	U	5.	UG/KG		TARG
79-00-5	1,1,2-TRICHLOROETHANE	5.	U	5.	UG/KG		TARG



# CERTIFICATE OF ANALYSIS

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20446370SVL0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2049/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204472  
Retest:  
Prep Date: 08/02/95  
Prep Batch: 18871

Lab Method: 2932  
Lab Method Blank: AG3079  
Analysis Date: 08/02/95 22:27  
Dilution: 1

## VOLATILES (VOA) - P&T GCMS-CAPIL.COL. EPA 8260 Primary Result

Cas Number	Analyte	Result	Qualifier	Report Limit	Units	% Rec	Type
71-43-2	BENZENE	5.	U	5.	UG/KG		TARG
61-01-5	CIS-1,3-DICHLOROPROPENE	5.	U	5.	UG/KG		TARG
75-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U	5.	UG/KG		TARG
75-25-2	BROMOFORM	5.	U	5.	UG/KG		TARG
127-18-4	TETRACHLOROETHENE	5.	U	5.	UG/KG		TARG
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U	5.	UG/KG		TARG
108-88-3	TOLUENE	5.	U	5.	UG/KG		TARG
108-90-7	CHLOROBENZENE	5.	U	5.	UG/KG		TARG
100-41-4	ETHYLBENZENE	5.	U	5.	UG/KG		TARG
100-42-5	STYRENE	5.	U	5.	UG/KG		TARG
95-47-6	O-XYLENE	5.	U	5.	UG/KG		TARG
108-88-3	M/P-XYLENE	10.	U	10	UG/KG		TARG
541-73-1	1,3-DICHLOROBENZENE	5.	U	5.	UG/KG		TARG
106-46-7	1,4-DICHLOROBENZENE	5.	U	5.	UG/KG		TARG
95-50-1	1,2-DICHLOROBENZENE	5.	U	5.	UG/KG		TARG
95-49-8	O-CHLOROTOLUENE	5.	U	5.	UG/KG		TARG
106-43-4	P-CHLOROTOLUENE	5.	U	5.	UG/KG		TARG
108-67-8	1,3,5-TRIMETHYLBENZENE	5.	U	5.	UG/KG		TARG
98-06-6	TERT-BUTYLBENZENE	5.	U	5.	UG/KG		TARG
95-63-6	1,2,4-TRIMETHYLBENZENE	5.	U	5.	UG/KG		TARG
135-98-8	SEC-BUTYLBENZENE	5.	U	5.	UG/KG		TARG
99-87-6	P-CYME	5.	U	5.	UG/KG		TARG
104-51-8	N-BUTYLBENZENE	5.	U	5.	UG/KG		TARG
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	5.	U	5.	UG/KG		TARG
120-82-1	1,2,4-TRICHLOROBENZENE	5.	U	5.	UG/KG		TARG
87-68-3	HEXACHLOROBUTADIENE	5.	U	5.	UG/KG		TARG
91-20-3	NAPHTHALENE	5.	U	5.	UG/KG		TARG
91-20-6	1,2,3-TRICHLOROBENZENE	5.	U	5.	UG/KG		TARG
231-26-5	TOLUENE-D8					95	SURR
460-00-4	P-BROMOFLUOROBENZENE					75	SURR
1868-53-7	DIBROMOFLUOROMETHANE					106	SURR

# CERTIFICATE OF ANALYSIS

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ROCKETDYNE

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20246220SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2011/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204269  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18623

Lab Method: 2935  
Lab Method Blank: AG2132  
Analysis Date: 08/11/95 18:19  
Dilution: 1

## SEMIVOLATILES-GCMS-CAPIL.COLUMN

EPA 8270A

### Primary Result

Cas Number	Analyte	Result	Qualifier	Report Limit	Units	% Rec	Type
108-95-2	PHENOL	370	U	370	UG/KG		TARG
141-44-4	BIS(2-CHLOROETHYL)ETHER	370	U	370	UG/KG		TARG
95-57-8	2-CHLOROPHENOL	370	U	370	UG/KG		TARG
541-73-1	1,3-DICHLOROBENZENE	370	U	370	UG/KG		TARG
106-46-7	1,4-DICHLOROBENZENE	370	U	370	UG/KG		TARG
100-51-6	BENZYL ALCOHOL	370	U	370	UG/KG		TARG
95-50-1	1,2-DICHLOROBENZENE	370	U	370	UG/KG		TARG
95-48-7	2-METHYLPHENOL	370	U	370	UG/KG		TARG
108-60-1	BIS(2-CHLOROISOPROPYL) ETHER	370	U	370	UG/KG		TARG
106-44-5	4-METHYLPHENOL	370	U	370	UG/KG		TARG
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	370	U	370	UG/KG		TARG
67-72-1	HEXACHLOROETHANE	370	U	370	UG/KG		TARG
98-95-3	NITROBENZENE	370	U	370	UG/KG		TARG
78-59-1	ISOPHORONE	370	U	370	UG/KG		TARG
88-75-5	2-NITROPHENOL	370	U	370	UG/KG		TARG
105-67-9	2,4-DIMETHYLPHENOL	370	U	370	UG/KG		TARG
65-85-0	BENZOIC ACID	890	U	890	UG/KG		TARG
111-91-1	BIS(2-CHLOROETHOXY)METHANE	370	U	370	UG/KG		TARG
120-83-2	2,4-DICHLOROPHENOL	370	U	370	UG/KG		TARG
120-82-1	1,2,4-TRICHLOROBENZENE	370	U	370	UG/KG		TARG
91-20-3	NAPHTHALENE	73.	U	73.	UG/KG		TARG
106-47-8	4-CHLOROANILINE	370	U	370	UG/KG		TARG
87-68-3	HEXACHLOROBUTADIENE	370	U	370	UG/KG		TARG
59-50-7	4-CHLORO-3-METHYLPHENOL	370	U	370	UG/KG		TARG
91-57-6	2-METHYLNAPHTHALENE	370	U	370	UG/KG		TARG
77-47-4	HEXACHLOROCYCLOPENTADIENE	370	U	370	UG/KG		TARG
88-06-2	2,4,6-TRICHLOROPHENOL	370	U	370	UG/KG		TARG
95-4	2,4,5-TRICHLOROPHENOL	890	U	890	UG/KG		TARG
91-58-7	2-CHLORONAPHTHALENE	370	U	370	UG/KG		TARG
88-74-4	2-NITROANILINE	890	U	890	UG/KG		TARG
131-11-3	DIMETHYL PHTHALATE	370	U	370	UG/KG		TARG

# CERTIFICATE OF ANALYSIS

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ROCKETDYNE

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20246220SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2011/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204269  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18623

Lab Method: 2935  
Lab Method Blank: AG2132  
Analysis Date: 08/11/95 18:19  
Dilution: 1

## SEMIVOLATILES-GCMS-CAPIL.COLUMN EPA 8270A Primary Result

Cas Number	Analyte	Result	Qualifier	Report Limit	Units	% Rec	Type
208-96-8	ACENAPHTHYLENE	73.	U	73.	UG/KG		TARG
20-2	2,6-DINITROTOLUENE	370	U	370	UG/KG		TARG
99-2	3-NITROANILINE	890	U	890	UG/KG		TARG
83-32-9	ACENAPHTHENE	73.	U	73.	UG/KG		TARG
51-28-5	2,4-DINITROPHENOL	890	U	890	UG/KG		TARG
100-02-7	4-NITROPHENOL	890	U	890	UG/KG		TARG
132-64-9	DIBENZOFURAN	370	U	370	UG/KG		TARG
121-14-2	2,4-DINITROTOLUENE	370	U	370	UG/KG		TARG
84-66-2	DIETHYL PHTHALATE	370	U	370	UG/KG		TARG
7005-72-3	4-CHLOROPHENYLPHENYL ETHER	370	U	370	UG/KG		TARG
86-73-7	FLUORENE	73.	U	73.	UG/KG		TARG
100-01-6	4-NITROANILINE	890	U	890	UG/KG		TARG
534-52-1	4,6-DINITRO-2-METHYLPHENOL	890	U	890	UG/KG		TARG
86-30-6	N-NITROSODIPHENYLAMINE	370	U	370	UG/KG		TARG
101-55-3	4-BROMOPHENYL PHENYL ETHER	370	U	370	UG/KG		TARG
118-74-1	HEXACHLOROBENZENE	370	U	370	UG/KG		TARG
87-86-5	PENTACHLOROPHENOL	890	U	890	UG/KG		TARG
85-01-8	PHENANTHRENE	73.	U	73.	UG/KG		TARG
120-12-7	ANTHRACENE	73.	U	73.	UG/KG		TARG
86-74-8	CARBAZOLE	370	U	370	UG/KG		TARG
84-74-2	DI-N-BUTYL PHTHALATE	41.	J	370	UG/KG		TARG
206-44-0	FLUORANTHENE	73.	U	73.	UG/KG		TARG
129-00-0	PYRENE	73.	U	73.	UG/KG		TARG
85-68-7	BUTYL BENZYL PHTHALATE	370	U	370	UG/KG		TARG
91-94-1	3,3'-DICHLOROBENZIDINE	730	U	730	UG/KG		TARG
56-55-3	BENZO(A)ANTHRACENE	73.	U	73.	UG/KG		TARG
218-01-9	CHRYSENE	73.	U	73.	UG/KG		TARG
81-7	BIS(2-ETHYLHEXYL) PHTHALATE	55.	J	370	UG/KG		TARG
77-84-0	DI-N-OCTYL PHTHALATE	370	U	370	UG/KG		TARG
205-99-2	BENZO(B)FLUORANTHENE	73.	U	73.	UG/KG		TARG
207-08-9	BENZO(K)FLUORANTHENE	73.	U	73.	UG/KG		TARG

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20246220SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2011/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204269  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18623

Lab Method: 2935  
Lab Method Blank: AG2132  
Analysis Date: 08/11/95 18:19  
Dilution: 1

**SEMIVOLATILES-GCMS-CAPIL.COLUMN  
EPA 8270A  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
50-32-8	BENZO(A)PYRENE	73.	U	73.	UG/KG		TARG
39-5	INDENO(1,2,3-CD)PYRENE	73.	U	73.	UG/KG		TARG
-3	DIBENZO(A,H)ANTHRACENE	73.	U	73.	UG/KG		TARG
191-24-2	BENZO(G,H,I)PERYLENE	73.	U	73.	UG/KG		TARG
4165-60-0	NITROBENZENE-D5					90	SURR
321-60-8	2-FLUOROBIPHENYL					85	SURR
1718-51-0	P-TERPHENYL-D14		*			149	SURR
4165-62-2	PHENOL-D5					90	SURR
367-12-4	2-FLUOROPHENOL					98	SURR
118-79-6	2,4,6-TRIBROMOPHENOL					90	SURR

# CERTIFICATE OF ANALYSIS

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ROCKETDYNE

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20146220SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2033/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204381  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18623

Lab Method: 2935  
Lab Method Blank: AG2132  
Analysis Date: 08/12/95 00:40  
Dilution: 1

## SEMIVOLATILES-GCMS-CAPIL.COLUMN EPA 8270A Primary Result

Cas Number	Analyte	Result	Qualifier	Report Limit	Units	% Rec	Type
108-95-2	PHENOL	370	U	370	UG/KG		TARG
144-4	BIS(2-CHLOROETHYL)ETHER	370	U	370	UG/KG		TARG
7-8	2-CHLOROPHENOL	370	U	370	UG/KG		TARG
541-73-1	1,3-DICHLOROBENZENE	370	U	370	UG/KG		TARG
106-46-7	1,4-DICHLOROBENZENE	370	U	370	UG/KG		TARG
100-51-6	BENZYL ALCOHOL	370	U	370	UG/KG		TARG
95-50-1	1,2-DICHLOROBENZENE	370	U	370	UG/KG		TARG
95-48-7	2-METHYLPHENOL	370	U	370	UG/KG		TARG
108-60-1	BIS(2-CHLOROISOPROPYL) ETHER	370	U	370	UG/KG		TARG
106-44-5	4-METHYLPHENOL	370	U	370	UG/KG		TARG
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	370	U	370	UG/KG		TARG
67-72-1	HEXACHLOROETHANE	370	U	370	UG/KG		TARG
98-95-3	NITROBENZENE	370	U	370	UG/KG		TARG
78-59-1	ISOPHORONE	370	U	370	UG/KG		TARG
88-75-5	2-NITROPHENOL	370	U	370	UG/KG		TARG
105-67-9	2,4-DIMETHYLPHENOL	370	U	370	UG/KG		TARG
65-85-0	BENZOIC ACID	900	U	900	UG/KG		TARG
111-91-1	BIS(2-CHLOROETHOXY)METHANE	370	U	370	UG/KG		TARG
120-83-2	2,4-DICHLOROPHENOL	370	U	370	UG/KG		TARG
120-82-1	1,2,4-TRICHLOROBENZENE	370	U	370	UG/KG		TARG
91-20-3	NAPHTHALENE	74.	U	74.	UG/KG		TARG
106-47-8	4-CHLOROANILINE	370	U	370	UG/KG		TARG
87-68-3	HEXACHLOROBUTADIENE	370	U	370	UG/KG		TARG
59-50-7	4-CHLORO-3-METHYLPHENOL	370	U	370	UG/KG		TARG
91-57-6	2-METHYLNAPHTHALENE	370	U	370	UG/KG		TARG
77-47-4	HEXACHLOROCYCLOPENTADIENE	370	U	370	UG/KG		TARG
28-06-2	2,4,6-TRICHLOROPHENOL	370	U	370	UG/KG		TARG
5-4	2,4,5-TRICHLOROPHENOL	900	U	900	UG/KG		TARG
58-7	2-CHLORONAPHTHALENE	370	U	370	UG/KG		TARG
88-74-4	2-NITROANILINE	900	U	900	UG/KG		TARG
131-11-3	DIMETHYL PHTHALATE	370	U	370	UG/KG		TARG

# CERTIFICATE OF ANALYSIS

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ROCKETDYNE

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20146220SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2033/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204381  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18623

Lab Method: 2935  
Lab Method Blank: AG2132  
Analysis Date: 08/12/95 00:40  
Dilution: 1

## SEMIVOLATILES-GCMS-CAPIL.COLUMN EPA 8270A Primary Result

Cas Number	Analyte	Result	Qualifier	Report Limit	Units	% Rec	Type
208-96-8	ACENAPHTHYLENE	74.	U	74.	UG/KG		TARG
20-2	2,6-DINITROTOLUENE	370	U	370	UG/KG		TARG
9-2	3-NITROANILINE	900	U	900	UG/KG		TARG
83-32-9	ACENAPHTHENE	74.	U	74.	UG/KG		TARG
51-28-5	2,4-DINITROPHENOL	900	U	900	UG/KG		TARG
100-02-7	4-NITROPHENOL	900	U	900	UG/KG		TARG
132-64-9	DIBENZOFURAN	370	U	370	UG/KG		TARG
121-14-2	2,4-DINITROTOLUENE	370	U	370	UG/KG		TARG
84-66-2	DIETHYL PHTHALATE	370	U	370	UG/KG		TARG
7005-72-3	4-CHLOROPHENYLPHENYL ETHER	370	U	370	UG/KG		TARG
86-73-7	FLUORENE	74.	U	74.	UG/KG		TARG
100-01-6	4-NITROANILINE	900	U	900	UG/KG		TARG
534-52-1	4,6-DINITRO-2-METHYLPHENOL	900	U	900	UG/KG		TARG
86-30-6	N-NITROSODIPHENYLAMINE	370	U	370	UG/KG		TARG
101-55-3	4-BROMOPHENYL PHENYL ETHER	370	U	370	UG/KG		TARG
118-74-1	HEXACHLOROBENZENE	370	U	370	UG/KG		TARG
87-86-5	PENTACHLOROPHENOL	900	U	900	UG/KG		TARG
85-01-8	PHENANTHRENE	74.	U	74.	UG/KG		TARG
120-12-7	ANTHRACENE	74.	U	74.	UG/KG		TARG
86-74-8	CARBAZOLE	370	U	370	UG/KG		TARG
84-74-2	DI-N-BUTYL PHTHALATE	370	U	370	UG/KG		TARG
206-44-0	FLUORANTHENE	74.	U	74.	UG/KG		TARG
129-00-0	PYRENE	74.	U	74.	UG/KG		TARG
85-68-7	BUTYL BENZYL PHTHALATE	370	U	370	UG/KG		TARG
91-94-1	3,3'-DICHLOROBENZIDINE	740	U	740	UG/KG		TARG
56-55-3	BENZO(A)ANTHRACENE	74.	U	74.	UG/KG		TARG
218-01-9	CHRYSENE	74.	U	74.	UG/KG		TARG
31-7	BIS(2-ETHYLHEXYL) PHTHALATE	370	U	370	UG/KG		TARG
147-84-0	DI-N-OCTYL PHTHALATE	370	U	370	UG/KG		TARG
205-99-2	BENZO(B)FLUORANTHENE	74.	U	74.	UG/KG		TARG
207-08-9	BENZO(K)FLUORANTHENE	74.	U	74.	UG/KG		TARG

# CERTIFICATE OF ANALYSIS

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ROCKETDYNE

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20146220SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2033/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204381  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18623

Lab Method: 2935  
Lab Method Blank: AG2132  
Analysis Date: 08/12/95 00:40  
Dilution: 1

## SEMIVOLATILES-GCMS-CAPIL.COLUMN EPA 8270A Primary Result

Cas Number	Analyte	Result	Qualifier	Report Limit	Units	% Rec	Type
50-32-8	BENZO(A)PYRENE	74.	U	74.	UG/KG		TARG
123-39-5	INDENO(1,2,3-CD)PYRENE	74.	U	74.	UG/KG		TARG
173-0-3	DIBENZO(A,H)ANTHRACENE	74.	U	74.	UG/KG		TARG
191-24-2	BENZO(G,H,I)PERYLENE	74.	U	74.	UG/KG		TARG
4165-60-0	NITROBENZENE-D5					67	SURR
321-60-8	2-FLUOROBIPHENYL					74	SURR
1718-51-0	P-TERPHENYL-D14					118	SURR
4165-62-2	PHENOL-D5					77	SURR
367-12-4	2-FLUOROPHENOL					89	SURR
118-79-6	2,4,6-TRIBROMOPHENOL					84	SURR

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20346310SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2036/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204417  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18623

Lab Method: 2935  
Lab Method Blank: AG2132  
Analysis Date: 08/12/95 01:17  
Dilution: 5

**SEMIVOLATILES-GCMS-CAPIL.COLUMN  
EPA 8270A  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
108-95-2	PHENOL	1700	U	1700	UG/KG		TARG
108-44-4	BIS(2-CHLOROETHYL)ETHER	1700	U	1700	UG/KG		TARG
106-57-8	2-CHLOROPHENOL	1700	U	1700	UG/KG		TARG
541-73-1	1,3-DICHLOROBENZENE	1700	U	1700	UG/KG		TARG
106-46-7	1,4-DICHLOROBENZENE	1700	U	1700	UG/KG		TARG
100-51-6	BENZYL ALCOHOL	1700	U	1700	UG/KG		TARG
95-50-1	1,2-DICHLOROBENZENE	1700	U	1700	UG/KG		TARG
95-48-7	2-METHYLPHENOL	1700	U	1700	UG/KG		TARG
108-60-1	BIS(2-CHLOROISOPROPYL) ETHER	1700	U	1700	UG/KG		TARG
106-44-5	4-METHYLPHENOL	1700	U	1700	UG/KG		TARG
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1700	U	1700	UG/KG		TARG
67-72-1	HEXACHLOROETHANE	1700	U	1700	UG/KG		TARG
98-95-3	NITROBENZENE	1700	U	1700	UG/KG		TARG
78-59-1	ISOPHORONE	1700	U	1700	UG/KG		TARG
88-75-5	2-NITROPHENOL	1700	U	1700	UG/KG		TARG
105-67-9	2,4-DIMETHYLPHENOL	1700	U	1700	UG/KG		TARG
65-85-0	BENZOIC ACID	4200	U	4200	UG/KG		TARG
111-91-1	BIS(2-CHLOROETHOXY)METHANE	1700	U	1700	UG/KG		TARG
120-83-2	2,4-DICHLOROPHENOL	1700	U	1700	UG/KG		TARG
120-82-1	1,2,4-TRICHLOROBENZENE	1700	U	1700	UG/KG		TARG
91-20-3	NAPHTHALENE	350	U	350	UG/KG		TARG
106-47-8	4-CHLOROANILINE	1700	U	1700	UG/KG		TARG
87-68-3	HEXACHLOROBUTADIENE	1700	U	1700	UG/KG		TARG
59-50-7	4-CHLORO-3-METHYLPHENOL	1700	U	1700	UG/KG		TARG
91-57-6	2-METHYLNAPHTHALENE	1700	U	1700	UG/KG		TARG
77-47-4	HEXACHLOROCYCLOPENTADIENE	1700	U	1700	UG/KG		TARG
28-06-2	2,4,6-TRICHLOROPHENOL	1700	U	1700	UG/KG		TARG
108-95-4	2,4,5-TRICHLOROPHENOL	4200	U	4200	UG/KG		TARG
108-58-7	2-CHLORONAPHTHALENE	1700	U	1700	UG/KG		TARG
88-74-4	2-NITROANILINE	4200	U	4200	UG/KG		TARG
131-11-3	DIMETHYL PHTHALATE	1700	U	1700	UG/KG		TARG



# CERTIFICATE OF ANALYSIS

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ROCKETDYNE

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20346310SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2036/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204417  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18623

Lab Method: 2935  
Lab Method Blank: AG2132  
Analysis Date: 08/12/95 01:17  
Dilution: 5

## SEMIVOLATILES - GCMS - CAPIL. COLUMN EPA 8270A Primary Result

Cas Number	Analyte	Result	Qualifier	Report Limit	Units	% Rec	Type
208-96-8	ACENAPHTHYLENE	350	U	350	UG/KG		TARG
20-2	2,6-DINITROTOLUENE	1700	U	1700	UG/KG		TARG
9-2	3-NITROANILINE	4200	U	4200	UG/KG		TARG
83-32-9	ACENAPHTHENE	350	U	350	UG/KG		TARG
51-28-5	2,4-DINITROPHENOL	4200	U	4200	UG/KG		TARG
100-02-7	4-NITROPHENOL	4200	U	4200	UG/KG		TARG
132-64-9	DIBENZOFURAN	1700	U	1700	UG/KG		TARG
121-14-2	2,4-DINITROTOLUENE	1700	U	1700	UG/KG		TARG
84-66-2	DIETHYL PHTHALATE	1700	U	1700	UG/KG		TARG
7005-72-3	4-CHLOROPHENYLPHENYL ETHER	1700	U	1700	UG/KG		TARG
86-73-7	FLUORENE	350	U	350	UG/KG		TARG
100-01-6	4-NITROANILINE	4200	U	4200	UG/KG		TARG
534-52-1	4,6-DINITRO-2-METHYLPHENOL	4200	U	4200	UG/KG		TARG
86-30-6	N-NITROSODIPHENYLAMINE	1700	U	1700	UG/KG		TARG
101-55-3	4-BROMOPHENYL PHENYL ETHER	1700	U	1700	UG/KG		TARG
118-74-1	HEXACHLOROBENZENE	1700	U	1700	UG/KG		TARG
87-86-5	PENTACHLOROPHENOL	4200	U	4200	UG/KG		TARG
85-01-8	PHENANTHRENE	350	U	350	UG/KG		TARG
120-12-7	ANTHRACENE	350	U	350	UG/KG		TARG
86-74-8	CARBAZOLE	1700	U	1700	UG/KG		TARG
84-74-2	DI-N-BUTYL PHTHALATE	1700	U	1700	UG/KG		TARG
206-44-0	FLUORANTHENE	350	U	350	UG/KG		TARG
129-00-0	PYRENE	350	U	350	UG/KG		TARG
85-68-7	BUTYL BENZYL PHTHALATE	1700	U	1700	UG/KG		TARG
91-94-1	3,3'-DICHLOROBENZIDINE	3500	U	3500	UG/KG		TARG
56-55-3	BENZO(A)ANTHRACENE	350	U	350	UG/KG		TARG
718-01-9	CHRYSENE	350	U	350	UG/KG		TARG
31-7	BIS(2-ETHYLHEXYL) PHTHALATE	1700	U	1700	UG/KG		TARG
117-84-0	DI-N-OCTYL PHTHALATE	1700	U	1700	UG/KG		TARG
205-99-2	BENZO(B)FLUORANTHENE	350	U	350	UG/KG		TARG
207-08-9	BENZO(K)FLUORANTHENE	350	U	350	UG/KG		TARG

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20346310SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2036/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204417  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18623

Lab Method: 2935  
Lab Method Blank: AG2132  
Analysis Date: 08/12/95 01:17  
Dilution: 5

**SEMIVOLATILES-GCMS-CAPIL.COLUMN  
EPA 8270A  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
50-32-8	BENZO(A)PYRENE	350	U	350	UG/KG		TARG
39-5	INDENO(1,2,3-CD)PYRENE	350	U	350	UG/KG		TARG
0-3	DIBENZO(A,H)ANTHRACENE	350	U	350	UG/KG		TARG
191-24-2	BENZO(G,H,I)PERYLENE	350	U	350	UG/KG		TARG
4165-60-0	NITROBENZENE-D5					86	SURR
321-60-8	2-FLUOROBIPHENYL					109	SURR
1718-51-0	P-TERPHENYL-D14					117	SURR
4165-62-2	PHENOL-D5					94	SURR
367-12-4	2-FLUOROPHENOL					120	SURR
118-79-6	2,4,6-TRIBROMOPHENOL					112	SURR

# CERTIFICATE OF ANALYSIS

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20130331SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2039/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204433  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18623

Lab Method: 2935  
Lab Method Blank: AG2132  
Analysis Date: 08/11/95 22:46  
Dilution: 1

## SEMIVOLATILES - GCMS - CAPIL. COLUMN EPA 8270A Primary Result

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
108-95-2	PHENOL	380	U	380	UG/KG		TARG
108-44-4	BIS(2-CHLOROETHYL)ETHER	380	U	380	UG/KG		TARG
7-8	2-CHLOROPHENOL	380	U	380	UG/KG		TARG
541-73-1	1,3-DICHLOROBENZENE	380	U	380	UG/KG		TARG
106-46-7	1,4-DICHLOROBENZENE	380	U	380	UG/KG		TARG
100-51-6	BENZYL ALCOHOL	380	U	380	UG/KG		TARG
95-50-1	1,2-DICHLOROBENZENE	380	U	380	UG/KG		TARG
95-48-7	2-METHYLPHENOL	380	U	380	UG/KG		TARG
108-60-1	BIS(2-CHLOROISOPROPYL) ETHER	380	U	380	UG/KG		TARG
106-44-5	4-METHYLPHENOL	380	U	380	UG/KG		TARG
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	380	U	380	UG/KG		TARG
67-72-1	HEXACHLOROETHANE	380	U	380	UG/KG		TARG
98-95-3	NITROBENZENE	380	U	380	UG/KG		TARG
78-59-1	ISOPHORONE	380	U	380	UG/KG		TARG
88-75-5	2-NITROPHENOL	380	U	380	UG/KG		TARG
105-67-9	2,4-DIMETHYLPHENOL	380	U	380	UG/KG		TARG
65-85-0	BENZOIC ACID	930	U	930	UG/KG		TARG
111-91-1	BIS(2-CHLOROETHOXY)METHANE	380	U	380	UG/KG		TARG
120-83-2	2,4-DICHLOROPHENOL	380	U	380	UG/KG		TARG
120-82-1	1,2,4-TRICHLOROBENZENE	380	U	380	UG/KG		TARG
91-20-3	NAPHTHALENE	77.	U	77.	UG/KG		TARG
106-47-8	4-CHLOROANILINE	380	U	380	UG/KG		TARG
87-68-3	HEXACHLOROBUTADIENE	380	U	380	UG/KG		TARG
59-50-7	4-CHLORO-3-METHYLPHENOL	380	U	380	UG/KG		TARG
91-57-6	2-METHYLNAPHTHALENE	380	U	380	UG/KG		TARG
77-47-4	HEXACHLOROCYCLOPENTADIENE	380	U	380	UG/KG		TARG
98-06-2	2,4,6-TRICHLOROPHENOL	380	U	380	UG/KG		TARG
95-4	2,4,5-TRICHLOROPHENOL	930	U	930	UG/KG		TARG
91-58-7	2-CHLORONAPHTHALENE	380	U	380	UG/KG		TARG
88-74-4	2-NITROANILINE	930	U	930	UG/KG		TARG
131-11-3	DIMETHYL PHTHALATE	380	U	380	UG/KG		TARG

# CERTIFICATE OF ANALYSIS

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20130331SOCO  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2039/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204433  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18623

Lab Method: 2935  
Lab Method Blank: AG2132  
Analysis Date: 08/11/95 22:46  
Dilution: 1

## SEMIVOLATILES-GCMS-CAPIL.COLUMN EPA 8270A Primary Result

Cas Number	Analyte	Result	Qualifier	Report Limit	Units	% Rec	Type
208-96-8	ACENAPHTHYLENE	77.	U	77.	UG/KG		TARG
20-2	2,6-DINITROTOLUENE	380	U	380	UG/KG		TARG
-2	3-NITROANILINE	930	U	930	UG/KG		TARG
83-32-9	ACENAPHTHENE	77.	U	77.	UG/KG		TARG
51-28-5	2,4-DINITROPHENOL	930	U	930	UG/KG		TARG
100-02-7	4-NITROPHENOL	930	U	930	UG/KG		TARG
132-64-9	DIBENZOFURAN	380	U	380	UG/KG		TARG
121-14-2	2,4-DINITROTOLUENE	380	U	380	UG/KG		TARG
84-66-2	DIETHYL PHTHALATE	380	U	380	UG/KG		TARG
7005-72-3	4-CHLOROPHENYLPHENYL ETHER	380	U	380	UG/KG		TARG
86-73-7	FLUORENE	77.	U	77.	UG/KG		TARG
100-01-6	4-NITROANILINE	930	U	930	UG/KG		TARG
534-52-1	4,6-DINITRO-2-METHYLPHENOL	930	U	930	UG/KG		TARG
86-30-6	N-NITROSODIPHENYLAMINE	380	U	380	UG/KG		TARG
101-55-3	4-BROMOPHENYL PHENYL ETHER	380	U	380	UG/KG		TARG
118-74-1	HEXACHLOROBENZENE	380	U	380	UG/KG		TARG
87-86-5	PENTACHLOROPHENOL	930	U	930	UG/KG		TARG
85-01-8	PHENANTHRENE	77.	U	77.	UG/KG		TARG
120-12-7	ANTHRACENE	77.	U	77.	UG/KG		TARG
86-74-8	CARBAZOLE	380	U	380	UG/KG		TARG
84-74-2	DI-N-BUTYL PHTHALATE	380	U	380	UG/KG		TARG
206-44-0	FLUORANTHENE	77.	U	77.	UG/KG		TARG
129-00-0	PYRENE	77.	U	77.	UG/KG		TARG
85-68-7	BUTYL BENZYL PHTHALATE	380	U	380	UG/KG		TARG
91-94-1	3,3'-DICHLOROBENZIDINE	770	U	770	UG/KG		TARG
56-55-3	BENZO(A)ANTHRACENE	77.	U	77.	UG/KG		TARG
78-01-9	CHRYSENE	77.	U	77.	UG/KG		TARG
81-7	BIS(2-ETHYLHEXYL) PHTHALATE	380	U	380	UG/KG		TARG
117-84-0	DI-N-OCTYL PHTHALATE	380	U	380	UG/KG		TARG
205-99-2	BENZO(B)FLUORANTHENE	77.	U	77.	UG/KG		TARG
207-08-9	BENZO(K)FLUORANTHENE	77.	U	77.	UG/KG		TARG

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20130331SOC0

Client Matrix: SOIL

Collection Date: 07/24/95

Lab Sample: AG2039/ORIGINAL

Lab Matrix: SOIL

Received Date: 07/26/95

Test: 204433

Retest:

Prep Date: 07/27/95

Prep Batch: 18623

Lab Method: 2935

Lab Method Blank: AG2132

Analysis Date: 08/11/95 22:46

Dilution: 1

**SEMIVOLATILES-GCMS-CAPIL.COLUMN**

EPA 8270A

Primary Result

Cas #	per	Analyte	Result	Qualifier	Report	Unit	Units	% Rec	Type
50-72-8		BENZO(A)PYRENE	77.	U	77.	UG/KG			TARG
7-39-5		INDENO(1,2,3-CD)PYRENE	77.	U	77.	UG/KG			TARG
70-3		DIBENZO(A,H)ANTHRACENE	77.	U	77.	UG/KG			TARG
191-24-2		BENZO(G,H,I)PERYLENE	77.	U	77.	UG/KG			TARG
4165-60-0		NITROBENZENE-D5						82	SURR
321-60-8		2-FLUOROBIPHENYL						80	SURR
1718-51-0		P-TERPHENYL-D14						121	SURR
4165-62-2		PHENOL-D5						82	SURR
367-12-4		2-FLUOROPHENOL						95	SURR
118-79-6		2,4,6-TRIBROMOPHENOL						77	SURR

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20446370SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2053/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204491  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18623

Lab Method: 2935  
Lab Method Blank: AG2132  
Analysis Date: 08/11/95 23:23  
Dilution: 1

**SEMIVOLATILES-GCMS-CAPIL.COLUMN**  
**EPA 8270A**  
**Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
108-95-2	PHENOL	340	U	340	UG/KG		TARG
44-4	BIS(2-CHLOROETHYL)ETHER	340	U	340	UG/KG		TARG
7-8	2-CHLOROPHENOL	340	U	340	UG/KG		TARG
541-73-1	1,3-DICHLOROBENZENE	340	U	340	UG/KG		TARG
106-46-7	1,4-DICHLOROBENZENE	340	U	340	UG/KG		TARG
100-51-6	BENZYL ALCOHOL	340	U	340	UG/KG		TARG
95-50-1	1,2-DICHLOROBENZENE	340	U	340	UG/KG		TARG
95-48-7	2-METHYLPHENOL	340	U	340	UG/KG		TARG
108-60-1	BIS(2-CHLOROISOPROPYL) ETHER	340	U	340	UG/KG		TARG
106-44-5	4-METHYLPHENOL	340	U	340	UG/KG		TARG
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	340	U	340	UG/KG		TARG
67-72-1	HEXACHLOROETHANE	340	U	340	UG/KG		TARG
98-95-3	NITROBENZENE	340	U	340	UG/KG		TARG
78-59-1	ISOPHORONE	340	U	340	UG/KG		TARG
88-75-5	2-NITROPHENOL	340	U	340	UG/KG		TARG
105-67-9	2,4-DIMETHYLPHENOL	340	U	340	UG/KG		TARG
65-85-0	BENZOIC ACID	820	U	820	UG/KG		TARG
111-91-1	BIS(2-CHLOROETHOXY)METHANE	340	U	340	UG/KG		TARG
120-83-2	2,4-DICHLOROPHENOL	340	U	340	UG/KG		TARG
120-82-1	1,2,4-TRICHLOROBENZENE	340	U	340	UG/KG		TARG
91-20-3	NAPHTHALENE	68.	U	68.	UG/KG		TARG
106-47-8	4-CHLOROANILINE	340	U	340	UG/KG		TARG
87-68-3	HEXACHLOROBUTADIENE	340	U	340	UG/KG		TARG
59-50-7	4-CHLORO-3-METHYLPHENOL	340	U	340	UG/KG		TARG
91-57-6	2-METHYLNAPHTHALENE	340	U	340	UG/KG		TARG
77-47-4	HEXACHLOROCYCLOPENTADIENE	340	U	340	UG/KG		TARG
22-06-2	2,4,6-TRICHLOROPHENOL	340	U	340	UG/KG		TARG
95-4	2,4,5-TRICHLOROPHENOL	820	U	820	UG/KG		TARG
58-7	2-CHLORONAPHTHALENE	340	U	340	UG/KG		TARG
88-74-4	2-NITROANILINE	820	U	820	UG/KG		TARG
131-11-3	DIMETHYL PHTHALATE	340	U	340	UG/KG		TARG

# CERTIFICATE OF ANALYSIS

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ROCKETDYNE

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20446370SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2053/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204491  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18623

Lab Method: 2935  
Lab Method Blank: AG2132  
Analysis Date: 08/11/95 23:23  
Dilution: 1

## SEMIVOLATILES-GCMS-CAPIL.COLUMN EPA 8270A Primary Result

Cas Number	Analyte	Result	Qualifier	Report Limit	Units	% Rec	Type
208-96-8	ACENAPHTHYLENE	68.	U	68.	UG/KG		TARG
20-2	2,6-DINITROTOLUENE	340	U	340	UG/KG		TARG
9-2	3-NITROANILINE	820	U	820	UG/KG		TARG
85-32-9	ACENAPHTHENE	68.	U	68.	UG/KG		TARG
51-28-5	2,4-DINITROPHENOL	820	U	820	UG/KG		TARG
100-02-7	4-NITROPHENOL	820	U	820	UG/KG		TARG
132-64-9	DIBENZOFURAN	340	U	340	UG/KG		TARG
121-14-2	2,4-DINITROTOLUENE	340	U	340	UG/KG		TARG
84-66-2	DIETHYL PHTHALATE	340	U	340	UG/KG		TARG
7005-72-3	4-CHLOROPHENYLPHENYL ETHER	340	U	340	UG/KG		TARG
86-73-7	FLUORENE	68.	U	68.	UG/KG		TARG
100-01-6	4-NITROANILINE	820	U	820	UG/KG		TARG
534-52-1	4,6-DINITRO-2-METHYLPHENOL	820	U	820	UG/KG		TARG
86-30-6	N-NITROSODIPHENYLAMINE	340	U	340	UG/KG		TARG
101-55-3	4-BROMOPHENYL PHENYL ETHER	340	U	340	UG/KG		TARG
118-74-1	HEXACHLOROBENZENE	340	U	340	UG/KG		TARG
87-86-5	PENTACHLOROPHENOL	820	U	820	UG/KG		TARG
85-01-8	PHENANTHRENE	68.	U	68.	UG/KG		TARG
120-12-7	ANTHRACENE	68.	U	68.	UG/KG		TARG
86-74-8	CARBAZOLE	340	U	340	UG/KG		TARG
84-74-2	DI-N-BUTYL PHTHALATE	37.	J	340	UG/KG		TARG
206-44-0	FLUORANTHENE	68.	U	68.	UG/KG		TARG
129-00-0	PYRENE	68.	U	68.	UG/KG		TARG
85-68-7	BUTYL BENZYL PHTHALATE	340	U	340	UG/KG		TARG
91-94-1	3,3'-DICHLOBENZIDINE	680	U	680	UG/KG		TARG
56-55-3	BENZO(A)ANTHRACENE	68.	U	68.	UG/KG		TARG
218-01-9	CHRYSENE	68.	U	68.	UG/KG		TARG
81-7	BIS(2-ETHYLHEXYL) PHTHALATE	540		340	UG/KG		TARG
84-0	DI-N-OCTYL PHTHALATE	340	U	340	UG/KG		TARG
205-99-2	BENZO(B)FLUORANTHENE	68.	U	68.	UG/KG		TARG
207-08-9	BENZO(K)FLUORANTHENE	68.	U	68.	UG/KG		TARG

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20446370SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2053/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204491  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18623

Lab Method: 2935  
Lab Method Blank: AG2132  
Analysis Date: 08/11/95 23:23  
Dilution: 1

**SEMIVOLATILES-GCMS-CAPIL.COLUMN**  
**EPA 8270A**  
**Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
50-32-8	BENZO(A)PYRENE	68.	U	68.	UG/KG		TARG
39-5	INDENO(1,2,3-CD)PYRENE	68.	U	68.	UG/KG		TARG
-3	DIBENZO(A,H)ANTHRACENE	68.	U	68.	UG/KG		TARG
191-24-2	BENZO(G,H,I)PERYLENE	68.	U	68.	UG/KG		TARG
4165-60-0	NITROBENZENE-D5					78	SURR
321-60-8	2-FLUOROBIPHENYL					91	SURR
1718-51-0	P-TERPHENYL-D14					128	SURR
4165-62-2	PHENOL-D5					84	SURR
367-12-4	2-FLUOROPHENOL					98	SURR
118-79-6	2,4,6-TRIBROMOPHENOL					86	SURR



**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20246220SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2011/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204266  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18626

Lab Method: 3170  
Lab Method Blank: AG2143  
Analysis Date: 08/02/95 18:23  
Dilution: 1

**ORGANOCHLOR. PCB-GC/EC, CAP&PACK**  
**EPA 8080**  
**Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
11104-28-2	AROCLOR-1221	22.	U	22.	UG/KG		TARG
74-11-2	AROCLOR-1016	22.	U	22.	UG/KG		TARG
1-16-5	AROCLOR-1232	22.	U	22.	UG/KG		TARG
53469-21-9	AROCLOR-1242	22.	U	22.	UG/KG		TARG
12672-29-6	AROCLOR-1248	22.	U	22.	UG/KG		TARG
11097-69-1	AROCLOR-1254	44.	U	44.	UG/KG		TARG
11096-82-5	AROCLOR-1260	44.	U	44.	UG/KG		TARG
877-09-8	2,4,5,6-TETRACHLORO-M-XYLENE					107	SURR
1770-80-5	DIBUTYL CHLORENDATE					77	SURR

# CERTIFICATE OF ANALYSIS

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ROCKETDYNE

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20146220SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2033/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204378  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18626

Lab Method: 3170  
Lab Method Blank: AG2143  
Analysis Date: 08/02/95 19:14  
Dilution: 1

## ORGANOCHLOR. PCB-GC/EC, CAP&PACK EPA 8080 Primary Result

Cas Number	Analyte	Result	Qualifier	Report Limit	Units	% Rec	Type
11104-28-2	AROCLOR-1221	23.	U	23.	UG/KG		TARG
11104-11-2	AROCLOR-1016	23.	U	23.	UG/KG		TARG
11104-16-5	AROCLOR-1232	23.	U	23.	UG/KG		TARG
53469-21-9	AROCLOR-1242	23.	U	23.	UG/KG		TARG
12672-29-6	AROCLOR-1248	23.	U	23.	UG/KG		TARG
11097-69-1	AROCLOR-1254	71.		45.	UG/KG		TARG
11096-82-5	AROCLOR-1260	45.	U	45.	UG/KG		TARG
877-09-8	2,4,5,6-TETRACHLORO-M-XYLENE					104	SURR
1770-80-5	DIBUTYL CHLORENDATE					80	SURR

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20346310SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2036/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204414  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18626

Lab Method: 3170  
Lab Method Blank: AG2143  
Analysis Date: 08/10/95 12:48  
Dilution: 2

**ORGANOCHLOR. PCB-GC/EC, CAP&PACK**  
**EPA 8080**  
**Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
11104-28-2	AROCLOR-1221	43.	U	43.	UG/KG		TARG
74-11-2	AROCLOR-1016	43.	U	43.	UG/KG		TARG
1-16-5	AROCLOR-1232	43.	U	43.	UG/KG		TARG
53469-21-9	AROCLOR-1242	43.	U	43.	UG/KG		TARG
12672-29-6	AROCLOR-1248	43.	U	43.	UG/KG		TARG
11097-69-1	AROCLOR-1254	88.		86.	UG/KG		TARG
11096-82-5	AROCLOR-1260	86.	U	86.	UG/KG		TARG
877-09-8	2,4,5,6-TETRACHLORO-M-XYLENE					81	SURR
1770-80-5	DIBUTYL CHLORENDATE					53	SURR

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20130331SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2039/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204430  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18626

Lab Method: 3170  
Lab Method Blank: AG2143  
Analysis Date: 08/02/95 20:05  
Dilution: 1

**ORGANOCHLOR. PCB-GC/EC, CAP&PACK**  
**EPA 8080**  
**Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
11104-28-2	AROCLOR-1221	23.	U	23.	UG/KG		TARG
74-11-2	AROCLOR-1016	23.	U	23.	UG/KG		TARG
-16-5	AROCLOR-1232	23.	U	23.	UG/KG		TARG
53469-21-9	AROCLOR-1242	23.	U	23.	UG/KG		TARG
12672-29-6	AROCLOR-1248	23.	U	23.	UG/KG		TARG
11097-69-1	AROCLOR-1254	47.	U	47.	UG/KG		TARG
11096-82-5	AROCLOR-1260	47.	U	47.	UG/KG		TARG
877-09-8	2,4,5,6-TETRACHLORO-M-XYLENE					101	SURR
1770-80-5	DIBUTYL CHLORENDATE					69	SURR

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20446370SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2053/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204488  
Retest:  
Prep Date: 07/27/95  
Prep Batch: 18626

Lab Method: 3170  
Lab Method Blank: AG2143  
Analysis Date: 08/02/95 20:30  
Dilution: 5

**ORGANOCHLOR. PCB-GC/EC, CAP&PACK**  
**EPA 8080**  
**Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
11104-28-2	AROCLOR-1221	100	U	100	UG/KG		TARG
2674-11-2	AROCLOR-1016	100	U	100	UG/KG		TARG
1-16-5	AROCLOR-1232	100	U	100	UG/KG		TARG
53469-21-9	AROCLOR-1242	100	U	100	UG/KG		TARG
12672-29-6	AROCLOR-1248	100	U	100	UG/KG		TARG
11097-69-1	AROCLOR-1254	360		210	UG/KG		TARG
11096-82-5	AROCLOR-1260	210	U	210	UG/KG		TARG
877-09-8	2,4,5,6-TETRACHLORO-M-XYLENE					95	SURR
1770-80-5	DIBUTYL CHLORENDATE					66	SURR

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20246220SMM0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2020/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204396  
Retest:  
Prep Date: 07/28/95  
Prep Batch: 18682

Lab Method: 3276  
Lab Method Blank: AG2426  
Analysis Date: 08/01/95 13:35  
Dilution: 1

**METALS BY ICP-SUPER TRACE INSTRUMNT  
EPA 6010A  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
7440-38-2	ARSENIC	4.40		1.05	MG/KG		TARG
7440-47-3	CHROMIUM	16.1		.0526	MG/KG		TARG
7440-50-8	COPPER	10.6		.158	MG/KG		TARG
7440-92-1	LEAD	28.6		.316	MG/KG		TARG
7440-02-0	NICKEL	10.4		.316	MG/KG		TARG
7440-66-6	ZINC	61.4		2.11	MG/KG		TARG

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20146220SMM0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2035/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204411  
Retest:  
Prep Date: 07/28/95  
Prep Batch: 18682

Lab Method: 3276  
Lab Method Blank: AG2426  
Analysis Date: 08/01/95 13:50  
Dilution: 1

**METALS BY ICP-SUPER TRACE INSTRUMNT  
EPA 6010A  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
7440-38-2	ARSENIC	4.70		1.18	MG/KG		TARG
0-47-3	CHROMIUM	25.8		.0588	MG/KG		TARG
50-8	COPPER	17.5		.176	MG/KG		TARG
7439-92-1	LEAD	9.10		.353	MG/KG		TARG
7440-02-0	NICKEL	18.1		.353	MG/KG		TARG
7440-66-6	ZINC	63.2		2.35	MG/KG		TARG

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20130331SMMO  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2041/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204448  
Retest:  
Prep Date: 07/28/95  
Prep Batch: 18682

Lab Method: 3276  
Lab Method Blank: AG2426  
Analysis Date: 08/01/95 13:55  
Dilution: 1

**METALS BY ICP-SUPER TRACE INSTRUMNT  
EPA 6010A  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
7440-38-2	ARSENIC	4.90		1.03	MG/KG		TARG
7440-47-3	CHROMIUM	27.4		.0515	MG/KG		TARG
7440-50-8	COPPER	19.5		.155	MG/KG		TARG
7440-92-1	LEAD	11.2		.309	MG/KG		TARG
7440-02-0	NICKEL	19.1		.309	MG/KG		TARG
7440-66-6	ZINC	61.5		2.06	MG/KG		TARG



**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20346310SMM0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2042/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204454  
Retest:  
Prep Date: 07/28/95  
Prep Batch: 18682

Lab Method: 3276  
Lab Method Blank: AG2426  
Analysis Date: 08/01/95 14:05  
Dilution: 1

**METALS BY ICP-SUPER TRACE INSTRUMNT**  
**EPA 6010A**  
**Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
7440-38-2	ARSENIC	4.20		1.03	MG/KG		TARG
7440-47-3	CHROMIUM	20.4		.0515	MG/KG		TARG
7440-50-8	COPPER	24.9		.155	MG/KG		TARG
7440-92-1	LEAD	10.9		.309	MG/KG		TARG
7440-02-0	NICKEL	14.6		.309	MG/KG		TARG
7440-66-6	ZINC	68.2		2.06	MG/KG		TARG

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 17, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20446370SMM0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AG2051/ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204485  
Retest:  
Prep Date: 07/28/95  
Prep Batch: 18682

Lab Method: 3276  
Lab Method Blank: AG2426  
Analysis Date: 08/01/95 14:09  
Dilution: 1

**METALS BY ICP-SUPER TRACE INSTRUMNT  
EPA 6010A  
Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
7440-38-2	ARSENIC	4.40		1.03	MG/KG		TARG
7440-47-3	CHROMIUM	22.3		.0515	MG/KG		TARG
7440-50-8	COPPER	16.1		.155	MG/KG		TARG
7439-92-1	LEAD	10.7		.309	MG/KG		TARG
7440-02-0	NICKEL	15.0		.309	MG/KG		TARG
7440-66-6	ZINC	64.2		2.06	MG/KG		TARG

Quanterra Incorporated  
5815 Middlebrook Pike  
Knoxville, Tennessee 37921

615 588-6401 Telephone  
615 584-4315 Fax

24-Aug-95  
Revised 31-Aug-95

Ruth Custance  
ICF Kaiser Environment and Energy Group  
10 Universal City Plaza  
Suite 2400  
Universal City, CA 91608-1097

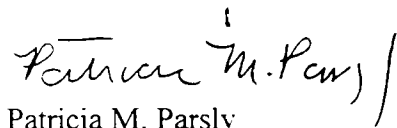
**RE: Dioxin/Furan Report**  
Work Order No: 2328

Dear Ms. Custance:

Enclosed please find one copy of our final Dioxin/Furan report for twenty soil samples and one water sample received 26-Jul-95.

Quanterra Environmental Services appreciates your business and looks forward to working with you in the future. Please call if you have any questions about our report or services.

Sincerely,



Patricia M. Parsly  
Project Manager



Environmental  
Services

Quanterra Incorporated  
5815 Middlebrook Pike  
Knoxville, Tennessee 37921

615 588-6401 Telephone  
615 584-4315 Fax

## CERTIFICATE OF ANALYSIS

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Ruth Custance  
ICF Kaiser Environment and Energy Group  
10 Universal City Plaza  
Suite 2400  
Universal City, CA 91608-1097

24-Aug-95  
Revised 31-Aug-95

---

**WORK ORDER NUMBER: 2328**

**This is the Certificate of Analysis for the following samples:**

<b>Client Project ID:</b>	Rocketdyne
<b>Date Received by Lab:</b>	26-Jul-95
<b>Number of Samples:</b>	Twenty-One (21)
<b>Sample Matrix:</b>	Soil and Water

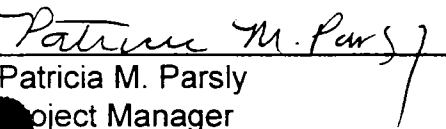
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### Introduction/Case Narrative

Twenty (20) soil samples and one (1) water sample were received 26-Jul-95 for the analysis of 2,3,7,8-TCDD/TCDF and total tetra through octa ( $\text{Cl}_4\text{-Cl}_8$ ) dioxin and furan homologs (See Appendix A, Cross Reference List and Appendix E, Chain-of-Custody and Request for Analysis records). An estimation of all 2,3,7,8-substituted isomers was also requested. The samples and the blanks were spiked with an internal standard mixture containing 1.0 ng each of  $^{13}\text{C}$ -TCDD,  $^{13}\text{C}$ -TCDF,  $^{13}\text{C}$ -PeCDD,  $^{13}\text{C}$ -PeCDF,  $^{13}\text{C}$ -HxCDD,  $^{13}\text{C}$ -HxCDF,  $^{13}\text{C}$ -HpCDD,  $^{13}\text{C}$ -HpCDF and 2.0 ng of  $^{13}\text{C}$ -OCDD. The samples and the blanks were analyzed using the EPA reference method described in RCRA SW-846, Method 8290. Extracts were analyzed by GC/MS operating in the selected ion monitoring mode for enhanced sensitivity. The results reported herein are applicable to the samples submitted for analysis only. It is recommended that if this report is reproduced, it is reproduced in its entirety.

The soil samples are reported on a dry weight basis.

Reviewed and Approved:

  
Patricia M. Parsly  
Project Manager

460/dll

## I. Introduction/Case Narrative (Continued)

This report was originally issued on 24-Aug-95 without the results from the confirmation analysis for the 2,3,7,8-TCDF. This report includes the previously reported results and the results from the 2,3,7,8-TCDF confirmation analysis.

Many of the 2,3,7,8-TCDF results from the DB-225 column were higher than the results from the DB-5 column. Most of the samples exhibited a possible polychlorinated diphenyl interference.

Due to matrix interferences which caused ion suppression, the specified results for the samples listed below were obtained from a dilution:

<u>Sample</u>	<u>Dilution Factor</u>	<u>Results obtained from dilution</u>
20146220SOC0	1:10	All
20346310SOC0	1:5	All
20446370SOC0	1:10	<sup>13</sup> C-HpCDD, HpCDD
21431330SOC0	1:10	<sup>13</sup> C-HpCDD- <sup>13</sup> -OCDD, HxCDD-OCDD
20546500SOC0	1:10	<sup>13</sup> C-HpCDF, <sup>13</sup> HxCDF, HxCDF-OCDF
31235290SOC0	1:10	HpCDD, <sup>13</sup> C-HpCDF
21513070SOC0	1:10	All
40206390SOC0	1:10	All
30921670SOC0	1:10	<sup>13</sup> C-HpCDD, HpCDF
40206390SOC0	1:10	All
22046220SOC0	1:10	<sup>13</sup> C-HpCDD, HpCDF

## II. Analytical Results/Methodology

### SAMPLE PREPARATION

**Soil** - A 10 gram (wet weight) aliquot of each sample and 10 grams of quartz sand (for the blanks) were weighed into separate Soxhlet thimbles. The samples and the blanks were spiked with the internal standard mixture, followed by a Soxhlet extraction with toluene for sixteen hours. The resulting extracts were filtered into a KD flask and the volume reduced to approximately 1 ml.

**Water** - Approximately 1000 ml of the sample and 1000 ml distilled water (for the blank) were transferred into individual separatory funnels. The sample and the blank were spiked with the internal standard mixture, and then triple-extracted with methylene chloride. The resulting extracts were filtered into a KD flask and the volume reduced to approximately 1 ml.

## II. Analytical Results/Methodology (Continued)

### SAMPLE CLEANUP

The sample and blank extracts were washed with 20% KOH and distilled water followed by three concentrated H<sub>2</sub>SO<sub>4</sub> washes. Further cleanup consisted of a dual column system utilizing acid-modified silica gel followed by neutral alumina. Final extracts were concentrated to near dryness and raised to 20 µl with 2.0 ng <sup>13</sup>C-1,2,3,4-TCDD and 2.0 ng <sup>13</sup>C-1,2,3,7,8,9-HxCDD which were used as recovery standards.

### GC/MS ANALYSIS

**Total Dioxin and Furan** - The samples and the blanks were analyzed for total dioxin and furan homologs from Cl<sub>4</sub>-Cl<sub>8</sub>. The standard analyzed each shift consisted of:

#### Dioxins

<sup>13</sup>C-2,3,7,8-TCDD  
<sup>13</sup>C-1,2,3,4-TCDD  
<sup>13</sup>C-1,2,3,7,8-PeCDD  
<sup>13</sup>C-1,2,3,6,7,8-HxCDD  
<sup>13</sup>C-1,2,3,7,8,9-HxCDD  
<sup>13</sup>C-1,2,3,4,6,7,8-HpCDD  
<sup>13</sup>C-OCDD  
2,3,7,8-TCDD  
1,2,3,7,8-PeCDD  
1,2,3,4,7,8-HxCDD  
1,2,3,6,7,8-HxCDD  
1,2,3,7,8,9-HxCDD  
1,2,3,4,6,7,8-HpCDD  
OCDD

#### Dibenzofurans

<sup>13</sup>C-2,3,7,8-TCDF  
<sup>13</sup>C-1,2,3,7,8-PeCDF  
<sup>13</sup>C-1,2,3,4,7,8-HxCDF  
<sup>13</sup>C-1,2,3,4,6,7,8-HpCDF  
2,3,7,8-TCDF  
1,2,3,7,8-PeCDF  
2,3,4,7,8-PeCDF  
1,2,3,4,7,8-HxCDF  
1,2,3,6,7,8-HxCDF  
2,3,4,6,7,8-HxCDF  
1,2,3,7,8,9-HxCDF  
1,2,3,4,6,7,8-HpCDF  
1,2,3,4,7,8,9-HpCDF  
OCDF

Response factors were calculated for each compound in the standard relative to its <sup>13</sup>C labeled homolog. Native OCDF is calculated against <sup>13</sup>C-OCDD. A five-point calibration plot was analyzed. The mean response factors obtained from this five-point calibration were used for all subsequent calculations. The daily calibration standards, analyzed on the same day as the samples, met the method criteria for all native analytes.

The extracts were analyzed using HRGC/HRMS scanning in the selected ion monitoring mode for enhanced sensitivity. The column used for the analysis was a 60 m DB-5 type fused silica capillary column.

## II. Analytical Results/Methodology (Continued)

### GC/MS RESULTS

**Totals** - The results for the totals analysis, shown in Appendix C, are reported in pg/g for the soil samples and pg/L for the water sample with the total amount of each homologous group calculated. For any homologous series of dioxins or furans that contain more than one 2,3,7,8-substituted isomer, the total result for that series is the sum of the individual 2,3,7,8-substituted isomers (calculated using their specific Response Factors) and all other non-2,3,7,8-substituted isomers (calculated using the average Response Factor of the individual 2,3,7,8-substituted isomers in that homologous series).

The results from the confirmation analysis are in Appendix D.

**Detection Limits** - When an analyte is not detected, a sample specific detection limit is calculated for that analyte. This is done by first determining the GC/MS peak height of the noise or interferent in the expected region of the analyte signal. This value is multiplied by the number 2.5 which serves as a safety factor. The 2.5 safety factor is disregarded if the noise present in the analyte region is a result of chemical interferences. The resulting signal response value is then used to estimate the minimum detectable analyte amount. The result is the estimated sample detection limit.

When an analyte is not detected, a "U" is reported in the qualifier column. The value in the result column is the estimated detection limit for the analyte in that particular sample.

## III. Quality Control

Routine laboratory QA/QC was followed. Appendix B lists the results of the QC samples run in the same quality assurance batch as the client samples. Recoveries for the internal standards for each sample are presented with the sample analysis data.

## **APPENDIX A**



**APPENDIX A**

Page 1 of 1

**Ruth Custance****ICF KAISER ENVIRONMENTAL ENERGY AND GROUP**

Date: 24-Aug-95

Work Order No.: 2328

*Environmental  
Services*

Revised 31-Aug-95

**CROSS REFERENCE LIST**

<b>QUANTERRA SAMPLE NO.</b>	<b>CLIENT SAMPLE NO.</b>	<b>MATRIX</b>
AA5775	20246220SOC0	Soil
AA5776	20203310SOC0	Soil
AA5777	20330281SOC0	Soil
AA5778	20146220SOC0	Soil
AA5779	20346310SOC0	Soil
AA5780	20130331SOC0	Soil
AA5781	20446370SOC0	Soil
AA5782	21431330SOC0	Soil
AA5783	20530491SOC0	Soil
AA5784	20546500SOC0	Soil
AA5785	21446220SOC0	Soil
AA5786	20846220SOC0	Soil
AA5787	21516170SOC0	Soil
AA5788	21404240SOC0	Soil
AA5789	31235290SOC0	Soil
AA5790	21513070SOC0	Soil
AA5791	40206390SOC0	Soil
AA5792	30921670SOC0	Soil
AA5793	40206390SOC0	Soil
AA5795	22046220SOC0	Soil
AA5794	21431330WOC1	Water

## **APPENDIX B**

**APPENDIX B**

Page 1 of 3

**Ruth Custance****ICF KAISER ENVIRONMENTAL ENERGY AND GROUP**

Date: 24-Aug-95

Work Order No.: 2328

**Environmental  
Services**

Revised 31-Aug-95

**LABORATORY CONTROL SAMPLE****QA/QC REPORT****HRMS**LCS Number: **BLCS528**Extraction Method: **SOXHLET**Matrix: **SOLID**Extraction Date: **8/4/95**Totals Analysis Date: **8/13/95**

COMPOUND	Amt.	Conc.	%	EPA %
	Added	LCS	Recovery	Recovery
	pg/g	pg/g	LCS	Range

**Totals Analysis**

2,3,7,8-TCDD	20.0	19.5	98	a
1,2,3,7,8-PeCDD	100.	105	105	a
1,2,3,6,7,8-HxCDD	100.	99.6	100	a
1,2,3,4,6,7,8-HpCDD	100.	96.2	96	a
OCDD	200.	181	91	a
2,3,7,8-TCDF	20.0	21.5	108	a
1,2,3,7,8-PeCDF	100.	94.4	94	a
1,2,3,4,7,8-HxCDF	100.	96.4	96	a
1,2,3,4,6,7,8-HpCDF	100.	98.8	99	a
OCDF	200.	183	92	a

% Recovery = (Conc. LCS) / Amt. Added) x 100

(a) No EPA Range has been established for these analytes. ITAS-TDL QA/QC limits are 60% - 140%.

## LABORATORY CONTROL SAMPLE

## QA/QC REPORT

## HRMS

LCS Number: BLCS525

Extraction Method: SOXHLET

Matrix: SOLID

Extraction Date: 8/9/95

Totals Analysis Date: 8/18/95

COMPOUND	Amt.	Conc.	%	EPA %
	Added	LCS	Recovery	Recovery
	pg/g	pg/g	LCS	Range

## Totals Analysis

2,3,7,8-TCDD	20.0	20.3	102	a
1,2,3,7,8-PeCDD	100.	107	107	a
1,2,3,6,7,8-HxCDD	100.	102	102	a
1,2,3,4,6,7,8-HpCDD	100.	100	100	a
OCDD	200.	198	99	a
2,3,7,8-TCDF	20.0	22.1	111	a
1,2,3,7,8-PeCDF	100.	95.1	95	a
1,2,3,4,7,8-HxCDF	100.	98.6	99	a
1,2,3,4,6,7,8-HpCDF	100.	102	102	a
OCDF	200.	174	87	a

$$\% \text{ Recovery} = (\text{Conc. LCS}) / \text{Amt. Added} \times 100$$

(a) No EPA Range has been established for these analytes. ITAS-TDL QA/QC limits are 60% - 140%.

**APPENDIX B**

Page 3 of 3

Ruth Custance

ICF KAISER ENVIRONMENTAL ENERGY AND GROUP

Date: 24-Aug-95

Work Order No.: 2328

Environmental  
Services

Revised 31-Aug-95

**LABORATORY CONTROL SAMPLE****QA/QC REPORT  
HRMS**LCS Number: BLCS522  
Sample Matrix: Water

Extraction Date: 7/31/95

Totals Analysis Date: 8/3/95

Extraction Method: Liquid/Liquid

COMPOUND	Amt.	Conc.	%	EPA %
	Added	LCS	Recovery	Recovery
	pg/L	pg/L	LCS	Range
<b>Totals Analysis</b>				
2,3,7,8-TCDD	200	215	108	a
1,2,3,7,8-PeCDD	1000	1070	107	a
1,2,3,6,7,8-HxCDD	1000	1030	103	a
1,2,3,4,6,7,8-HpCDD	1000	1020	102	a
OCDD	2000	1800	90	a
2,3,7,8-TCDF	200	226	113	a
1,2,3,7,8-PeCDF	1000	925	93	a
1,2,3,4,7,8-HxCDF	1000	958	96	a
1,2,3,4,6,7,8-HpCDF	1000	966	97	a
OCDF	2000	1680	84	a

% Recovery = (Conc. LCS) / Amt. Added) x 100

(a) No EPA Range has been established for these analytes. ITAS-TDL QA/QC advisory limits are 60% - 140%.



## **APPENDIX C**

# CERTIFICATE OF ANALYSIS

Page 1 C of 51 C

ROCKETDYNE

August 24, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20246220SOC0

Client Matrix: SOIL

Collection Date: 07/24/95

Lab Sample: AA5775 /ORIGINAL

Lab Matrix: SOIL

Received Date: 07/26/95

Test: 204277

Retest:

Prep Date: 08/04/95

Prep Batch: 3254

Lab Method: 1012

Lab Method Blank: BLK3254

Analysis Date: 08/15/95 10:19

Dilution: 1

## PCDD/F, HRMS EPA 8290 Primary Result

Cas Number	Analyte	Result	Qualifier	Report Limit	Units	% Rec	Type
1746-01-6	2,3,7,8-TCDD	.57	U	.57	PG/G		TARG
3-57-5	TOTAL TCDD	.23	J	1.1	PG/G		TARG
7-76-4	1,2,3,7,8-PECDD	.35	U	.35	PG/G		TARG
36088-22-9	TOTAL PECDD	.36	J	5.6	PG/G		TARG
39227-28-6	1,2,3,4,7,8-HXCDD	.11	U	.11	PG/G		TARG
57653-85-7	1,2,3,6,7,8-HXCDD	.46	J	5.6	PG/G		TARG
19408-74-3	1,2,3,7,8,9-HXCDD	.74	J	5.6	PG/G		TARG
34465-46-8	TOTAL HXCDD	1.9	JQ	5.6	PG/G		TARG
35822-46-9	1,2,3,4,6,7,8-HPCDD	1.6	J	5.6	PG/G		TARG
37871-00-4	TOTAL HPCDD	3.3	J	5.6	PG/G		TARG
3268-87-9	TOTAL OCDD	20.8		11.	PG/G		TARG
51207-31-9	2,3,7,8-TCDF	.35	JCQ	1.1	PG/G		TARG
55722-27-5	TOTAL TCDF	4.2	JIQ	1.1	PG/G		TARG
57117-41-6	1,2,3,7,8-PECDF	.23	U	.23	PG/G		TARG
57117-31-4	2,3,4,7,8-PECDF	.19	U	.19	PG/G		TARG
30402-15-4	TOTAL PECDF	1.9	JIQ	5.6	PG/G		TARG
70648-26-9	1,2,3,4,7,8-HXCDF	.10	U	.10	PG/G		TARG
57117-44-9	1,2,3,6,7,8-HXCDF	.12	U	.12	PG/G		TARG
60851-34-5	2,3,4,6,7,8-HXCDF	.18	J	5.6	PG/G		TARG
72918-21-9	1,2,3,7,8,9-HXCDF	.54	J	5.6	PG/G		TARG
55684-94-1	TOTAL HXCDF	2.0	JI	5.6	PG/G		TARG
67562-39-4	1,2,3,4,6,7,8-HPCDF	.21	U	.21	PG/G		TARG
55673-89-7	1,2,3,4,7,8,9-HPCDF	.11	U	.11	PG/G		TARG
38998-75-3	TOTAL HPCDF	.41	J	5.6	PG/G		TARG
39001-02-0	TOTAL OCDF	.79	JQ	11.	PG/G		TARG
76523-40-5	13C-2,3,7,8-TCDD					55	SURR
719-79-1	13C-1,2,3,7,8-PECDD					61	SURR
9-81-5	13C-1,2,3,6,7,8-HXCDD					51	SURR
109719-83-7	13C-1,2,3,4,6,7,8-HPCDD					62	SURR
114423-97-1	13C-OCDD					45	SURR
89059-46-1	13C-2,3,7,8-TCDF					47	SURR



**CERTIFICATE OF ANALYSIS**  
**ROCKETDYNE**

Page 2 C of 51 C  
August 24, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20246220SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AA5775 /ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204277  
Retest:  
Prep Date: 08/04/95  
Prep Batch: 3254

Lab Method: 1012  
Lab Method Blank: BLK3254  
Analysis Date: 08/15/95 10:19  
Dilution: 1

**PCDD/F, HRMS**  
**EPA 8290**  
**Primary Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
109719-77-9	13C-1,2,3,7,8-PECDF					62	SURR
23-98-2	13C-1,2,3,4,7,8-HXCDF					54	SURR
19-84-8	13C-1,2,3,4,6,7,8-HPCDF					47	SURR



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# CERTIFICATE OF ANALYSIS

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ROCKETDYNE

August 24, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20146220SOC0

Client Matrix: SOIL

Collection Date: 07/24/95

Lab Sample: AA5778 /ORIGINAL

Lab Matrix: SOIL

Received Date: 07/26/95

Test: 204386

Retest:

Prep Date: 08/04/95

Prep Batch: 3254

Lab Method: 1012

Lab Method Blank: BLK3254

Analysis Date: 08/16/95 10:41

Dilution: 10

## PCDD/F, HRMS EPA 8290 Primary Result

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
1746-01-6	2,3,7,8-TCDD	2.4	U	2.4	PG/G		TARG
3-57-5	TOTAL TCDD	3.0	U	3.0	PG/G		TARG
-76-4	1,2,3,7,8-PECDD	1.6	U	1.6	PG/G		TARG
36088-22-9	TOTAL PECDD	1.6	U	1.6	PG/G		TARG
39227-28-6	1,2,3,4,7,8-HXCDD	1.7	U	1.7	PG/G		TARG
57653-85-7	1,2,3,6,7,8-HXCDD	1.5	J	57.	PG/G		TARG
19408-74-3	1,2,3,7,8,9-HXCDD	1.5	J	57.	PG/G		TARG
34465-46-8	TOTAL HXCDD	10.3		57.	PG/G		TARG
35822-46-9	1,2,3,4,6,7,8-HPCDD	17.2	J	57.	PG/G		TARG
37871-00-4	TOTAL HPCDD	56.3		57.	PG/G		TARG
3268-87-9	TOTAL OCDD	128.		110	PG/G		TARG
51207-31-9	2,3,7,8-TCDF	2.8	J	11.	PG/G		TARG
55722-27-5	TOTAL TCDF	27.9	I	11.	PG/G		TARG
57117-41-6	1,2,3,7,8-PECDF	.94	U	.94	PG/G		TARG
57117-31-4	2,3,4,7,8-PECDF	1.6	U	1.6	PG/G		TARG
30402-15-4	TOTAL PECDF	15.2	JIQ	57.	PG/G		TARG
70648-26-9	1,2,3,4,7,8-HXCDF	1.8	U	1.8	PG/G		TARG
57117-44-9	1,2,3,6,7,8-HXCDF	.95	U	.95	PG/G		TARG
60851-34-5	2,3,4,6,7,8-HXCDF	1.2	U	1.2	PG/G		TARG
72918-21-9	1,2,3,7,8,9-HXCDF	1.4	U	1.4	PG/G		TARG
55684-94-1	TOTAL HXCDF	7.0	JIQ	57.	PG/G		TARG
67562-39-4	1,2,3,4,6,7,8-HPCDF	3.9	J	57.	PG/G		TARG
55673-89-7	1,2,3,4,7,8,9-HPCDF	2.3	U	2.3	PG/G		TARG
38998-75-3	TOTAL HPCDF	8.7	J	57.	PG/G		TARG
39001-02-0	TOTAL OCDF	4.5	JQ	110	PG/G		TARG
76523-40-5	13C-2,3,7,8-TCDD					71	SURR
719-79-1	13C-1,2,3,7,8-PECDD					71	SURR
9-81-5	13C-1,2,3,6,7,8-HXCDD					65	SURR
109719-83-7	13C-1,2,3,4,6,7,8-HPCDD					45	SURR
114423-97-1	13C-OCDD					41	SURR
89059-46-1	13C-2,3,7,8-TCDF					64	SURR



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# CERTIFICATE OF ANALYSIS

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ROCKETDYNE

August 24, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20146220SOC0

Client Matrix: SOIL

Collection Date: 07/24/95

Lab Sample: AA5778 /ORIGINAL

Lab Matrix: SOIL

Received Date: 07/26/95

Test: 204386

Retest:

Prep Date: 08/04/95

Prep Batch: 3254

Lab Method: 1012

Lab Method Blank: BLK3254

Analysis Date: 08/16/95 10:41

Dilution: 10

## PCDD/F, HRMS EPA 8290 Primary Result

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
109719-77-9	13C-1,2,3,7,8-PECDF					88	SURR
23-98-2	13C-1,2,3,4,7,8-HXCDF					75	SURR
9-84-8	13C-1,2,3,4,6,7,8-HPCDF					43	SURR



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# CERTIFICATE OF ANALYSIS

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ROCKETDYNE

August 24, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20346310SOC0

Client Matrix: SOIL

Collection Date: 07/24/95

Lab Sample: AA5779 /ORIGINAL

Lab Matrix: SOIL

Received Date: 07/26/95

Test: 204422

Retest:

Prep Date: 08/04/95

Prep Batch: 3254

Lab Method: 1012

Lab Method Blank: BLK3254

Analysis Date: 08/17/95 06:58

Dilution: 5

## PCDD/F, HRMS EPA 8290 Primary Result

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
1746-01-6	2,3,7,8-TCDD	3.4	U	3.4	PG/G		TARG
3-57-5	TOTAL TCDD	4.2	U	4.2	PG/G		TARG
-76-4	1,2,3,7,8-PECDD	2.2	U	2.2	PG/G		TARG
36088-22-9	TOTAL PECDD	2.2	U	2.2	PG/G		TARG
39227-28-6	1,2,3,4,7,8-HXCDD	1.3	U	1.3	PG/G		TARG
57653-85-7	1,2,3,6,7,8-HXCDD	3.1	J	27.	PG/G		TARG
19408-74-3	1,2,3,7,8,9-HXCDD	2.2	J	27.	PG/G		TARG
34465-46-8	TOTAL HXCDD	18.6	JQ	27.	PG/G		TARG
35822-46-9	1,2,3,4,6,7,8-HPCDD	20.5		27.	PG/G		TARG
37871-00-4	TOTAL HPCDD	38.3		27.	PG/G		TARG
3268-87-9	TOTAL OCDD	106.		54.	PG/G		TARG
51207-31-9	2,3,7,8-TCDF	65.4	C	5.4	PG/G		TARG
55722-27-5	TOTAL TCDF	172.	IQ	5.4	PG/G		TARG
57117-41-6	1,2,3,7,8-PECDF	1.7	U	1.7	PG/G		TARG
57117-31-4	2,3,4,7,8-PECDF	1.2	JQ	27.	PG/G		TARG
30402-15-4	TOTAL PECDF	74.5	IQ	27.	PG/G		TARG
70648-26-9	1,2,3,4,7,8-HXCDF	2.4	U	2.4	PG/G		TARG
57117-44-9	1,2,3,6,7,8-HXCDF	1.9	U	1.9	PG/G		TARG
60851-34-5	2,3,4,6,7,8-HXCDF	1.7	U	1.7	PG/G		TARG
72918-21-9	1,2,3,7,8,9-HXCDF	2.0	U	2.0	PG/G		TARG
55684-94-1	TOTAL HXCDF	14.2	IQ	27.	PG/G		TARG
67562-39-4	1,2,3,4,6,7,8-HPCDF	6.0	J	2.1	PG/G		TARG
55673-89-7	1,2,3,4,7,8,9-HPCDF	2.1	U	27.	PG/G		TARG
38998-75-3	TOTAL HPCDF	20.6	J	27.	PG/G		TARG
39001-02-0	TOTAL OCDF	7.9	J	54.	PG/G		TARG
76523-40-5	13C-2,3,7,8-TCDD					85	SURR
719-79-1	13C-1,2,3,7,8-PECDD					80	SURR
9-81-5	13C-1,2,3,6,7,8-HXCDD					72	SURR
109719-83-7	13C-1,2,3,4,6,7,8-HPCDD					77	SURR
114423-97-1	13C-OCDD					63	SURR
89059-46-1	13C-2,3,7,8-TCDF					77	SURR



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# CERTIFICATE OF ANALYSIS

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ROCKETDYNE

August 24, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20346310SOC0

Client Matrix: SOIL

Collection Date: 07/24/95

Lab Sample: AA5779 /ORIGINAL

Lab Matrix: SOIL

Received Date: 07/26/95

Test: 204422

Retest:

Prep Date: 08/04/95

Prep Batch: 3254

Lab Method: 1012

Lab Method Blank: BLK3254

Analysis Date: 08/17/95 06:58

Dilution: 5

## PCDD/F, HRMS EPA 8290 Primary Result

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
109719-77-9	13C-1,2,3,7,8-PECDF					102	SURR
123-98-2	13C-1,2,3,4,7,8-HXCDF					81	SURR
19-84-8	13C-1,2,3,4,6,7,8-HPCDF					68	SURR

**CERTIFICATE OF ANALYSIS**

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**ROCKETDYNE**

August 24, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20130331SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AA5780 /ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204438  
Retest:  
Prep Date: 08/04/95  
Prep Batch: 3254

Lab Method: 1012  
Lab Method Blank: BLK3254  
Analysis Date: 08/15/95 21:05  
Dilution: 1

**PCDD/F, HRMS  
EPA 8290  
Primary Result**

Cas Number	Analyte	Result	Qualifier	Report Limit	Units	% Rec	Type
1745-01-6	2,3,7,8-TCDD	1.1	U	1.1	PG/G		TARG
1745-03-57-5	TOTAL TCDD	1.1	U	1.1	PG/G		TARG
1745-076-4	1,2,3,7,8-PECDD	.34	U	.34	PG/G		TARG
36088-22-9	TOTAL PECDD	.34	U	.34	PG/G		TARG
39227-28-6	1,2,3,4,7,8-HXCDD	.18	U	.18	PG/G		TARG
57653-85-7	1,2,3,6,7,8-HXCDD	.51	U	.51	PG/G		TARG
19408-74-3	1,2,3,7,8,9-HXCDD	.22	J	6.0	PG/G		TARG
34465-46-8	TOTAL HXCDD	.22	J	6.0	PG/G		TARG
35822-46-9	1,2,3,4,6,7,8-HPCDD	1.2	J	6.0	PG/G		TARG
37871-00-4	TOTAL HPCDD	2.3	J	6.0	PG/G		TARG
3268-87-9	TOTAL OCDD	10.	J	12.	PG/G		TARG
51207-31-9	2,3,7,8-TCDF	1.0	U	1.0	PG/G		TARG
55722-27-5	TOTAL TCDF	1.0	U	1.0	PG/G		TARG
57117-41-6	1,2,3,7,8-PECDF	.31	U	.31	PG/G		TARG
57117-31-4	2,3,4,7,8-PECDF	.29	U	.29	PG/G		TARG
30402-15-4	TOTAL PECDF	.30	U	.30	PG/G		TARG
70648-26-9	1,2,3,4,7,8-HXCDF	.18	U	.18	PG/G		TARG
57117-44-9	1,2,3,6,7,8-HXCDF	.15	U	.15	PG/G		TARG
60851-34-5	2,3,4,6,7,8-HXCDF	.22	J	6.0	PG/G		TARG
72918-21-9	1,2,3,7,8,9-HXCDF	.13	JQ	6.0	PG/G		TARG
55684-94-1	TOTAL HXCDF	.47	JQ	6.0	PG/G		TARG
67562-39-4	1,2,3,4,6,7,8-HPCDF	.27	U	.27	PG/G		TARG
55673-89-7	1,2,3,4,7,8,9-HPCDF	.25	U	.25	PG/G		TARG
38998-75-3	TOTAL HPCDF	.40	J	6.0	PG/G		TARG
39001-02-0	TOTAL OCDF	.50	J	12.	PG/G		TARG
76523-40-5	13C-2,3,7,8-TCDD					34	SURR
1745-079-1	13C-1,2,3,7,8-PECDD					64	SURR
1745-081-5	13C-1,2,3,6,7,8-HXCDD					54	SURR
1745-083-7	13C-1,2,3,4,6,7,8-HPCDD					50	SURR
114423-97-1	13C-OCDD					37	SURR
89059-46-1	13C-2,3,7,8-TCDF					26	SURR

## CERTIFICATE OF ANALYSIS

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ROCKETDYNE

August 24, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20130331SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AA5780 /ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204438  
Retest:  
Prep Date: 08/04/95  
Prep Batch: 3254

Lab Method: 1012  
Lab Method Blank: BLK3254  
Analysis Date: 08/15/95 21:05  
Dilution: 1

PCDD/F, HRMS  
EPA 8290  
Primary Result

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
109719-77-9	13C-1,2,3,7,8-PECDF					56	SURR
23-98-2	13C-1,2,3,4,7,8-HXCDF					54	SURR
9-84-8	13C-1,2,3,4,6,7,8-HPCDF					47	SURR



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Services

# CERTIFICATE OF ANALYSIS

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ROCKETDYNE

August 24, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20446370SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AA5781 /ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 214973  
Retest: 1  
Prep Date: 08/04/95  
Prep Batch: 3254

Lab Method: 1012  
Lab Method Blank: BLK3254  
Analysis Date: 08/17/95 08:01  
Dilution: 10

## PCDD/F, HRMS EPA 8290 Primary Result

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
35822-46-9	1,2,3,4,6,7,8-HPCDD	29.5	S	5.2	PG/G		TARG
71-00-4	TOTAL HPCDD	78.1	S	5.2	PG/G		TARG
19-83-7	13C-1,2,3,4,6,7,8-HPCDD					67	SURR



# CERTIFICATE OF ANALYSIS

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ROCKETDYNE

August 24, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20446370SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AA5781 /ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 204496  
Retest:  
Prep Date: 08/04/95  
Prep Batch: 3254

Lab Method: 1012  
Lab Method Blank: BLK3254  
Analysis Date: 08/15/95 22:07  
Dilution: 1

## PCDD/F, HRMS EPA 8290 Primary Result

Cas Number	Analyte	Result	Qualifier	Report Limit	Units	% Rec	Type
1746-01-6	2,3,7,8-TCDD	.81	U	.81	PG/G		TARG
1746-57-5	TOTAL TCDD	1.1	U	1.1	PG/G		TARG
1746-76-4	1,2,3,7,8-PECDD	.66	U	.66	PG/G		TARG
36088-22-9	TOTAL PECDD	15.4	JQ	5.2	PG/G		TARG
39227-28-6	1,2,3,4,7,8-HXCDD	.35	JQ	5.2	PG/G		TARG
57653-85-7	1,2,3,6,7,8-HXCDD	1.6	J	5.2	PG/G		TARG
19408-74-3	1,2,3,7,8,9-HXCDD	1.5	JQ	5.2	PG/G		TARG
34465-46-8	TOTAL HXCDD	13.0	JQ	5.2	PG/G		TARG
3268-87-9	TOTAL OCDD	202.		10.	PG/G		TARG
51207-31-9	2,3,7,8-TCDF	41.9	C	1.0	PG/G		TARG
55722-27-5	TOTAL TCDF	218.	IQ	1.0	PG/G		TARG
57117-41-6	1,2,3,7,8-PECDF	.79	J	5.2	PG/G		TARG
57117-31-4	2,3,4,7,8-PECDF	3.4	J	5.2	PG/G		TARG
30402-15-4	TOTAL PECDF	106.	IQ	5.2	PG/G		TARG
70648-26-9	1,2,3,4,7,8-HXCDF	3.7	J	5.2	PG/G		TARG
57117-44-9	1,2,3,6,7,8-HXCDF	2.0	JI	5.2	PG/G		TARG
60851-34-5	2,3,4,6,7,8-HXCDF	.73	J	5.2	PG/G		TARG
72918-21-9	1,2,3,7,8,9-HXCDF	.21	J	5.2	PG/G		TARG
55684-94-1	TOTAL HXCDF	29.3	I	5.2	PG/G		TARG
67562-39-4	1,2,3,4,6,7,8-HPCDF	5.6	J	5.2	PG/G		TARG
55673-89-7	1,2,3,4,7,8,9-HPCDF	.72	JQ	5.2	PG/G		TARG
38998-75-3	TOTAL HPCDF	16.2	IQ	5.2	PG/G		TARG
39001-02-0	TOTAL OCDF	7.3	J	10.	PG/G		TARG
76523-40-5	13C-2,3,7,8-TCDD					95	SURR
109719-79-1	13C-1,2,3,7,8-PECDD					100	SURR
109719-81-5	13C-1,2,3,6,7,8-HXCDD					76	SURR
109719-81-5	13C-OCDD					52	SURR
109719-81-5	13C-2,3,7,8-TCDF					79	SURR
109719-77-9	13C-1,2,3,7,8-PECDF					100	SURR
114423-98-2	13C-1,2,3,4,7,8-HXCDF					77	SURR
109719-84-8	13C-1,2,3,4,6,7,8-HPCDF					67	SURR

**CERTIFICATE OF ANALYSIS**  
**ROCKETDYNE**

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August 31, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20246220SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AA5775 /ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 217435  
Retest:  
Prep Date: 08/04/95  
Prep Batch: 3254

Lab Method: 1012  
Lab Method Blank: BLK3254  
Analysis Date: 08/29/95 02:39  
Dilution: 1

**PCDD/F, HRMS**  
**EPA 8290**  
**Second Column Confirmation Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
51207-31-9	2,3,7,8-TCDF	1.1	J	1.1	PG/G		TARG

**CERTIFICATE OF ANALYSIS**  
**ROCKETDYNE**

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August 31, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20146220SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AA5778 /ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 217438  
Retest:  
Prep Date: 08/04/95  
Prep Batch: 3254

Lab Method: 1012  
Lab Method Blank: BLK3254  
Analysis Date: 08/29/95 03:12  
Dilution: 1

**PCDD/F, HRMS**  
**EPA 8290**  
**Second Column Confirmation Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
51207-31-9	2,3,7,8-TCDF	5.1	U	5.1	PG/G		TARG

**CERTIFICATE OF ANALYSIS**  
**ROCKETDYNE**

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August 31, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20346310SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AA5779 /ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 218212  
Retest:  
Prep Date: 08/04/95  
Prep Batch: 3254

Lab Method: 1012  
Lab Method Blank: BLK3254  
Analysis Date: 08/29/95 03:46  
Dilution: 1

**PCDD/F, HRMS**  
**EPA 8290**  
**Second Column Confirmation Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
51207-31-9	2,3,7,8-TCDF	13.		1.1	PG/G		TARG

**CERTIFICATE OF ANALYSIS**  
**ROCKETDYNE**

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August 31, 1995

Sample Delivery Group: 4276

Report Batch: 19358

Client Sample: 20446370SOC0  
Client Matrix: SOIL  
Collection Date: 07/24/95

Lab Sample: AA5781 /ORIGINAL  
Lab Matrix: SOIL  
Received Date: 07/26/95

Test: 218213  
Retest:  
Prep Date: 08/04/95  
Prep Batch: 3254

Lab Method: 1012  
Lab Method Blank: BLK3254  
Analysis Date: 08/29/95 04:22  
Dilution: 1

**PCDD/F, HRMS**  
**EPA 8290**  
**Second Column Confirmation Result**

<u>Cas Number</u>	<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Report Limit</u>	<u>Units</u>	<u>% Rec</u>	<u>Type</u>
51207-31-9	2,3,7,8-TCDF	15.1	I	1.0	PG/G		TARG

**MBT Environmental  
Laboratories**

3083 Gold Canal Drive  
Rancho Cordova  
CA 95670  
Phone 916/852-6600  
Fax 916/852-7292



Waste-Business Inc. 1995

Date: July 20, 1995  
LP #: 12124

Eric Smith  
McLaren/Hart Environmental Engineering  
16755 Von Karman Avenue  
Irvine, CA 92714

Dear Mr. Smith:

Enclosed are the laboratory results for the 20 samples submitted to MBT Environmental Laboratories on June 29, 1995, for the project *FSDF Off-Site Drainage Invest.*

The analyses requested are:

EPA 8080 PCB (20 - Soil)

The report consists of the following sections:

1. Cover Page
2. Copy of Chain-of-Custody
3. General Narrative
4. Quality Control Summary
5. Analytical and Quality Control Results

Unless otherwise instructed by you, samples will be disposed of two weeks from the date of this letter.

Thank you for choosing MBT Environmental Laboratories. We are looking forward to serving you in the future. Should you have any questions concerning this analytical report or the analytical methods employed, please do not hesitate to call.

Sincerely,

Shakoora Azimi  
Laboratory Director, Principal Scientist