

# **Investigation of Possible PCB Impact during the Akron Airdock May 18, 2006 Fire**

**Submitted to EPA Region 5 on June 23, 2006**

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## **SUMMARY**

Following the Akron Airdock fire on May, 18, 2006, two rounds of sampling were conducted by Lockheed Martin based on communications with U.S. EPA Region 5. The objectives of the sampling efforts were to determine if any PCB-containing siding had burned in the fire, and if so whether there was any downwind impact from PCBs or combustion products. Previous inspection of the fire damage revealed little impact to the PCB-containing siding material, as documented in a separate report to U.S. EPA Region 5.

The resulting data show that only a small amount of PCBs were burned. Combustion products attributable to the fire were only detected in the immediate vicinity of the fire, at levels that are below the risk-based action levels commonly applied to PCB fires. No special action appears to be necessary beyond repair of the fire-damaged roofing material.

Off-site and downwind sample results showed no significant levels of by-products and no measurable PCBs; the insignificant levels of chemicals often attributed to PCB combustion were attributable to other sources. Measurable PCB levels found on site are attributed to known PCB contamination already present around the Airdock, which will be addressed as part of the exterior remediation project described to U.S. EPA in earlier communications.

## **BACKGROUND**

This report presents both the results of sampling performed at the Akron Airdock in the weeks following the May 18, 2006 fire, and analyses as to whether the data indicate that PCBs were or were not burned during the fire.

Background information describing the Airdock, and ongoing efforts to upgrade the facility and manage the PCB-containing siding (known as Robertson Protected Metal or "RPM"), are contained in the report provided to U.S. EPA entitled "Akron Airdock Fire Report" dated June 7, 2006. Lockheed Martin has been working with the U.S. EPA to finalize a plan for addressing the PCBs in the Airdock interior, and, in a report submitted to the U.S. EPA on June 8, 2005, presented a preliminary plan that describes measures to clean the grounds and surrounding impacted areas.

The Airdock is currently being renovated in preparation for manufacturing High Altitude Airships for the Department of Defense. As part of this effort, all exposed exterior surfaces of the Airdock with siding panels not covered by a rubber roof membrane are being removed and replaced with new materials. The fire occurred during removal of siding panels on the northeast corner of the Airdock. The fire appeared to combust about 50 to 65 percent of the rubber membrane on the exterior of the north east door, and some of the plywood strips used as the foundation for the membrane's metal mounting hardware. Fire damage was also evident on the rear lip of the north east door in two distinct and separate areas; a lower section from the gutter line up approximately 40 feet and an upper area beginning at a point near the top of the Airdock and extending approximately 75 feet long. The area between these two locations is undisturbed.

The exterior of the upper roof, northeast door and door lip were visually examined on May 20 from the accessible area of the Airdock roof delineated by the exterior roof hand rail. Because of the door curvature, very little of the main area of the door was visible. No damage or disturbance to the top of the northwest door was observed. Damage to other portions of the northeast door was evident but it was not possible to closely observe the damage. There were several areas of what appeared to be bare steel corrugated siding with none of the original RPM coating remaining. It was not possible to determine if the missing coating was a result of the fire or had exfoliated prior to the rubber membrane installation. Based on visual observations and reviews of photos taken prior to the membrane installation, it appears that none of the RPM siding exposed on the rear lip was consumed during the fire.

Based on the visual inspection conducted, the following conclusions were made with regard to the impact of the fire.

- There was no evidence that any structural steel member of the door or Airdock was exposed to flame or significant heat.
- The condition of the foam layer on the door had degraded but was still primarily intact.
- The fire did not significantly alter the condition of the roof as compared to its condition prior to the rubber membrane installation.

## **SAMPLING RATIONALE**

Post-fire sample selection included surface, bulk, and water samples from around the Airdock as well as background samples in areas not impacted by the fire (typically upwind of the area where the fire occurred). Determining the locations for sampling took into consideration the following:

- The area surrounding the Airdock has been the subject of extensive PCB sampling since September 2003. Pre-fire exterior sampling results, submitted to U.S. EPA on December 22, 2005, show the presence of measurable levels of PCB in soil and in the concrete tarmac in the immediate vicinity of the Airdock.
- PCBs would be present in some samples near the Airdock due to pre-fire contamination, and samples downwind of the Airdock were less likely to have measurable PCB levels unless impacted by the fire.

Post-fire sample analysis included PCB, dioxin, and furan analysis, depending on location. The choice of analysis depended in part on the following:

- Research associated with PCB fires has shown that no more than a small percentage of PCB converts to furans even under optimal conditions.
- Samples collected downwind from the fire (i.e. where smoke deposition may have occurred) but where historic PCB contamination was not expected were analyzed only for the presence of PCBs, which, if found, would justify the additional analysis for furans.
- Samples close to the fire where pre-fire impact from PCBs was expected to be present due to historical contamination were analyzed for furans, since the presence of PCBs alone will not necessarily indicate whether PCBs were involved in the fire.

Extensive research has been conducted in the formation of by-products from PCB combustion, and the results from numerous PCB fires have been documented in the literature. Citations for any of the assertions in this report regarding by-product formation and previous project action levels will be provided upon request.

Air sampling was limited to the interior of the building, given that smoke was observed in the building during the fire, and that extensive air monitoring data was already available from the interior with which to compare the post-fire results.

## **ENVIRONMENTAL SAMPLING RESULTS**

Following the fire, sampling of various media was performed, first immediately after the fire and then several weeks later. Both rounds of sampling were performed after consultation with and concurrence from U.S. EPA. The sample locations for both rounds of sampling are shown on Figure 1 and 2.

### **First Sampling Round (Immediate Post-Fire)**

Immediately after the fire, air monitoring was performed inside the Airdock to assess the air quality. Samples were collected during the night of May 18 and into the morning of May 19, 2006, utilizing a modified NIOSH 5503 method.

Exterior samples were collected of water standing on the ground both at the fire scene and at locations away from the influence of the fire. Wipe samples of the leaves on four trees in the downwind direction of the smoke plume and one upwind tree were collected to assess potential down wind deposition of smoke. Lockheed Martin also conducted additional sampling in coordination with U.S. EPA at several locations. The plan for these samples was submitted to U.S. EPA and Ohio EPA on May 22, 2006.

Table 1 shows the water sample results, along with the conversion factors and data adjustments needed to compute TEQ ("dioxin equivalents"). The laboratory analytical reports associated with Table 1 and the leaf sample analytical reports are contained in Appendix A.

## **Second Sampling Round**

Supplemental samples were collected in and around the Airdock on June 2, 2006, based on a sampling plan developed by Lockheed Martin and agreed to with U.S. EPA in e-mail communications dated June 8, 2006. Samples included wipe samples both in and around the siding work area containment and at locations remote from the fire roofing debris samples from the vicinity of the fire, and several additional soil samples. Lockheed Martin added four additional samples to the supplemental sample collection.

Table 2 presents the results of all the supplemental sampling, including TEQ results where applicable. The associated laboratory reports are contained in Appendix B.

## **OBSERVATIONS**

### **Data Analysis Rationale**

The objective of the sampling program was to determine whether any PCBs burned in the fire, and if so whether any of the resulting by-products were above generally accepted action levels.

When attempting to determine whether PCBs burned, the best indicator is whether the data show that furans were formed. Research has shown that PCBs as manufactured can contain up to 10 ppm furans (expressed as TEQ), so the PCB/TEQ ratio would normally be at least 100,000 in either wipe samples or bulk samples in an unburned PCB sample.

Regarding the action levels, TEQ cleanup levels are risk-based rather than based on published standards. Commonly cited TEQ cleanup thresholds derived from risk-based determination after confirmed PCB fires are 1 ppb for soil and bulk, and 25 ng/m<sup>2</sup> for surfaces for industrial or low contact settings.

Regarding dioxin results, research has shown that dioxin compounds cannot be formed from burning PCB in the absence of chlorobenzenes, but may be present as the result of other background sources not related to the Airdock. Because the Airdock RPM does not contain chlorobenzene, any dioxin detected in samples thus was not a product of PCB combustion.

Regarding furan results, the PCB present in the Airdock RPM is Aroclor 1268, which is comprised largely of hepta- and octachlorobiphenyl. If this PCB were burned, furan congeners with similar levels of chlorination (hepta – octa) would be the predominant congeners. Any lower chlorinated furan compounds found are probably attributable to another source.

### **Air Sampling Results**

All sample results for PCBs were reported below the National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit (REL) for PCBs of 1 µg/m<sup>3</sup>. Area sample results ranged from < 0.0079 µg/m<sup>3</sup> to 0.023 µg/m<sup>3</sup>, which was consistent with ambient air measurements in the Airdock before the fire.

## **Background and Remote Sampling Results**

The leaf PCB wipe sample results taken 1,000 to 5,000 feet downwind of the fire were all non-detect for PCB (see Appendix A). They were also non-detect for TEQ when the trace hexa- and octa-dioxin results were excluded.

The wipe samples collected from the rain protected areas of buildings immediately upwind (Plant E) and downwind (M Hangar) contained no measurable PCB.

A wipe sample (S-4) collected from the southwest door contained only trace amounts of TEQ (0.39 ng/m<sup>2</sup>).

A soil sample (S-13) collected from a traffic island south of the Airdock contained no measurable PCB.

These results taken in total suggest that no significant off-site or downwind migration of PCB or combustion products occurred as a result of the fire.

## **Fire Area Debris and On-Site Wipe Samples**

All four of the debris and foam samples collected from the Airdock roof contained measurable PCB and TEQ. However, only one of the ash/soot samples (S-7) contained elevated TEQ levels relative to the PCB levels, suggesting a small amount of PCB may have been burned. Nearby foam sample results showed no elevated TEQ results, suggesting that any PCB present in the foam was not burned.

Only one of the three wipe sample results taken in the vicinity of the fire (S-3, on the plastic work zone enclosure) showed elevated TEQ results relative to the PCB results. All of the TEQ and PCB wipe sample results were below the 25 ng/m<sup>2</sup> threshold value cited earlier, the highest sample result being sample S-1 at 5.63 ng/m<sup>2</sup>. Taken together, these results show that the impact of any burned PCB is minimal and limited only to the immediate vicinity of the fire.

## **Soil and Water Samples**

The soil PCB results from the north apron (3.9 – 7.4 ppm), i.e., near the fire, are consistent with other pre-fire PCB findings in the area.

All of the water samples were taken from standing water “puddles” or accumulations a day after the fire, presumably representing deluge water from firefighting combined with rainwater accumulated the night of the fire. Each sample was split and both filtered and unfiltered samples were analyzed.

The water PCB results ranged from 1 µg/L to 4.1 µg/L, with the highest result being closest to the fire location. The water PCB results are anomalous, however, for several reasons. First, the filtered samples should have less PCB than the unfiltered samples since the PCB is largely present as solid particles, but the opposite was found for the sample collected near the fire (1.1

µg/L unfiltered versus 4.1 µg/L filtered). Second, three of the four north and south water samples were reported at or slightly above 1 µg/L, but the reporting limit was also 1.0 µg/L, rendering these results suspect. The low reporting limit is attributed to the small sample volume, since these samples were collected from small puddles of water after the fire and subsequent rainfall. Unfortunately the remaining water has since evaporated, so there was no opportunity to resample after the results were received.

Some of the TEQ water and leaf samples contained tetrachlorodibenzofuran, which is an unlikely product of burning 1268, as noted earlier. They were nevertheless included in the TEQ calculations.

## **CONCLUSIONS**

It appears from the inspection and from the sampling results that some small amount of RPM and associated PCB may have burned in the fire.

The off-site and downwind PCB and TEQ results confirm that there was no measurable offsite impact from the fire.

The residual onsite TEQ levels, where found, are insignificant and low enough to require no special action.

The residual PCB levels, where found onsite, were at or close to pre-fire levels, and require no special action.

**Table 1 – First Sampling Round**

Sample Type	Water		Water		Water		Water		TEF
	North Filtered	Factored TEQ	North Unfiltered	Factored TEQ	South Filtered	Factored TEQ	South Unfiltered	Factored TEQ	
<b>Sample #</b>	3		4		1		2		
<b>Furan Congener</b>									
2,3,7,8	16	1.6	330	33	6.5	0.65	18	1.8	0.1
1,2,3,7,8			110	0.55					0.05
2,3,4,7,8			260	130					0.5
1,2,3,4,7,8	24	2.4	330	33					0.1
1,2,3,6,7,8			130	13					0.1
2,3,4,6,7,8			240	24					0.1
1,2,3,7,8,9									0.1
1,2,3,4,6,7,8	41	0.41	600	6	32	0.32	74	0.74	0.01
1,2,3,4,7,8,9			40	0.4					0.01
<b>Total Furan Congeners, pg/L</b>	81	4.41	2040	239.95	38.5	0.97	92	2.54	
<b>PCB Totals, ug/L</b>	4.1		1		1.1		1.2		
<b>PCB/Furan Ratio</b>	929,705		4168		1,134,021		472,441		

Notes:

1. Highlighted = TEQ results elevated above background in PCB sample
2. The PCB results reported are for Aroclor 1268. No other Aroclors were detected in any of the analyzed samples.
3. Lower chlorinated furan results were included in the TEQ calculations, although the lower chlorinated furans are not a likely product of burning Aroclor 1268. Dioxins are not a known product of PCB combustion and were not included in the water TEQ calculations

**Table 2 – Second Sampling Round**

Sample Number	Sample ID	Sample Type	Sample Location	Requested Analyses	Preliminary PCB Results $\mu\text{g}/100 \text{ cm}^2$	TEQ Concentration $\text{ng}/\text{m}^2$	PCB/TEQ ratio
S-1	LMC-FI-001	Wipe	<b>Work Zone</b> Vertical steel plate at east end of northeast Airdock door (within enclosure)	Dioxins / Furans	NA	5.63	NA
S-2	LMC-FI-002A & LMC-FI-002B	Wipe	<b>Near Work Zone</b> Interior of nongalbestos siding panel (white) at Arch 13E (north of mandoor)	PCBs / Dioxins / Furans	0.99	0.12	825,000
S-3	LMC-FI-003A & LMC-FI-003B	Wipe	<b>Near Work Zone</b> Poly sheeting on top of container (West of Arch 13E) used for interior enclosure (outside enclosure)	PCBs / Dioxins / Furans	3.0	0.52	57,361
S-4	LMC-FI-010	Wipe	<b>Far from Work Zone</b> Identical vertical steel plate as Sample ID LMC-FI-001, except located on SW Airdock door (not in enclosure)	Dioxins / Furans	NA	0.39	NA
S-5	LMC-FI-012	Wipe	<b>Rain Protected Area of M Hangar Building (East of Airdock)</b> Grey steel panel located below overhang near NW portion of M Hangar	PCBs	ND	NA	NA

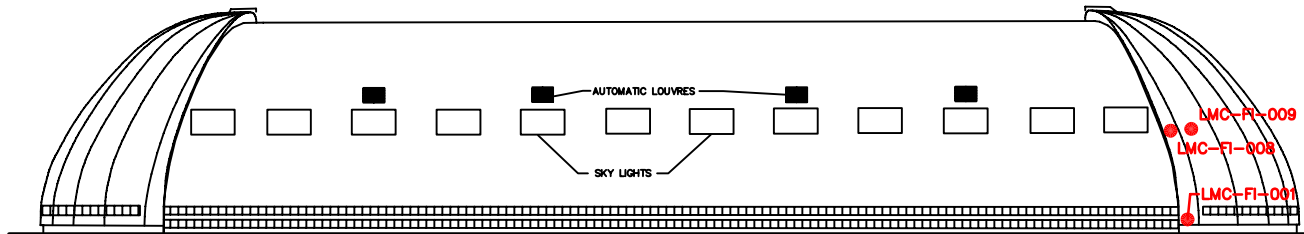


Sample Number	Sample ID	Sample Type	Sample Location	Requested Analyses	Preliminary PCB Results $\mu\text{g}/100 \text{ cm}^2$	TEQ Concentration $\text{ng}/\text{m}^2$	PCB/TEQ ratio
S-6	LMC-FI-011	Wipe	<b>Rain protected Area of Building (West of Airdock)</b> Top portion of steel man-door located between loading docks 8 and 9 east side of Plant E	PCBs	ND	NA	NA
S-7	LMC-FI-008A & LMC-FI-008B	Bulk	<b>Debris Samples (Ash or Soot) from or Adjacent to Fire Impacted Area</b> Just above triangular section of affected RPM	PCBs / Dioxins / Furans	12	0.303	39,581
S-8	LMC-FI-008C & LMC-FI-008D	Bulk	<b>Undisturbed Foam from or Adjacent to Fire Impacted Area</b> Just above triangular section of affected RPM	PCBs / Dioxins / Furans	83	0.0007	118,000,000
S-9	LMC-FI-009A & LMC-FI-009B	Bulk	<b>Debris Samples(Ash or Soot) from or Adjacent to Fire impacted Area</b> At same approximate elevation as, and approximately 6 feet west of, sample locations LMC-FI-008A and LMC-FI-008B	PCBs / Dioxins / Furans	42	0.277	202,000

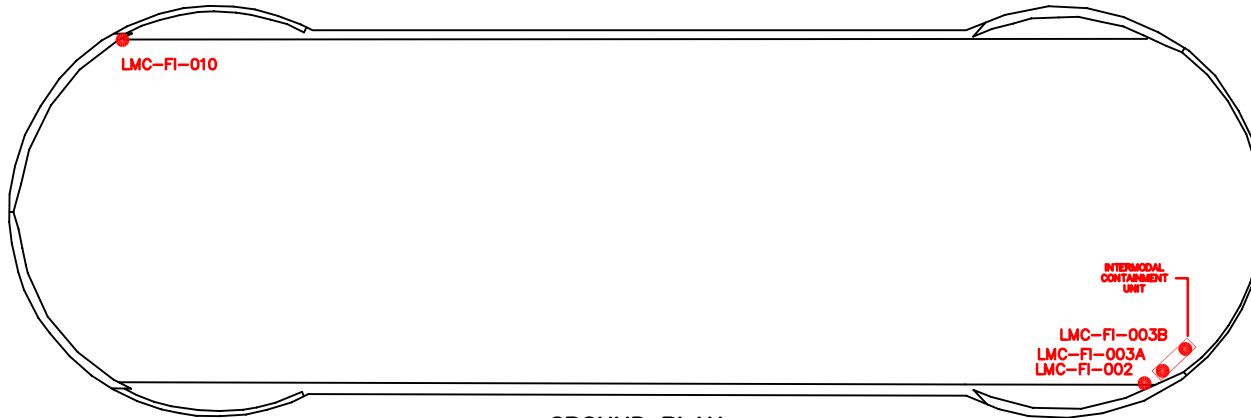
Sample Number	Sample ID	Sample Type	Sample Location	Requested Analyses	Preliminary PCB Results $\mu\text{g}/100 \text{ cm}^2$	TEQ Concentration $\text{ng}/\text{m}^2$	PCB/TEQ ratio
S-10	LMC-FI-009C & LMC-FI-009D	Bulk	<b>Undisturbed Foam from or Adjacent to Fire Impacted Area</b> At same approximate elevation as, and approximately 6 feet west of, sample locations LMC-FI-008C & LMC-FI-008D	PCBs / Dioxins / Furans	2000	0.025	78,000,000
S-11	LMC-FI-006	Bulk	<b>Soil Sample Near the North Apron Adjacent to the Airport</b> North side of fence approximately 25 feet east of monitoring well A-101 (0-3 inches bgs)	PCBs	3.9	NA	NA
S-12	LMC-FI-007	Bulk	<b>Soil Sample Near the North Apron Adjacent to the Airport</b> North side of fence approximately 25 feet west of monitoring well A-101 (0-3 inches bgs)	PCBs	7.4	NA	NA
S-13	LMC-FI-005	Bulk	<b>Soil Sample in grass area at the South End of the Airdock</b> Grassy island located south and east of Airdock (0-3 inches bgs)	PCBs	ND	NA	NA

Notes:

1. NA = not applicable
2. ND = not detected. The analytical Results indicate concentrations were not detected above the laboratory detection limit.
3. J = Estimated result. Result is less than the reporting limit.
4. CON = Confirmation analysis.
5. Highlighted = TEQ results elevated above background in PCB sample
6. The PCB results reported are for Aroclor 1268. No other Aroclors were detected in any of the analyzed samples.
7. Dioxin and lower chlorinated furan results were included in the TEQ calculations, although dioxins are not a known product of PCB combustion and the lower chlorinated furans are not a likely product of burning Aroclor 1268.



**EAST SIDE ELEVATION**



**GROUND PLAN**

**LEGEND:**

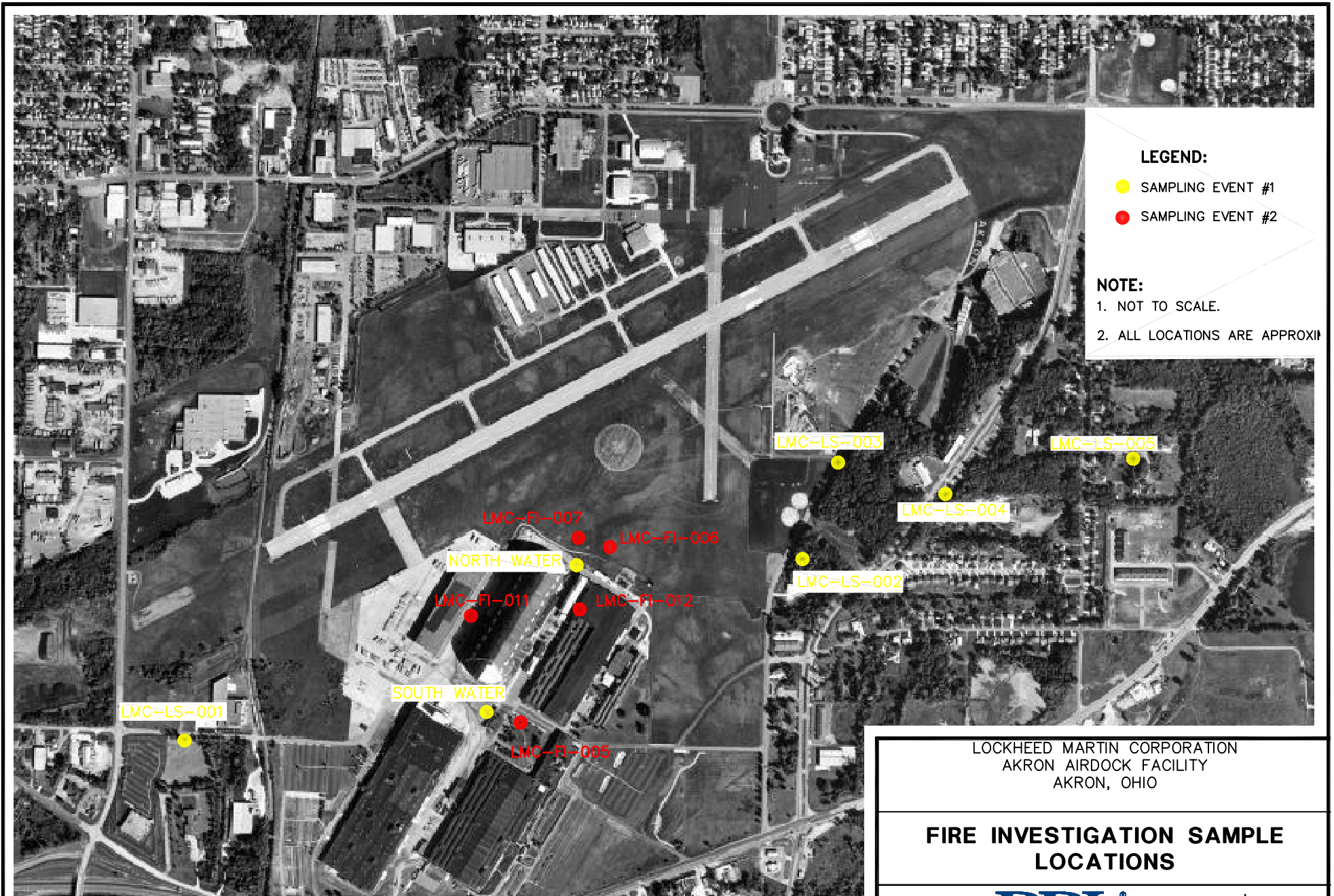
- SAMPLING EVENT #2

**NOTE:**

1. NOT TO SCALE.
2. ALL LOCATIONS ARE APPROXIMATE.

LOCKHEED MARTIN CORPORATION AKRON AIRDOCK FACILITY AKRON, OHIO	
<b>FIRE INVESTIGATION SAMPLE          LOCATION</b>	
	FIGURE <b>1</b>

X: NONE  
 L: ON=\*, OFF=REF\*  
 P: PAGESET/PLT-AL1  
 06/22/06 SYR-85-AMS  
 38032004\38032B01.DWG



**LEGEND:**

- SAMPLING EVENT #1
- SAMPLING EVENT #2

**NOTE:**

1. NOT TO SCALE.
2. ALL LOCATIONS ARE APPROXIMATE.

LOCKHEED MARTIN CORPORATION  
 AKRON AIRDOCK FACILITY  
 AKRON, OHIO

**FIRE INVESTIGATION SAMPLE  
 LOCATIONS**



FIGURE  
**2**

## **Appendix A**

### **First Sampling Round Laboratory Analysis Reports**

- Lot Number A6E220164: PCBs and Dioxin/Furans for water samples**
- Lot Number A6E220164-teqr2: PCBs and Dioxin/Furans for water samples**
- Lot Number A6E220167: Dioxin/Furans for leaves**
- Lot Number A6E220171: PCBs for leaves**

<b>Analytical Report Cover Page A6E220164 .....</b>	<b>1</b>
Case Narrative .....	2
Executive Summary .....	6
Analytical Method Summary .....	8
Sample Summary .....	9
Analytical Results by Sample .....	10
Quality Control Section .....	22
Chain of Custody .....	34
<b>Total # of Pages in this Document .....</b>	<b>38</b>

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## ANALYTICAL REPORT

PROJECT NO. 38032-001

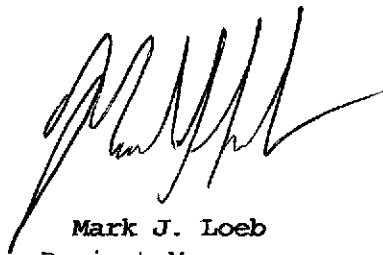
LMC AIRDOCK, AKRON OH

Lot #: A6E220164

Brad Heim

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1210 Massillon Road  
Akron, OH 44315-0001

SEVERN TRENT LABORATORIES, INC.



Mark J. Loeb  
Project Manager

May 31, 2006



# **CASE NARRATIVE**

A6E220164

The following report contains the analytical results for four water samples submitted to STL North Canton by Lockheed Martin Tactical Defense Systems from the LMC Airdock, Akron OH Site, project number 38032-001. The samples were received May 20, 2006, according to documented sample acceptance procedures.

The Dioxin analysis was performed at STL Sacramento.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. Preliminary results were provided to Brad Heim, Dave Gunnarson, Dan Kemp, Mark Hurban, and Shawn Wolf on May 25, 2006, on May 26, 2006, and May 30, 2006. A summary of QC data for these analyses is included at the back of the report.

STL North Canton attests to the validity of the laboratory data generated by STL facilities reported herein. All analyses performed by STL facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. STL's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

If you have any questions, please call the Project Manager, Mark J. Loeb, at 330-497-9396.

This report is sequentially paginated. The final page of the report is labeled as "END OF REPORT." The total number of pages in this report is 38.

## **SUPPLEMENTAL QC INFORMATION**

### **SAMPLE RECEIVING**

The temperature of the cooler upon sample receipt was 7.4°C. with wet ice present.

See STL's Cooler Receipt Form for additional information.

## **CASE NARRATIVE (continued)**

### **POLYCHLORINATED BIPHENYLS-8082**

For sample NORTH FILTERED WATER (DISS) the recovery for one surrogate compound is outside acceptance criteria. Since the method criterion is that one of two surrogate compounds must meet acceptance criteria, no corrective action was required.

There were no client requested Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples in batch 6143066. Therefore, the laboratory has included a Laboratory Control Sample Duplicate (LCSD) in the QC batch. The LCSD recoveries, together with the LCS recoveries, are used to determine the reproducibility (precision) of the analytical system.

### **STL SACRAMENTO - DIOXINS**

Water samples SOUTH FILTERED WATER (DISS) and NORTH FILTERED WATER (DISS) are logged in for a 1613b extraction. Client did specify that samples were to be filtered, however only the aqueous portions were to be extracted. So samples were filtered, the filtered sample portions were set aside, and then the aqueous portions were spiked with our internal standards and extracted with DCM. These results do not contain the particulates that were filtered out of these aqueous samples.

## QUALITY CONTROL ELEMENTS OF SW-846 METHODS

STL North Canton conducts a quality assurance/quality control (QA/QC) program designed to provide scientifically valid and legally defensible data. Toward this end, several types of quality control indicators are incorporated into the QA/QC program, which is described in detail in QA Policy, QA-003. These indicators are introduced into the sample testing process to provide a mechanism for the assessment of the analytical data.

### **QC BATCH**

Environmental samples are taken through the testing process in groups called QUALITY CONTROL BATCHES (QC batches). A QC batch contains up to twenty environmental samples of a similar matrix (water, soil) that are processed using the same reagents and standards. STL North Canton requires that each environmental sample be associated with a QC batch.

Several quality control samples are included in each QC batch and are processed identically to the twenty environmental samples. These QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) pair or a MATRIX SPIKE/SAMPLE DUPLICATE (MS/DU) pair. If there is insufficient sample to perform an MS/MSD or an MS/DU, then a LABORATORY CONTROL SAMPLE DUPLICATE (LCSD) is included in the QC batch.

### **LABORATORY CONTROL SAMPLE**

The Laboratory Control Sample is a QC sample that is created by adding known concentrations of a full or partial set of target analytes to a matrix similar to that of the environmental samples in the QC batch. The LCS analyte recovery results are used to monitor the analytical process and provide evidence that the laboratory is performing the method within acceptable guidelines. All control analytes indicated by a bold type in the LCS must meet acceptance criteria. Failure to meet the established recovery guidelines requires the reparation and reanalysis of all samples in the QC batch. The only exception is that if the LCS recoveries are biased high and the associated sample is ND (non-detected) for the parameter(s) of interest, the batch is acceptable.

At times, a Laboratory Control Sample Duplicate (LCSD) is also included in the QC batch. An LCSD is a QC sample that is created and handled identically to the LCS. Analyte recovery data from the LCSD is assessed in the same way as that of the LCS. The LCSD recoveries, together with the LCS recoveries, are used to determine the reproducibility (precision) of the analytical system. Precision data are expressed as relative percent differences (RPDs). If the RPD fails for an LCS/LCSD and yet the recoveries are within acceptance criteria, the batch is still acceptable.

### **METHOD BLANK**

The Method Blank is a QC sample consisting of all the reagents used in analyzing the environmental samples contained in the QC batch. Method Blank results are used to determine if interference or contamination in the analytical system could lead to the reporting of false positive data or elevated analyte concentrations. All target analytes must be below the reporting limits (RL) or the associated sample(s) must be ND except under the following circumstances:

- Common organic contaminants may be present at concentrations up to 5 times the reporting limits. Common metals contaminants may be present at concentrations up to 2 times the reporting limit, or the reported blank concentration must be twenty fold less than the concentration reported in the associated environmental samples. (See common laboratory contaminants listed below.)
- 

<b><u>Volatile (GC or GC/MS)</u></b>	<b><u>Semivolatile (GC/MS)</u></b>	<b><u>Metals ICP-MS</u></b>	<b><u>Metals ICP Trace</u></b>
Methylene Chloride, Acetone, 2-Butanone	Phthalate Esters	Copper, Iron, Zinc, Lead, Calcium, Magnesium, Potassium, Sodium, Barium, Chromium, Manganese	Copper, Iron, Zinc, Lead

## QUALITY CONTROL ELEMENTS OF SW-846 METHODS (Continued)

- Organic blanks will be accepted if compounds detected in the blank are present in the associated samples at levels 10 times the blank level. Inorganic blanks will be accepted if elements detected in the blank are present in the associated samples at 20 times the blank level.
- Blanks will be accepted if the compounds/elements detected are not present in any of the associated environmental samples.

Failure to meet these Method Blank criteria requires the repreparation and reanalysis of all samples in the QC batch.

### **MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

A Matrix Spike and a Matrix Spike Duplicate are a pair of environmental samples to which known concentrations of a full or partial set of target analytes are added. The MS/MSD results are determined in the same manner as the results of the environmental sample used to prepare the MS/MSD. The analyte recoveries and the relative percent differences (RPDs) of the recoveries are calculated and used to evaluate the effect of the sample matrix on the analytical results. Due to the potential variability of the matrix of each sample, the MS/MSD results may not have an immediate bearing on any samples except the one spiked; therefore, the associated batch MS/MSD may not reflect the same compounds as the samples contained in the analytical report. When these MS/MSD results fail to meet acceptance criteria, the data is evaluated. If the LCS is within acceptance criteria, the batch is considered acceptable. The acceptance criteria do not apply to samples that are diluted for organics if the native sample amount is 4x the concentration of the spike.

For certain methods, a Matrix Spike/Sample Duplicate (MS/DU) may be included in the QC batch in place of the MS/MSD. For the parameters (i.e. pH, ignitability) where it is not possible to prepare a spiked sample, a Sample Duplicate may be included in the QC batch. However, a Sample Duplicate is less likely to provide usable precision statistics depending on the likelihood of finding concentrations below the standard reporting limit. When the Sample Duplicate result fails to meet acceptance criteria, the data is evaluated.

### **SURROGATE COMPOUNDS**

In addition to these batch-related QC indicators, each organic environmental and QC sample is spiked with surrogate compounds. Surrogates are organic chemicals that behave similarly to the analytes of interest and that are rarely present in the environment. Surrogate recoveries are used to monitor the individual performance of a sample in the analytical system.

If surrogate recoveries are biased high in the LCS, LCSD, or the Method Blank, and the associated sample(s) are ND, the batch is acceptable. Otherwise, if the LCS, LCSD, or Method Blank surrogate(s) fail to meet recovery criteria, the entire sample batch is repped and reanalyzed. If the surrogate recoveries are outside criteria for environmental samples, the samples will be repped and reanalyzed unless there is objective evidence of matrix interference or if the sample dilution is greater than the threshold outlined in the associated method SOP.

For the GC/MS BNA methods, the surrogate criterion is that two of the three surrogates for each fraction must meet acceptance criteria. The third surrogate must have a recovery of ten percent or greater.

For the Pesticide, PCB, and PAH methods, the surrogate criterion is that one of two surrogate compounds must meet acceptance criteria.



### **STL North Canton Certifications and Approvals:**

California (#01144CA), Connecticut (#PH-0590), Florida (#E87225), Illinois (#200004), Kansas (#E10336), Minnesota (#39-999-348), New Jersey (#OH001), New York (#10975), Ohio (#6090), OhioVAP (#CL0024), Utah (#QUAN9), West Virginia (#210), Wisconsin (#999518190), NAVY, ARMY, USDA Soil Permit, ACIL Seal of Excellence – Participating Lab Status Award (#82)

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## EXECUTIVE SUMMARY - Detection Highlights

A6E220164

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
<b>SOUTH FILTERED WATER (DISS) 05/19/06 16:04 001</b>				
1,2,3,4,6,7,8-HpCDD	68		pg/L	EPA-5 1613B
Total HpCDD	140		pg/L	EPA-5 1613B
OCDD	740		pg/L	EPA-5 1613B
Total TCDF	12		pg/L	EPA-5 1613B
Total PeCDF	27		pg/L	EPA-5 1613B
Total HxCDF	56		pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	32 J		pg/L	EPA-5 1613B
Total HpCDF	33		pg/L	EPA-5 1613B
Aroclor 1268	1.2	1.0	ug/L	SW846 8082
<b>SOUTH UNFILTERED WATER 05/19/06 16:04 002</b>				
Total HxCDD	85		pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	200		pg/L	EPA-5 1613B
Total HpCDD	410		pg/L	EPA-5 1613B
OCDD	2000		pg/L	EPA-5 1613B
2,3,7,8-TCDF	6.4		pg/L	EPA-5 1613B
Qualifiers: J,JA,CON				
Total TCDF	85		pg/L	EPA-5 1613B
Total PeCDF	130		pg/L	EPA-5 1613B
Total HxCDF	190		pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	74		pg/L	EPA-5 1613B
Total HpCDF	130		pg/L	EPA-5 1613B
OCDF	130		pg/L	EPA-5 1613B
Aroclor 1268	1.1	1.0	ug/L	SW846 8082
<b>NORTH FILTERED WATER (DISS) 05/19/06 16:15 003</b>				
2,3,7,8-TCDF	5.0 J,CON		pg/L	EPA-5 1613B
Total TCDF	43		pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	41 J		pg/L	EPA-5 1613B
Total HpCDF	41		pg/L	EPA-5 1613B
Aroclor 1268	4.1	1.0	ug/L	SW846 8082
<b>NORTH UNFILTERED WATER 05/19/06 16:15 004</b>				
1,2,3,4,6,7,8-HpCDD	26 J		pg/L	EPA-5 1613B
Total HpCDD	26		pg/L	EPA-5 1613B
OCDD	130		pg/L	EPA-5 1613B
2,3,7,8-TCDF	90 CON		pg/L	EPA-5 1613B
Total TCDF	1400		pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	110		pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	260		pg/L	EPA-5 1613B

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# EXECUTIVE SUMMARY - Detection Highlights

A6E220164

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>ANALYTICAL METHOD</u>
<b>NORTH UNFILTERED WATER 05/19/06 16:15 004</b>				
Total PeCDF	1900		pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	330		pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	130		pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	240		pg/L	EPA-5 1613B
Total HxCDF	2200		pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	600		pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	40 J		pg/L	EPA-5 1613B
Total HpCDF	1100		pg/L	EPA-5 1613B
OCDF	770		pg/L	EPA-5 1613B
Aroclor 1268	1.0	1.0	ug/L	SW846 8082

# ANALYTICAL METHODS SUMMARY

A6E220164

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>
Dioxins/Furans, HRGC/HRMS	EPA-5 1613B
PCBs by SW-846 8082	SW846 8082

## References:

- EPA-5 "Method 1613: Tetra- through Octa- Chlorinated Dioxins and Furans by Isotope Dilution, HRGC/HRMS, Revision B", EPA, OCTOBER 1994
- SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

# SAMPLE SUMMARY

A6E220164

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED DATE</u>	<u>SAMP TIME</u>
H5XHM	001	SOUTH FILTERED WATER (DISS)	05/19/06	16:04
H5XHN	002	SOUTH UNFILTERED WATER	05/19/06	16:04
H5XHP	003	NORTH FILTERED WATER (DISS)	05/19/06	16:15
H5XHQ	004	NORTH UNFILTERED WATER	05/19/06	16:15

**NOTE(S) :**

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.



Lockheed Martin Tactical Defense Systems

Client Sample ID: SOUTH FILTERED WATER (DISS)

GC Semivolatiles

Lot-Sample #...: A6E220164-001    Work Order #...: H5XHM1AA    Matrix.....: WG  
 Date Sampled...: 05/19/06 16:04    Date Received..: 05/20/06  
 Prep Date.....: 05/23/06    Analysis Date..: 05/24/06  
 Prep Batch #...: 6143066  
 Dilution Factor: 1    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	1.0	ug/L
Aroclor 1221	ND	1.0	ug/L
Aroclor 1232	ND	1.0	ug/L
Aroclor 1242	ND	1.0	ug/L
Aroclor 1248	ND	1.0	ug/L
Aroclor 1254	ND	1.0	ug/L
Aroclor 1260	ND	1.0	ug/L
<b>Aroclor 1268</b>	<b>1.2</b>	<b>1.0</b>	<b>ug/L</b>
	<u>PERCENT</u>	<u>RECOVERY</u>	
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>	
Tetrachloro-m-xylene	66	(35 - 130)	
Decachlorobiphenyl	44	(10 - 110)	

Lockheed Martin Tactical Defense Systems

Client Sample ID: SOUTH FILTERED WATER (DISS)

Trace Level Organic Compounds

Lot-Sample #...: A6E220164-001    Work Order #...: H5XHM1AC    Matrix.....: WG  
 Date Sampled...: 05/19/06 16:04    Date Received..: 05/20/06  
 Prep Date.....: 05/23/06    Analysis Date...: 05/25/06  
 Prep Batch #...: 6143570  
 Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	1.9	pg/L	EPA-5 1613B
Total TCDD	ND	2.2	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.4	pg/L	EPA-5 1613B
Total PeCDD	ND	3.4	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	4.2	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	8.8	pg/L	EPA-5 1613B
Total HxCDD	ND	14	pg/L	EPA-5 1613B
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>68</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
<b>Total HpCDD</b>	<b>140</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
<b>OCDD</b>	<b>740</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
2,3,7,8-TCDF	ND CON	2.4	pg/L	EPA-5 1613B
<b>Total TCDF</b>	<b>12</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
1,2,3,7,8-PeCDF	ND	2.6	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	5.1	pg/L	EPA-5 1613B
<b>Total PeCDF</b>	<b>27</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
1,2,3,4,7,8-HxCDF	ND	10	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	5.7	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	9.0	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	0.67	pg/L	EPA-5 1613B
<b>Total HxCDF</b>	<b>56</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>32 J</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
1,2,3,4,7,8,9-HpCDF	ND	2.9	pg/L	EPA-5 1613B
<b>Total HpCDF</b>	<b>33</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
OCDF	ND	37	pg/L	EPA-5 1613B

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Lockheed Martin Tactical Defense Systems

Client Sample ID: SOUTH FILTERED WATER (DISS)

Trace Level Organic Compounds

Lot-Sample #...: A6E220164-001    Work Order #...: H5XHM1AC    Matrix.....: WG

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C-2,3,7,8-TCDD	91	(25 - 164)
13C-1,2,3,7,8-PeCDD	116	(25 - 181)
13C-1,2,3,4,7,8-HxCDD	110	(32 - 141)
13C-1,2,3,6,7,8-HxCDD	77	(28 - 130)
13C-1,2,3,4,6,7,8-HpCDD	105	(23 - 140)
13C-OCDD	133	(17 - 157)
13C-2,3,7,8-TCDF	97	(24 - 169)
13C-1,2,3,7,8-PeCDF	106	(24 - 185)
13C-2,3,4,7,8-PeCDF	106	(21 - 178)
13C-1,2,3,6,7,8-HxCDF	77	(26 - 123)
13C-2,3,4,6,7,8-HxCDF	87	(28 - 136)
13C-1,2,3,7,8,9-HxCDF	98	(29 - 147)
13C-1,2,3,4,6,7,8-HpCDF	93	(28 - 143)
13C-1,2,3,4,7,8,9-HpCDF	116	(26 - 138)
13C-1,2,3,4,7,8-HxCDF	76	(26 - 152)
	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
<u>SURROGATE</u>		
37C14-2,3,7,8-TCDD	89	(35 - 197)

**NOTE(S):**

- CON Confirmation analysis.
- J Estimated result. Result is less than the reporting limit.

Lockheed Martin Tactical Defense Systems

Client Sample ID: SOUTH UNFILTERED WATER

GC Semivolatiles

Lot-Sample #...: A6E220164-002    Work Order #...: H5XHN1AA    Matrix.....: WG  
 Date Sampled...: 05/19/06 16:04    Date Received..: 05/20/06  
 Prep Date.....: 05/23/06    Analysis Date..: 05/24/06  
 Prep Batch #...: 6143066  
 Dilution Factor: 1    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	1.0	ug/L
Aroclor 1221	ND	1.0	ug/L
Aroclor 1232	ND	1.0	ug/L
Aroclor 1242	ND	1.0	ug/L
Aroclor 1248	ND	1.0	ug/L
Aroclor 1254	ND	1.0	ug/L
Aroclor 1260	ND	1.0	ug/L
<b>Aroclor 1268</b>	<b>1.1</b>	<b>1.0</b>	<b>ug/L</b>
<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	
Tetrachloro-m-xylene	61	(35 - 130)	
Decachlorobiphenyl	40	(10 - 110)	

Lockheed Martin Tactical Defense Systems

Client Sample ID: SOUTH UNFILTERED WATER

Trace Level Organic Compounds

Lot-Sample #...: A6E220164-002    Work Order #...: H5XHN1AC    Matrix.....: WG  
 Date Sampled...: 05/19/06 16:04    Date Received..: 05/20/06  
 Prep Date.....: 05/23/06    Analysis Date..: 05/25/06  
 Prep Batch #...: 6143498  
 Dilution Factor: 1

<u>PARAMETER</u>	<u>RESULT</u>	<u>DETECTION LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>
2,3,7,8-TCDD	ND	4.8	pg/L	EPA-5 1613B
Total TCDD	ND	4.8	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	5.1	pg/L	EPA-5 1613B
Total PeCDD	ND	8.4	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	3.6	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	9.4	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	20	pg/L	EPA-5 1613B
<b>Total HxCDD</b>	<b>85</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
1,2,3,4,6,7,8-HpCDD	200		pg/L	EPA-5 1613B
<b>Total HpCDD</b>	<b>410</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
OCDD	2000		pg/L	EPA-5 1613B
2,3,7,8-TCDF	6.4 J,JA,CON		pg/L	EPA-5 1613B
<b>Total TCDF</b>	<b>85</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
1,2,3,7,8-PeCDF	ND	5.3	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	13	pg/L	EPA-5 1613B
<b>Total PeCDF</b>	<b>130</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
1,2,3,4,7,8-HxCDF	ND	22	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	14	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	20	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	0.87	pg/L	EPA-5 1613B
<b>Total HxCDF</b>	<b>190</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
1,2,3,4,6,7,8-HpCDF	74		pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	5.6	pg/L	EPA-5 1613B
<b>Total HpCDF</b>	<b>130</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
OCDF	130		pg/L	EPA-5 1613B

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Lockheed Martin Tactical Defense Systems

Client Sample ID: SOUTH UNFILTERED WATER

Trace Level Organic Compounds

Lot-Sample #...: A6E220164-002    Work Order #...: H5XHN1AC    Matrix.....: WG

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C-2,3,7,8-TCDD	81	(25 - 164)
13C-1,2,3,7,8-PeCDD	105	(25 - 181)
13C-1,2,3,4,7,8-HxCDD	102	(32 - 141)
13C-1,2,3,6,7,8-HxCDD	73	(28 - 130)
13C-1,2,3,4,6,7,8-HpCDD	91	(23 - 140)
13C-OCDD	119	(17 - 157)
13C-2,3,7,8-TCDF	86	(24 - 169)
13C-1,2,3,7,8-PeCDF	89	(24 - 185)
13C-2,3,4,7,8-PeCDF	94	(21 - 178)
13C-1,2,3,6,7,8-HxCDF	71	(26 - 123)
13C-2,3,4,6,7,8-HxCDF	77	(28 - 136)
13C-1,2,3,7,8,9-HxCDF	82	(29 - 147)
13C-1,2,3,4,6,7,8-HpCDF	84	(28 - 143)
13C-1,2,3,4,7,8,9-HpCDF	105	(26 - 138)
13C-1,2,3,4,7,8-HxCDF	74	(26 - 152)
<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
37C14-2,3,7,8-TCDD	78	(35 - 197)

**NOTE(S):**

- J Estimated result. Result is less than the reporting limit.
- JA The analyte was positively identified, but the quantitation is an estimate.
- CON Confirmation analysis.

Lockheed Martin Tactical Defense Systems

Client Sample ID: NORTH FILTERED WATER (DISS)

GC Semivolatiles

Lot-Sample #...: A6E220164-003    Work Order #...: H5XHP1AA    Matrix.....: WG  
 Date Sampled...: 05/19/06 16:15    Date Received..: 05/20/06  
 Prep Date.....: 05/23/06    Analysis Date..: 05/24/06  
 Prep Batch #...: 6143066  
 Dilution Factor: 1    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	1.0	ug/L
Aroclor 1221	ND	1.0	ug/L
Aroclor 1232	ND	1.0	ug/L
Aroclor 1242	ND	1.0	ug/L
Aroclor 1248	ND	1.0	ug/L
Aroclor 1254	ND	1.0	ug/L
Aroclor 1260	ND	1.0	ug/L
<b>Aroclor 1268</b>	<b>4.1</b>	<b>1.0</b>	<b>ug/L</b>

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
Tetrachloro-m-xylene	77	(35 - 130)
Decachlorobiphenyl	121 *	(10 - 110)

**NOTE(S):**

\* Surrogate recovery is outside stated control limits.

Lockheed Martin Tactical Defense Systems

Client Sample ID: NORTH FILTERED WATER (DISS)

Trace Level Organic Compounds

Lot-Sample #...: A6E220164-003    Work Order #...: H5XHP1AC    Matrix.....: WG  
 Date Sampled...: 05/19/06 16:15    Date Received..: 05/20/06  
 Prep Date.....: 05/23/06    Analysis Date...: 05/25/06  
 Prep Batch #...: 6143570  
 Dilution Factor: 1

PARAMETER	RESULT	DETECTION		
		LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.79	pg/L	EPA-5 1613B
Total TCDD	ND	0.79	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.2	pg/L	EPA-5 1613B
Total PeCDD	ND	1.2	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	0.90	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	0.86	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.3	pg/L	EPA-5 1613B
Total HxCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	8.2	pg/L	EPA-5 1613B
Total HpCDD	ND	8.2	pg/L	EPA-5 1613B
OCDD	ND	21	pg/L	EPA-5 1613B
<b>2,3,7,8-TCDF</b>	<b>5.0 J, CON</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
<b>Total TCDF</b>	<b>43</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
1,2,3,7,8-PeCDF	ND	5.5	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	15	pg/L	EPA-5 1613B
Total PeCDF	ND	15	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	21	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	8.7	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	18	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	0.78	pg/L	EPA-5 1613B
Total HxCDF	ND	23	pg/L	EPA-5 1613B
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>41 J</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
1,2,3,4,7,8,9-HpCDF	ND	3.6	pg/L	EPA-5 1613B
<b>Total HpCDF</b>	<b>41</b>		<b>pg/L</b>	<b>EPA-5 1613B</b>
OCDF	ND	13	pg/L	EPA-5 1613B

(Continued on next page)



Lockheed Martin Tactical Defense Systems

Client Sample ID: NORTH FILTERED WATER (DISS)

Trace Level Organic Compounds

Lot-Sample #...: A6E220164-003    Work Order #...: H5XHP1AC    Matrix.....: WG

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C-2,3,7,8-TCDD	92	(25 - 164)
13C-1,2,3,7,8-PeCDD	119	(25 - 181)
13C-1,2,3,4,7,8-HxCDD	91	(32 - 141)
13C-1,2,3,6,7,8-HxCDD	73	(28 - 130)
13C-1,2,3,4,6,7,8-HpCDD	107	(23 - 140)
13C-OCDD	139	(17 - 157)
13C-2,3,7,8-TCDF	98	(24 - 169)
13C-1,2,3,7,8-PeCDF	98	(24 - 185)
13C-2,3,4,7,8-PeCDF	89	(21 - 178)
13C-1,2,3,6,7,8-HxCDF	67	(26 - 123)
13C-2,3,4,6,7,8-HxCDF	85	(28 - 136)
13C-1,2,3,7,8,9-HxCDF	96	(29 - 147)
13C-1,2,3,4,6,7,8-HpCDF	87	(28 - 143)
13C-1,2,3,4,7,8,9-HpCDF	121	(26 - 138)
13C-1,2,3,4,7,8-HxCDF	65	(26 - 152)
	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
<u>SURROGATE</u>		
37C14-2,3,7,8-TCDD	92	(35 - 197)

**NOTE(S):**

J Estimated result. Result is less than the reporting limit.

CON Confirmation analysis.

Lockheed Martin Tactical Defense Systems

Client Sample ID: NORTH UNFILTERED WATER

GC Semivolatiles

Lot-Sample #...: A6E220164-004    Work Order #...: H5XHQ1AA    Matrix.....: WG  
 Date Sampled...: 05/19/06 16:15    Date Received..: 05/20/06  
 Prep Date.....: 05/23/06    Analysis Date..: 05/24/06  
 Prep Batch #...: 6143066  
 Dilution Factor: 1    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	1.0	ug/L
Aroclor 1221	ND	1.0	ug/L
Aroclor 1232	ND	1.0	ug/L
Aroclor 1242	ND	1.0	ug/L
Aroclor 1248	ND	1.0	ug/L
Aroclor 1254	ND	1.0	ug/L
Aroclor 1260	ND	1.0	ug/L
<b>Aroclor 1268</b>	<b>1.0</b>	<b>1.0</b>	<b>ug/L</b>
<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	
Tetrachloro-m-xylene	75	( 35 - 130 )	
Decachlorobiphenyl	54	( 10 - 110 )	

Lockheed Martin Tactical Defense Systems

Client Sample ID: NORTH UNFILTERED WATER

Trace Level Organic Compounds

Lot-Sample #...: A6E220164-004    Work Order #...: H5XHQ1AC    Matrix.....: WG  
 Date Sampled...: 05/19/06 16:15    Date Received..: 05/20/06  
 Prep Date.....: 05/23/06    Analysis Date..: 05/25/06  
 Prep Batch #...: 6143498  
 Dilution Factor: 1

PARAMETER	RESULT	DETECTION		
		LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.65	pg/L	EPA-5 1613B
Total TCDD	ND	0.81	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.3	pg/L	EPA-5 1613B
Total PeCDD	ND	3.4	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	2.0	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	2.4	pg/L	EPA-5 1613B
Total HxCDD	ND	4.8	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	26 J		pg/L	EPA-5 1613B
Total HpCDD	26		pg/L	EPA-5 1613B
OCDD	130		pg/L	EPA-5 1613B
2,3,7,8-TCDF	90 CON		pg/L	EPA-5 1613B
Total TCDF	1400		pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	110		pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	260		pg/L	EPA-5 1613B
Total PeCDF	1900		pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	330		pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	130		pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	240		pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	7.2	pg/L	EPA-5 1613B
Total HxCDF	2200		pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	600		pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	40 J		pg/L	EPA-5 1613B
Total HpCDF	1100		pg/L	EPA-5 1613B
OCDF	770		pg/L	EPA-5 1613B

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Lockheed Martin Tactical Defense Systems

Client Sample ID: NORTH UNFILTERED WATER

Trace Level Organic Compounds

Lot-Sample #...: A6E220164-004    Work Order #...: H5XHQ1AC    Matrix.....: WG

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C-2,3,7,8-TCDD	88	(25 - 164)
13C-1,2,3,7,8-PeCDD	111	(25 - 181)
13C-1,2,3,4,7,8-HxCDD	105	(32 - 141)
13C-1,2,3,6,7,8-HxCDD	80	(28 - 130)
13C-1,2,3,4,6,7,8-HpCDD	102	(23 - 140)
13C-OCDD	139	(17 - 157)
13C-2,3,7,8-TCDF	93	(24 - 169)
13C-1,2,3,7,8-PeCDF	96	(24 - 185)
13C-2,3,4,7,8-PeCDF	105	(21 - 178)
13C-1,2,3,6,7,8-HxCDF	75	(26 - 123)
13C-2,3,4,6,7,8-HxCDF	82	(28 - 136)
13C-1,2,3,7,8,9-HxCDF	94	(29 - 147)
13C-1,2,3,4,6,7,8-HpCDF	94	(28 - 143)
13C-1,2,3,4,7,8,9-HpCDF	116	(26 - 138)
13C-1,2,3,4,7,8-HxCDF	78	(26 - 152)
	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
<u>SURROGATE</u>		
37C14-2,3,7,8-TCDD	92	(35 - 197)

**NOTE(S):**

J Estimated result. Result is less than the reporting limit.

CON Confirmation analysis.

# ***QUALITY CONTROL SECTION***

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: A6E220164  
MB Lot-Sample #: A6E230000-066

Work Order #...: H5X8Q1AA

Matrix.....: WATER

Analysis Date...: 05/24/06  
Dilution Factor: 1

Prep Date.....: 05/23/06

Prep Batch #...: 6143066

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		
		<u>LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>
Aroclor 1268	ND	1.0	ug/L	SW846 8082
Aroclor 1016	ND	1.0	ug/L	SW846 8082
Aroclor 1221	ND	1.0	ug/L	SW846 8082
Aroclor 1232	ND	1.0	ug/L	SW846 8082
Aroclor 1242	ND	1.0	ug/L	SW846 8082
Aroclor 1248	ND	1.0	ug/L	SW846 8082
Aroclor 1254	ND	1.0	ug/L	SW846 8082
Aroclor 1260	ND	1.0	ug/L	SW846 8082

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Tetrachloro-m-xylene	84	( 35 - 130 )
Decachlorobiphenyl	19	( 10 - 110 )

**NOTE(S):**

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

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: A6E220164  
 MB Lot-Sample #: G6E230000-498

Work Order #...: H51P11AA

Matrix.....: WATER

Prep Date.....: 05/23/06

Analysis Date...: 05/25/06

Prep Batch #...: 6143498

Dilution Factor: 1

PARAMETER	RESULT	DETECTION		METHOD
		LIMIT	UNITS	
2,3,7,8-TCDD	ND	1.2	pg/L	EPA-5 1613B
Total TCDD	ND	1.2	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.8	pg/L	EPA-5 1613B
Total PeCDD	ND	1.8	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	0.90	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.2	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.2	pg/L	EPA-5 1613B
Total HxCDD	ND	2.0	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	10	pg/L	EPA-5 1613B
Total HpCDD	ND	10	pg/L	EPA-5 1613B
OCDD	ND	21	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	0.99	pg/L	EPA-5 1613B
Total TCDF	ND	0.99	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.3	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	1.2	pg/L	EPA-5 1613B
Total PeCDF	ND	1.3	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	4.8	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	1.3	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	2.8	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	0.78	pg/L	EPA-5 1613B
Total HxCDF	ND	4.8	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	12	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.8	pg/L	EPA-5 1613B
Total HpCDF	ND	12	pg/L	EPA-5 1613B
OCDF	ND	9.2	pg/L	EPA-5 1613B

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METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: A6E220164

Work Order #...: H51P11AA

Matrix.....: WATER

<u>PARAMETER</u>	<u>RESULT</u>	<u>DETECTION LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>
	PERCENT	RECOVERY		
<u>INTERNAL STANDARDS</u>	<u>RECOVERY</u>	<u>LIMITS</u>		
13C-2,3,7,8-TCDD	78	(25 - 164)		
13C-1,2,3,7,8-PeCDD	108	(25 - 181)		
13C-1,2,3,4,7,8-HxCDD	102	(32 - 141)		
13C-1,2,3,6,7,8-HxCDD	81	(28 - 130)		
13C-1,2,3,4,6,7,8-HpCDD	97	(23 - 140)		
13C-OCDD	118	(17 - 157)		
13C-2,3,7,8-TCDF	81	(24 - 169)		
13C-1,2,3,7,8-PeCDF	84	(24 - 185)		
13C-2,3,4,7,8-PeCDF	96	(21 - 178)		
13C-1,2,3,6,7,8-HxCDF	75	(26 - 123)		
13C-2,3,4,6,7,8-HxCDF	84	(28 - 136)		
13C-1,2,3,7,8,9-HxCDF	90	(29 - 147)		
13C-1,2,3,4,6,7,8-HpCDF	90	(28 - 143)		
13C-1,2,3,4,7,8,9-HpCDF	107	(26 - 138)		
13C-1,2,3,4,7,8-HxCDF	75	(26 - 152)		
	PERCENT	RECOVERY		
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>		
37C14-2,3,7,8-TCDD	90	(35 - 197)		

**NOTE(S):**

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



METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: A6E220164  
MB Lot-Sample #: G6E230000-498

Work Order #...: H51P11AE

Matrix.....: WATER

Analysis Date...: 05/25/06  
Dilution Factor: 1

Prep Date.....: 05/23/06

Prep Batch #...: 6143498

<u>PARAMETER</u>	<u>RESULT</u>	<u>DETECTION</u>		<u>METHOD</u>
		<u>LIMIT</u>	<u>UNITS</u>	
2,3,7,8-TCDD	ND	10	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	10	pg/L	EPA-5 1613B

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C-2,3,7,8-TCDD	78	(25 - 164)
13C-2,3,7,8-TCDF	81	(24 - 169)

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
37C14-2,3,7,8-TCDD	90	(35 - 197)

**NOTE(S):**

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

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: A6E220164  
 MB Lot-Sample #: G6E230000-570

Work Order #...: H511N1AA

Matrix.....: WATER

Prep Date.....: 05/23/06

Analysis Date...: 05/25/06

Prep Batch #...: 6143570

Dilution Factor: 1

PARAMETER	RESULT	DETECTION		METHOD
		LIMIT	UNITS	
2,3,7,8-TCDD	ND	0.83	pg/L	EPA-5 1613B
Total TCDD	ND	0.83	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.6	pg/L	EPA-5 1613B
Total PeCDD	ND	1.6	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	0.88	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	0.88	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	0.94	pg/L	EPA-5 1613B
Total HxCDD	ND	0.94	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	5.4	pg/L	EPA-5 1613B
Total HpCDD	ND	5.4	pg/L	EPA-5 1613B
OCDD	ND	15	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	0.79	pg/L	EPA-5 1613B
Total TCDF	ND	0.79	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	0.84	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.89	pg/L	EPA-5 1613B
Total PeCDF	ND	0.89	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	1.9	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	0.68	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	1.4	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	0.60	pg/L	EPA-5 1613B
Total HxCDF	ND	1.9	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	6.4	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.0	pg/L	EPA-5 1613B
Total HpCDF	ND	6.4	pg/L	EPA-5 1613B
OCDF	ND	5.7	pg/L	EPA-5 1613B

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METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: A6E220164

Work Order #...: H511N1AA

Matrix.....: WATER

<u>PARAMETER</u>	<u>RESULT</u>	<u>DETECTION LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>
	PERCENT	RECOVERY		
<u>INTERNAL STANDARDS</u>	<u>RECOVERY</u>	<u>LIMITS</u>		
13C-2,3,7,8-TCDD	87	(25 - 164)		
13C-1,2,3,7,8-PeCDD	116	(25 - 181)		
13C-1,2,3,4,7,8-HxCDD	106	(32 - 141)		
13C-1,2,3,6,7,8-HxCDD	78	(28 - 130)		
13C-1,2,3,4,6,7,8-HpCDD	105	(23 - 140)		
13C-OCDD	133	(17 - 157)		
13C-2,3,7,8-TCDF	93	(24 - 169)		
13C-1,2,3,7,8-PeCDF	94	(24 - 185)		
13C-2,3,4,7,8-PeCDF	98	(21 - 178)		
13C-1,2,3,6,7,8-HxCDF	76	(26 - 123)		
13C-2,3,4,6,7,8-HxCDF	88	(28 - 136)		
13C-1,2,3,7,8,9-HxCDF	93	(29 - 147)		
13C-1,2,3,4,6,7,8-HpCDF	93	(28 - 143)		
13C-1,2,3,4,7,8,9-HpCDF	116	(26 - 138)		
13C-1,2,3,4,7,8-HxCDF	77	(26 - 152)		
	PERCENT	RECOVERY		
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>		
37C14-2,3,7,8-TCDD	85	(35 - 197)		

**NOTE(S):**

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #...: A6E220164      Work Order #...: H5X8Q1AC-LCS      Matrix.....: WATER  
 LCS Lot-Sample#: A6E230000-066      H5X8Q1AD-LCSD  
 Prep Date.....: 05/23/06      Analysis Date..: 05/24/06  
 Prep Batch #...: 6143066  
 Dilution Factor: 2

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>
Aroclor 1268	54	( 50 - 150)			SW846 8082
	51	( 50 - 150)	6.1	( 0-30)	SW846 8082

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Tetrachloro-m-xylene	73	( 35 - 130)
	79	( 35 - 130)
Decachlorobiphenyl	24	( 10 - 110)
	28	( 10 - 110)

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.  
 Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #...: A6E220164      Work Order #...: H51P11AC-LCS      Matrix.....: WATER  
 LCS Lot-Sample#: G6E230000-498      H51P11AD-LCSD  
 Prep Date.....: 05/23/06      Analysis Date..: 05/25/06  
 Prep Batch #...: 6143498  
 Dilution Factor: 1

PARAMETER	PERCENT	RECOVERY	RPD		METHOD
	RECOVERY	LIMITS	RPD	LIMITS	
2,3,7,8-TCDD	106	(67 - 158)			EPA-5 1613B
	111	(67 - 158)	5.2	(0-50)	EPA-5 1613B
1,2,3,7,8-PeCDD	92	(70 - 142)			EPA-5 1613B
	93	(70 - 142)	1.5	(0-50)	EPA-5 1613B
1,2,3,4,7,8-HxCDD	87	(70 - 164)			EPA-5 1613B
	88	(70 - 164)	1.6	(0-50)	EPA-5 1613B
1,2,3,6,7,8-HxCDD	93	(76 - 134)			EPA-5 1613B
	95	(76 - 134)	2.3	(0-50)	EPA-5 1613B
1,2,3,7,8,9-HxCDD	92	(64 - 162)			EPA-5 1613B
	93	(64 - 162)	0.99	(0-50)	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	102	(70 - 140)			EPA-5 1613B
	112	(70 - 140)	9.2	(0-50)	EPA-5 1613B
OCDD	101	(78 - 144)			EPA-5 1613B
	116	(78 - 144)	13	(0-50)	EPA-5 1613B
2,3,7,8-TCDF	120	(75 - 158)			EPA-5 1613B
	117	(75 - 158)	2.2	(0-50)	EPA-5 1613B
1,2,3,7,8-PeCDF	104	(80 - 134)			EPA-5 1613B
	107	(80 - 134)	2.8	(0-50)	EPA-5 1613B
2,3,4,7,8-PeCDF	101	(68 - 160)			EPA-5 1613B
	102	(68 - 160)	0.20	(0-50)	EPA-5 1613B
1,2,3,4,7,8-HxCDF	113	(72 - 134)			EPA-5 1613B
	116	(72 - 134)	2.6	(0-50)	EPA-5 1613B
1,2,3,6,7,8-HxCDF	105	(84 - 130)			EPA-5 1613B
	107	(84 - 130)	1.8	(0-50)	EPA-5 1613B
2,3,4,6,7,8-HxCDF	105	(70 - 156)			EPA-5 1613B
	109	(70 - 156)	4.0	(0-50)	EPA-5 1613B
1,2,3,7,8,9-HxCDF	105	(78 - 130)			EPA-5 1613B
	106	(78 - 130)	0.56	(0-50)	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	103	(82 - 122)			EPA-5 1613B
	106	(82 - 122)	2.3	(0-50)	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	99	(78 - 138)			EPA-5 1613B
	102	(78 - 138)	3.2	(0-50)	EPA-5 1613B
OCDF	102	(63 - 170)			EPA-5 1613B
	104	(63 - 170)	2.1	(0-50)	EPA-5 1613B

(Continued on next page)

**LABORATORY CONTROL SAMPLE EVALUATION REPORT**

**Trace Level Organic Compounds**

Client Lot #...: A6E220164      Work Order #...: H51P11AC-LCS      Matrix.....: WATER  
LCS Lot-Sample#: G6E230000-498      H51P11AD-LCSD

<u>INTERNAL STANDARD</u>	PERCENT	RECOVERY
	<u>RECOVERY</u>	<u>LIMITS</u>
13C-2,3,7,8-TCDD	79	(25 - 164)
	78	(25 - 164)
13C-1,2,3,7,8-PeCDD	115	(25 - 181)
	114	(25 - 181)
13C-1,2,3,4,7,8-HxCDD	109	(32 - 141)
	108	(32 - 141)
13C-1,2,3,6,7,8-HxCDD	77	(28 - 130)
	83	(28 - 130)
13C-1,2,3,4,6,7,8-HpCDD	103	(23 - 140)
	100	(23 - 140)
13C-OCDD	134	(17 - 157)
	125	(17 - 157)
13C-2,3,7,8-TCDF	82	(24 - 169)
	82	(24 - 169)
13C-1,2,3,7,8-PeCDF	91	(24 - 185)
	88	(24 - 185)
13C-2,3,4,7,8-PeCDF	98	(21 - 178)
	98	(21 - 178)
13C-1,2,3,6,7,8-HxCDF	74	(26 - 123)
	76	(26 - 123)
13C-2,3,4,6,7,8-HxCDF	83	(28 - 136)
	84	(28 - 136)
13C-1,2,3,7,8,9-HxCDF	92	(29 - 147)
	93	(29 - 147)
13C-1,2,3,4,6,7,8-HpCDF	91	(28 - 143)
	90	(28 - 143)
13C-1,2,3,4,7,8,9-HpCDF	115	(26 - 138)
	111	(26 - 138)
13C-1,2,3,4,7,8-HxCDF	76	(26 - 152)
	78	(26 - 152)
	PERCENT	RECOVERY
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>
37C14-2,3,7,8-TCDD	90	(35 - 197)
	89	(35 - 197)

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.  
Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #...: A6E220164      Work Order #...: H511N1AC      Matrix.....: WATER  
 LCS Lot-Sample#: G6E230000-570  
 Prep Date.....: 05/23/06      Analysis Date...: 05/25/06  
 Prep Batch #...: 6143570  
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>
2,3,7,8-TCDD	109	(67 - 158)	EPA-5 1613B
1,2,3,7,8-PeCDD	94	(70 - 142)	EPA-5 1613B
1,2,3,4,7,8-HxCDD	88	(70 - 164)	EPA-5 1613B
1,2,3,6,7,8-HxCDD	94	(76 - 134)	EPA-5 1613B
1,2,3,7,8,9-HxCDD	102	(64 - 162)	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	103	(70 - 140)	EPA-5 1613B
OCDD	100	(78 - 144)	EPA-5 1613B
2,3,7,8-TCDF	124	(75 - 158)	EPA-5 1613B
1,2,3,7,8-PeCDF	108	(80 - 134)	EPA-5 1613B
2,3,4,7,8-PeCDF	104	(68 - 160)	EPA-5 1613B
1,2,3,4,7,8-HxCDF	118	(72 - 134)	EPA-5 1613B
1,2,3,6,7,8-HxCDF	104	(84 - 130)	EPA-5 1613B
2,3,4,6,7,8-HxCDF	108	(70 - 156)	EPA-5 1613B
1,2,3,7,8,9-HxCDF	108	(78 - 130)	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	103	(82 - 122)	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	100	(78 - 138)	EPA-5 1613B
OCDF	100	(63 - 170)	EPA-5 1613B

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #...: A6E220164      Work Order #...: H511N1AC      Matrix.....: WATER  
 LCS Lot-Sample#: G6E230000-570

<u>INTERNAL STANDARD</u>	PERCENT <u>RECOVERY</u>	RECOVERY <u>LIMITS</u>
13C-2,3,7,8-TCDD	91	(25 - 164)
13C-1,2,3,7,8-PeCDD	119	(25 - 181)
13C-1,2,3,4,7,8-HxCDD	104	(32 - 141)
13C-1,2,3,6,7,8-HxCDD	73	(28 - 130)
13C-1,2,3,4,6,7,8-HpCDD	105	(23 - 140)
13C-OCDD	140	(17 - 157)
13C-2,3,7,8-TCDF	97	(24 - 169)
13C-1,2,3,7,8-PeCDF	96	(24 - 185)
13C-2,3,4,7,8-PeCDF	94	(21 - 178)
13C-1,2,3,6,7,8-HxCDF	73	(26 - 123)
13C-2,3,4,6,7,8-HxCDF	86	(28 - 136)
13C-1,2,3,7,8,9-HxCDF	93	(29 - 147)
13C-1,2,3,4,6,7,8-HpCDF	91	(28 - 143)
13C-1,2,3,4,7,8,9-HpCDF	115	(26 - 138)
13C-1,2,3,4,7,8-HxCDF	70	(26 - 152)
<u>SURROGATE</u>	PERCENT <u>RECOVERY</u>	RECOVERY <u>LIMITS</u>
37C14-2,3,7,8-TCDD	89	(35 - 197)

**NOTE(S):**

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

Bold print denotes control parameters



# Chain of Custody Record



Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client <b>LMC / BBL</b>		Project Manager <b>Mark Hurban 412-231-6624</b>		Date <b>5-19-06</b>	Chain of Custody Number <b>246150</b>
Address <b>600 Waterfront Drive</b>		Telephone Number (Area Code)/Fax Number <b>412-231-6147-330-796-2532</b>		Lab Number	
City <b>Pittsburg</b>	State <b>PA</b>	Zip Code <b>15222</b>	Site Contact <b>Dan Kemp</b>	Page <b>1</b> of <b>2</b>	

Project Name and Location (State) <b>LMC Airdeck, Akron OH</b>		Lab Contact <b>Mark Leeb</b>		Analysis (Attach list if more space is needed)	
Contract/Purchase Order/Quote No. <b>38032-001</b>		Carrier/Waybill Number			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix				Containers & Preservatives							ICE	PCB's	Dioxins	Furans	Special Instructions/ Conditions of Receipt
			Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc	NaOH					
South Filtered Water	5-19-06	1604		✓										✓	✓	✓		Pre-Filter
South Filtered Water	5-19-06	1604		✓										✓	✓	✓		Pre-Filter
South Filtered Water	5-19-06	1604		✓										✓	✓	✓		Pre-Filter
South Filtered Water	5-19-06	1604		✓										✓	✓	✓		Pre-Filter
South Unfiltered Water	5-19-06	1604		✓										✓	✓	✓		Pre-Filter
South Unfiltered Water	5-19-06	1604		✓										✓	✓	✓		Pre-Filter
South Unfiltered Water	5-19-06	1604		✓										✓	✓	✓		Pre-Filter
South Unfiltered Water	5-19-06	1604		✓										✓	✓	✓		Pre-Filter
North Filtered Water	5-19-06	1615		✓										✓	✓	✓		Pre-Filter
North Filtered Water	5-19-06	1615		✓										✓	✓	✓		Pre-Filter
North Filtered Water	5-19-06	1615		✓										✓	✓	✓		Pre-Filter
North Filtered Water	5-19-06	1615		✓										✓	✓	✓		Pre-Filter

Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown	Sample Disposal <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input checked="" type="checkbox"/> Archive For <u>1 (one)</u> Months (A fee may be assessed if samples are retained longer than 1 month)
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Turn Around Time Required  
 24 Hours  
 48 Hours  
 7 Days  
 14 Days  
 21 Days  
 Other 72 hr.

1. Relinquished By <i>[Signature]</i>	Date <b>5-20-06</b>	Time <b>0900</b>	1. Received By <i>[Signature]</i>	Date <b>5-20-06</b>	Time <b>9:00</b>
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

STL North Canton 34

Chain of Custody Record

FL-4124 (0901)

Client: LMC/BBL  
Project Manager: Mark Hurban 412-231-6624  
Date: 5-19-06  
Chain of Custody Number: 246151

Address: 600 Waterfront Dr.  
Telephone Number (Area Code)/Fax Number: 412-231-6147 - 330-796-2532  
Lab Number: \_\_\_\_\_

City: Pittsburg PA Zip Code: 15222  
Site Contact: Dan Kemp  
Lab Contact: Mark Loeb  
Analysis (Attach list if more space is needed)

Project Name and Location (State): LMC - Airdock, Akron, OH  
Carrier/Waybill Number: \_\_\_\_\_

Contract/Purchase Order/Quote No.: 38032-001

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix				Containers & Preservatives							ICE	PCBs	Dioxins	Furans	Special Instructions/ Conditions of Receipt	
			Air	Aqueous	Sed.	Soil	Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH							
North Unfiltered Water	5-19-06	1615		✓											✓	✓	✓	✓	Pre-filter
North Unfiltered Water	5-19-06	1615		✓											✓	✓	✓	✓	Pre-filter
North Unfiltered Water	5-19-06	1615		✓											✓	✓	✓	✓	Pre-filter
North Unfiltered Water	5-19-06	1615		✓											✓	✓	✓	✓	Pre-filter

Possible Hazard Identification:  Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal:  Return To Client  Disposal By Lab  Archive For 1 (one) Month (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required:  24 Hours  48 Hours  7 Days  14 Days  21 Days  Other: 72 hr

QC Requirements (Specify)

1. Relinquished By:	Date: 5-20-06	Time: 0900	1. Received By: Risa Hines	Date: 5-20-06	Time: 9:00
2. Relinquished By:	Date:	Time:	2. Received By:	Date:	Time:
3. Relinquished By:	Date:	Time:	3. Received By:	Date:	Time:

Comments

**STL Cooler Receipt Form/Narrative**

Lot Number: 400220104

**North Canton Facility**

Client: LMC/BBL Project: LMC - Airedank Quote#: \_\_\_\_\_  
 Cooler Received on: 5-19-06 Opened on: 5-19-06 by: [Signature] (Signature)

Fedx  Client Drop Off  UPS  DHL  FAS  STL Courier   
 Stetson  US Cargo  Other: \_\_\_\_\_

STL Cooler No# 994 Foam Box  Client Cooler  Other \_\_\_\_\_

- Were custody seals on the outside of the cooler? Yes  No  Intact? Yes  No  NA   
 If YES, Quantity \_\_\_\_\_  
 Were the custody seals signed and dated? Yes  No  NA   
 Yes  No  NA
  - Shipper's packing slip attached to this form? Yes  No  NA
  - Did custody papers accompany the samples? Yes  No  NA
  - Did you sign the custody papers in the appropriate place? Yes  No  NA
  - Packing material used: Bubble Wrap  Foam  None  Other: \_\_\_\_\_
  - Cooler temperature upon receipt 7.4 °C (see back of form for multiple coolers/temp)  
 METHOD: Temp Vial  Coolant & Sample  Against Bottles  IR  ICE/H<sub>2</sub>O Slurry   
 COOLANT: Wet Ice  Blue Ice  Dry Ice  Water  None
  - Did all bottles arrive in good condition (Unbroken)? Yes  No  NA
  - Could all bottle labels and/or tags be reconciled with the COC? Yes  No  NA
  - Were samples at the correct pH? (record below/on back) Yes  No  NA
  - Were correct bottles used for the tests indicated? Yes  No  NA
  - Were air bubbles >6 mm in any VOA vials? Yes  No  NA
  - Sufficient quantity received to perform indicated analyses? Yes  No  NA
  - Was a Trip Blank present in the cooler? Yes  No  Were VOAs on the COC? Yes  No
  - Does the trip blank number match the cooler number in which it was received? Yes  No  NA
- Contacted PM ML Date: 5/20 by: PM via Voice Mail  Verbal  Other   
 Concerning: High Temp

**1. CHAIN OF CUSTODY**

The following discrepancies occurred:

High temp - insufficient amount of ice - 3 small bags in large cooler  
Log as 4 samples, South Filtered water (biss), South UNFILTERED water over ->

**2. SAMPLE CONDITION**

Sample(s) \_\_\_\_\_ were received after the recommended holding time had expired.  
 Sample(s) \_\_\_\_\_ were received in a broken container.

**3. SAMPLE PRESERVATION**

Sample(s) \_\_\_\_\_ were further preserved in sample receiving to meet recommended pH level(s). Nitric Acid Lot # 122805-HNO<sub>3</sub>; Sulfuric Acid Lot # 100405-H<sub>2</sub>SO<sub>4</sub>; Sodium Hydroxide Lot # -100405 -NaOH; Hydrochloric Acid Lot # 100504-HCl; Sodium Hydroxide and Zinc Acetate Lot # 071604-CH<sub>3</sub>COO<sub>2</sub>Zn/NaOH  
 Sample(s) \_\_\_\_\_ were received with bubble > 6 mm in diameter (cc: PM)

**4. Other (see below or back)**

Client ID	pH	Date	Initials

## STL Cooler Receipt Form/Narrative North Canton Facility

Client ID	pH	Date	Initials
Cooler	Temp	Method	Coolant

**Discrepancies Cont.**

North Filtered <sup>water (Diss)</sup> (Diss), North unfiltered water. per MSL  
 - Diss samples need filtered by the Lab! 5/22/06

***END OF REPORT***

**Lockheed Martin Tactical Defense Systems**

**Dioxins/Furans, HRGC/HRMS (1613B)**

**Client Sample ID: SOUTH FILTERED WATER**

Lot-Sample #...: A6E220164 - 001  
 Date Sampled...: 05/19/06  
 Prep Date.....: 05/23/06  
 Prep Batch #...: 6143570

Work Order #...: H5XHM1AC  
 Date Received...: 05/20/06  
 Analysis Date...: 05/25/06  
 Dilution Factor: 1

Matrix.....: WATER  
 Instrument: 8D5  
 Units.....: pg/L  
 % Moisture:

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND	1.9	1.000	0
Total TCDD	ND	2.2		0
1,2,3,7,8-PeCDD	ND	1.4	0.500	0
Total PeCDD	ND	3.4		0
1,2,3,4,7,8-HxCDD	ND	1.3	0.100	0
1,2,3,6,7,8-HxCDD	ND	4.2	0.100	0
1,2,3,7,8,9-HxCDD	ND	8.8	0.100	0
Total HxCDD	ND	14		0
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>68</b>		<b>0.010</b>	<b>0.6800</b>
<b>Total HpCDD</b>	<b>140</b>			
<b>OCDD</b>	<b>740</b>		<b>0.001</b>	<b>0.7400</b>
2,3,7,8-TCDF	ND CON	2.4	0.100	0
<b>Total TCDF</b>	<b>12</b>			
1,2,3,7,8-PeCDF	ND	2.6	0.050	0
2,3,4,7,8-PeCDF	ND	5.1	0.500	0
<b>Total PeCDF</b>	<b>27</b>			
1,2,3,4,7,8-HxCDF	ND	10	0.100	0
1,2,3,6,7,8-HxCDF	ND	5.7	0.100	0
2,3,4,6,7,8-HxCDF	ND	9.0	0.100	0
1,2,3,7,8,9-HxCDF	ND	0.67	0.100	0
<b>Total HxCDF</b>	<b>56</b>			
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>32 J</b>		<b>0.010</b>	<b>0.3200</b>
1,2,3,4,7,8,9-HpCDF	ND	2.9	0.010	0
<b>Total HpCDF</b>	<b>33</b>			
OCDF	ND	37	0.001	0
<b>Total TEQ Concentration</b>				<b>1.7400</b>

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	91	25 - 164
13C-1,2,3,7,8-PeCDD	116	25 - 181
13C-1,2,3,4,7,8-HxCDD	110	32 - 141
13C-1,2,3,6,7,8-HxCDD	77	28 - 130
13C-1,2,3,4,6,7,8-HpCDD	105	23 - 140
13C-OCDD	133	17 - 157
13C-2,3,7,8-TCDF	97	24 - 169
13C-1,2,3,7,8-PeCDF	106	24 - 185
13C-2,3,4,7,8-PeCDF	106	21 - 178
13C-1,2,3,6,7,8-HxCDF	77	26 - 123
13C-2,3,4,6,7,8-HxCDF	87	28 - 136
13C-1,2,3,7,8,9-HxCDF	98	29 - 147
13C-1,2,3,4,6,7,8-HpCDF	93	28 - 143
13C-1,2,3,4,7,8,9-HpCDF	116	26 - 138
13C-1,2,3,4,7,8-HxCDF	76	26 - 152

Lockheed Martin Tactical Defense Systems

Dioxins/Furans, HRGC/HRMS (1613B)

Client Sample ID: SOUTH FILTERED WATER

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
37Cl4-2,3,7,8-TCDD	89	35 - 197

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016

CON Confirmation analysis.

J Estimated result. Result is less than the reporting limit.

**Lockheed Martin Tactical Defense Systems**

**Dioxins/Furans, HRGC/HRMS (1613B)**

**Client Sample ID: SOUTH UNFILTERED WATER**

Lot-Sample #...: A6E220164 - 002  
 Date Sampled...: 05/19/06  
 Prep Date.....: 05/23/06  
 Prep Batch #...: 6143498

Work Order #...: H5XHN1AC  
 Date Received...: 05/20/06  
 Analysis Date...: 05/25/06  
 Dilution Factor: 1

Matrix....: WATER  
 Instrument: 8D5  
 Units.....: pg/L  
 % Moisture:

<u>PARAMETER</u>	<u>RESULT</u>	<u>DETECTION LIMIT</u>	<u>TEF FACTOR</u>	<u>TEQ CONCENTRATION</u>
2,3,7,8-TCDD	ND	4.8	1.000	0
Total TCDD	ND	4.8		0
1,2,3,7,8-PeCDD	ND	5.1	0.500	0
Total PeCDD	ND	8.4		0
1,2,3,4,7,8-HxCDD	ND	3.6	0.100	0
1,2,3,6,7,8-HxCDD	ND	9.4	0.100	0
1,2,3,7,8,9-HxCDD	ND	20	0.100	0
<b>Total HxCDD</b>	<b>85</b>			
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>200</b>		<b>0.010</b>	<b>2.0000</b>
<b>Total HpCDD</b>	<b>410</b>			
<b>OCDD</b>	<b>2000</b>		<b>0.001</b>	<b>2.0000</b>
<b>2,3,7,8-TCDF</b>	<b>6.4</b>	<b>J JA CON</b>	<b>0.100</b>	<b>0.6400</b>
<b>Total TCDF</b>	<b>85</b>			
1,2,3,7,8-PeCDF	ND	5.3	0.050	0
2,3,4,7,8-PeCDF	ND	13	0.500	0
<b>Total PeCDF</b>	<b>130</b>			
1,2,3,4,7,8-HxCDF	ND	22	0.100	0
1,2,3,6,7,8-HxCDF	ND	14	0.100	0
2,3,4,6,7,8-HxCDF	ND	20	0.100	0
1,2,3,7,8,9-HxCDF	ND	0.87	0.100	0
<b>Total HxCDF</b>	<b>190</b>			
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>74</b>		<b>0.010</b>	<b>0.7400</b>
1,2,3,4,7,8,9-HpCDF	ND	5.6	0.010	0
<b>Total HpCDF</b>	<b>130</b>			
<b>OCDF</b>	<b>130</b>		<b>0.001</b>	<b>0.1300</b>
<b>Total TEQ Concentration</b>				<b>5.5100</b>

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C-2,3,7,8-TCDD	81	25 - 164
13C-1,2,3,7,8-PeCDD	105	25 - 181
13C-1,2,3,4,7,8-HxCDD	102	32 - 141
13C-1,2,3,6,7,8-HxCDD	73	28 - 130
13C-1,2,3,4,6,7,8-HpCDD	91	23 - 140
13C-OCDD	119	17 - 157
13C-2,3,7,8-TCDF	86	24 - 169
13C-1,2,3,7,8-PeCDF	89	24 - 185
13C-2,3,4,7,8-PeCDF	94	21 - 178
13C-1,2,3,6,7,8-HxCDF	71	26 - 123
13C-2,3,4,6,7,8-HxCDF	77	28 - 136
13C-1,2,3,7,8,9-HxCDF	82	29 - 147
13C-1,2,3,4,6,7,8-HpCDF	84	28 - 143
13C-1,2,3,4,7,8,9-HpCDF	105	26 - 138
13C-1,2,3,4,7,8-HxCDF	74	26 - 152



Lockheed Martin Tactical Defense Systems

Dioxins/Furans, HRGC/HRMS (1613B)

Client Sample ID: SOUTH UNFILTERED WATER

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
37Cl4-2,3,7,8-TCDD	78	35 - 197

**Notes:**

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016

- CON Confirmation analysis.
- J Estimated result. Result is less than the reporting limit.
- JA The analyte was positively identified, but the quantitation is an estimate.

**Lockheed Martin Tactical Defense Systems**

**Dioxins/Furans, HRGC/HRMS (1613B)**

**Client Sample ID: NORTH FILTERED WATER**

Lot-Sample #...: A6E220164 - 003  
 Date Sampled...: 05/19/06  
 Prep Date.....: 05/23/06  
 Prep Batch #...: 6143570

Work Order #...: H5XHP1AC  
 Date Received...: 05/20/06  
 Analysis Date...: 05/25/06  
 Dilution Factor: 1

Matrix....: WATER  
 Instrument: 8D5  
 Units.....: pg/L  
 % Moisture:

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND	0.79	1.000	0
Total TCDD	ND	0.79		0
1,2,3,7,8-PeCDD	ND	1.2	0.500	0
Total PeCDD	ND	1.2		0
1,2,3,4,7,8-HxCDD	ND	0.90	0.100	0
1,2,3,6,7,8-HxCDD	ND	0.86	0.100	0
1,2,3,7,8,9-HxCDD	ND	1.3	0.100	0
Total HxCDD	ND	1.3		0
1,2,3,4,6,7,8-HpCDD	ND	8.2	0.010	0
Total HpCDD	ND	8.2		0
OCDD	ND	21	0.001	0
<b>2,3,7,8-TCDF</b>	<b>5.0</b>	<b>J CON</b>	<b>0.100</b>	<b>0.5000</b>
<b>Total TCDF</b>	<b>43</b>			
1,2,3,7,8-PeCDF	ND	5.5	0.050	0
2,3,4,7,8-PeCDF	ND	15	0.500	0
Total PeCDF	ND	15		0
1,2,3,4,7,8-HxCDF	ND	21	0.100	0
1,2,3,6,7,8-HxCDF	ND	8.7	0.100	0
2,3,4,6,7,8-HxCDF	ND	18	0.100	0
1,2,3,7,8,9-HxCDF	ND	0.78	0.100	0
Total HxCDF	ND	23		0
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>41</b>	<b>J</b>	<b>0.010</b>	<b>0.4100</b>
1,2,3,4,7,8,9-HpCDF	ND	3.6	0.010	0
<b>Total HpCDF</b>	<b>41</b>			
OCDF	ND	13	0.001	0
<b>Total TEQ Concentration</b>				<b>0.9100</b>

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	92	25 - 164
13C-1,2,3,7,8-PeCDD	119	25 - 181
13C-1,2,3,4,7,8-HxCDD	91	32 - 141
13C-1,2,3,6,7,8-HxCDD	73	28 - 130
13C-1,2,3,4,6,7,8-HpCDD	107	23 - 140
13C-OCDD	139	17 - 157
13C-2,3,7,8-TCDF	98	24 - 169
13C-1,2,3,7,8-PeCDF	98	24 - 185
13C-2,3,4,7,8-PeCDF	89	21 - 178
13C-1,2,3,6,7,8-HxCDF	67	26 - 123
13C-2,3,4,6,7,8-HxCDF	85	28 - 136
13C-1,2,3,7,8,9-HxCDF	96	29 - 147
13C-1,2,3,4,6,7,8-HpCDF	87	28 - 143
13C-1,2,3,4,7,8,9-HpCDF	121	26 - 138
13C-1,2,3,4,7,8-HxCDF	65	26 - 152

**Lockheed Martin Tactical Defense Systems**

**Dioxins/Furans, HRGC/HRMS (1613B)**

**Client Sample ID: NORTH FILTERED WATER**

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
37Cl4-2,3,7,8-TCDD	92	35 - 197

**Notes:**

TBF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016

CON Confirmation analysis.  
J Estimated result. Result is less than the reporting limit.

**Lockheed Martin Tactical Defense Systems**

**Dioxins/Furans, HRGC/HRMS (1613B)**

**Client Sample ID: NORTH UNFILTERED WATER**

<b>Lot-Sample #...:</b> A6E220164 - 004	<b>Work Order #...:</b> H5XHQ1AC	<b>Matrix....:</b> WATER
<b>Date Sampled...:</b> 05/19/06	<b>Date Received...:</b> 05/20/06	<b>Instrument:</b> 8D5
<b>Prep Date.....:</b> 05/23/06	<b>Analysis Date..:</b> 05/25/06	<b>Units.....:</b> pg/L
<b>Prep Batch #...:</b> 6143498	<b>Dilution Factor:</b> 1	<b>% Moisture:</b>

<u>PARAMETER</u>	<u>RESULT</u>	<u>DETECTION LIMIT</u>	<u>TEF FACTOR</u>	<u>TEQ CONCENTRATION</u>
2,3,7,8-TCDD	ND	0.65	1.000	0
Total TCDD	ND	0.81		0
1,2,3,7,8-PeCDD	ND	1.3	0.500	0
Total PeCDD	ND	3.4		0
1,2,3,4,7,8-HxCDD	ND	1.3	0.100	0
1,2,3,6,7,8-HxCDD	ND	2.0	0.100	0
1,2,3,7,8,9-HxCDD	ND	2.4	0.100	0
Total HxCDD	ND	4.8		0
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>26</b>	<b>J</b>	<b>0.010</b>	<b>0.2600</b>
<b>Total HpCDD</b>	<b>26</b>			
<b>OCDD</b>	<b>130</b>		<b>0.001</b>	<b>0.1300</b>
<b>2,3,7,8-TCDF</b>	<b>90</b>	<b>CON</b>	<b>0.100</b>	<b>9.0000</b>
<b>Total TCDF</b>	<b>1400</b>			
<b>1,2,3,7,8-PeCDF</b>	<b>110</b>		<b>0.050</b>	<b>5.5000</b>
<b>2,3,4,7,8-PeCDF</b>	<b>260</b>		<b>0.500</b>	<b>130.0000</b>
<b>Total PeCDF</b>	<b>1900</b>			
<b>1,2,3,4,7,8-HxCDF</b>	<b>330</b>		<b>0.100</b>	<b>33.0000</b>
<b>1,2,3,6,7,8-HxCDF</b>	<b>130</b>		<b>0.100</b>	<b>13.0000</b>
<b>2,3,4,6,7,8-HxCDF</b>	<b>240</b>		<b>0.100</b>	<b>24.0000</b>
1,2,3,7,8,9-HxCDF	ND	7.2	0.100	0
<b>Total HxCDF</b>	<b>2200</b>			
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>600</b>		<b>0.010</b>	<b>6.0000</b>
<b>1,2,3,4,7,8,9-HpCDF</b>	<b>40</b>	<b>J</b>	<b>0.010</b>	<b>0.4000</b>
<b>Total HpCDF</b>	<b>1100</b>			
<b>OCDF</b>	<b>770</b>		<b>0.001</b>	<b>0.7700</b>
<b>Total TEQ Concentration</b>				<b>222.0600</b>

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C-2,3,7,8-TCDD	88	25 - 164
13C-1,2,3,7,8-PeCDD	111	25 - 181
13C-1,2,3,4,7,8-HxCDD	105	32 - 141
13C-1,2,3,6,7,8-HxCDD	80	28 - 130
13C-1,2,3,4,6,7,8-HpCDD	102	23 - 140
13C-OCDD	139	17 - 157
13C-2,3,7,8-TCDF	93	24 - 169
13C-1,2,3,7,8-PeCDF	96	24 - 185
13C-2,3,4,7,8-PeCDF	105	21 - 178
13C-1,2,3,6,7,8-HxCDF	75	26 - 123
13C-2,3,4,6,7,8-HxCDF	82	28 - 136
13C-1,2,3,7,8,9-HxCDF	94	29 - 147
13C-1,2,3,4,6,7,8-HpCDF	94	28 - 143
13C-1,2,3,4,7,8,9-HpCDF	116	26 - 138
13C-1,2,3,4,7,8-HxCDF	78	26 - 152

Lockheed Martin Tactical Defense Systems

Dioxins/Furans, HRGC/HRMS (1613B)

Client Sample ID: NORTH UNFILTERED WATER

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
37Cl4-2,3,7,8-TCDD	92	35 - 197

**Notes:**

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016

- CON Confirmation analysis.
- J Estimated result. Result is less than the reporting limit.

<b>Analytical Report Cover Page A6E220167 .....</b>	<b>1</b>
Case Narrative .....	2
Executive Summary .....	4
Analytical Method Summary .....	5
Sample Summary .....	6
Analytical Results by Sample .....	7
Quality Control Section .....	17
Shipping/Receiving Documents .....	22
<b>Total # of Pages in this Document .....</b>	<b>25</b>

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## ANALYTICAL REPORT

PROJECT NO. 38032-001 EXTERIOR

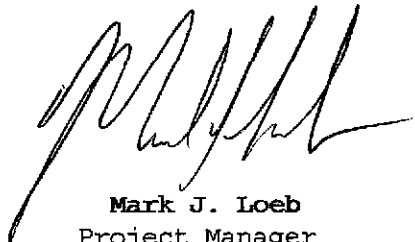
LMC AIRDOCK, AKRON, OHIO

Lot #: A6E220167

Brad Heim

Lockheed Martin Corporation  
Maritime Systems and Sensors  
1210 Massillon Road  
Akron, OH 44315-0001

SEVERN TRENT LABORATORIES, INC.



Mark J. Loeb  
Project Manager

May 31, 2006

# CASE NARRATIVE

A6E220167

The following report contains the analytical results for five wipe samples submitted to STL North Canton by Lockheed Martin Tactical Defense Systems from the LMC Airdock, Akron, Ohio Site, project number 38032-001 EXTERIOR. The samples were received May 22, 2006, according to documented sample acceptance procedures.

The Dioxin analysis was performed at STL Sacramento.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. Preliminary results were provided to Brad Heim, Dave Gunnarson, Dan Kemp, Mark Hurban, and Shawn Wolf on May 30, 2006. A summary of QC data for these analyses is included at the back of the report.

STL North Canton attests to the validity of the laboratory data generated by STL facilities reported herein. All analyses performed by STL facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. STL's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

If you have any questions, please call the Project Manager, Mark J. Loeb, at 330-497-9396.

This report is sequentially paginated. The final page of the report is labeled as "END OF REPORT." The total number of pages in this report is 25.

## SUPPLEMENTAL QC INFORMATION

### SAMPLE RECEIVING

The temperatures of the coolers upon sample receipt were 4.4 and 5.2°C.



## **CASE NARRATIVE (continued)**

### **STL SACRAMENTO - DIOXINS**

The samples were received at STL Sacramento at a temperature of 12°C. with blue ice that was thawed.

Sample LMC-LS-005 has internal standard (IS) 13C-2378-TCDD with the ion ratio outside limits; in this case its quantitation, as well as that of corresponding homologue series compounds, is based on a theoretical area count generated for the ion peak in question. The result is then qualified as “positively identified, but estimated quantitation” because the analyst believes the isomer to be present, but the quantitation is based on theoretical ratios. There is no adverse impact on data quality, so no corrective action is necessary.

The method blank associated with samples LMC-LS-001, LMC-LS-002, LMC-LS-003, LMC-LS-004, and LMC-LS-005 was contaminated with HpCDD and OCDD. The samples and method blank were reanalyzed and confirm contamination occurred after extractions. Re-extracts are free of contamination and have been reported.

# EXECUTIVE SUMMARY - Detection Highlights

A6E220167

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>ANALYTICAL METHOD</u>
NO DETECTABLE PARAMETERS				

# ANALYTICAL METHODS SUMMARY

A6E220167

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>
Dioxins/Furans, HRGC/HRMS	EPA-5 1613B

## References:

EPA-5 "Method 1613: Tetra- through Octa- Chlorinated Dioxins and Furans by Isotope Dilution, HRGC/HRMS, Revision B", EPA, OCTOBER 1994

# SAMPLE SUMMARY

A6E220167

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED DATE</u>	<u>SAMP TIME</u>
H5XJR	001	LMC-LS-001	05/21/06	14:05
H5XJT	002	LMC-LS-002	05/21/06	14:25
H5XJV	003	LMC-LS-003	05/21/06	14:45
H5XJW	004	LMC-LS-004	05/21/06	15:30
H5XJX	005	LMC-LS-005	05/21/06	15:50

## **NOTE(S) :**

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-LS-001

Trace Level Organic Compounds

Lot-Sample #...: A6E220167-001    Work Order #...: H5XJR2AA    Matrix.....: SW  
 Date Sampled...: 05/21/06 14:05    Date Received..: 05/22/06  
 Prep Date.....: 05/23/06    Analysis Date..: 05/26/06  
 Prep Batch #...: 6146423  
 Dilution Factor: 1

PARAMETER	RESULT	DETECTION		
		LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	9.7	pg	EPA-5 1613B
Total TCDD	ND	9.7	pg	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	21	pg	EPA-5 1613B
Total PeCDD	ND	21	pg	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	15	pg	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	16	pg	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	14	pg	EPA-5 1613B
Total HxCDD	ND	16	pg	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	7.1	pg	EPA-5 1613B
Total HpCDD	ND	7.1	pg	EPA-5 1613B
OCDD	ND	30	pg	EPA-5 1613B
2,3,7,8-TCDF	ND	14	pg	EPA-5 1613B
Total TCDF	ND	14	pg	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	11	pg	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	11	pg	EPA-5 1613B
Total PeCDF	ND	19	pg	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	22	pg	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	22	pg	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	15	pg	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	13	pg	EPA-5 1613B
Total HxCDF	ND	22	pg	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	7.6	pg	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	8.5	pg	EPA-5 1613B
Total HpCDF	ND	8.5	pg	EPA-5 1613B
OCDF	ND	17	pg	EPA-5 1613B

(Continued on next page)

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-LS-001

Trace Level Organic Compounds

Lot-Sample #...: A6E220167-001    Work Order #...: H5XJR2AA    Matrix.....: SW

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C-2,3,7,8-TCDD	98	(25 - 164)
13C-1,2,3,7,8-PeCDD	96	(25 - 181)
13C-1,2,3,4,7,8-HxCDD	107	(32 - 141)
13C-1,2,3,6,7,8-HxCDD	96	(28 - 130)
13C-1,2,3,4,6,7,8-HpCDD	93	(23 - 140)
13C-OCDD	104	(17 - 157)
13C-2,3,7,8-TCDF	76	(24 - 169)
13C-1,2,3,7,8-PeCDF	89	(24 - 185)
13C-2,3,4,7,8-PeCDF	90	(21 - 178)
13C-1,2,3,6,7,8-HxCDF	86	(26 - 123)
13C-2,3,4,6,7,8-HxCDF	89	(28 - 136)
13C-1,2,3,7,8,9-HxCDF	87	(29 - 147)
13C-1,2,3,4,6,7,8-HpCDF	81	(28 - 143)
13C-1,2,3,4,7,8,9-HpCDF	89	(26 - 138)
13C-1,2,3,4,7,8-HxCDF	83	(26 - 152)

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
37C14-2,3,7,8-TCDD	85	(35 - 197)

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-LS-002

Trace Level Organic Compounds

Lot-Sample #...: A6E220167-002    Work Order #...: H5XJT2AA    Matrix.....: SW  
 Date Sampled...: 05/21/06 14:25    Date Received..: 05/22/06  
 Prep Date.....: 05/23/06    Analysis Date...: 05/26/06  
 Prep Batch #...: 6146423  
 Dilution Factor: 1

PARAMETER	RESULT	DETECTION		
		LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	10	pg	EPA-5 1613B
Total TCDD	ND	10	pg	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	19	pg	EPA-5 1613B
Total PeCDD	ND	19	pg	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	16	pg	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	15	pg	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	14	pg	EPA-5 1613B
Total HxCDD	ND	16	pg	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	8.6	pg	EPA-5 1613B
Total HpCDD	ND	8.6	pg	EPA-5 1613B
OCDD	ND	27	pg	EPA-5 1613B
2,3,7,8-TCDF	ND	17	pg	EPA-5 1613B
Total TCDF	ND	17	pg	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	12	pg	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	12	pg	EPA-5 1613B
Total PeCDF	ND	17	pg	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	23	pg	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	21	pg	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	14	pg	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	12	pg	EPA-5 1613B
Total HxCDF	ND	23	pg	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	7.5	pg	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	8.9	pg	EPA-5 1613B
Total HpCDF	ND	8.9	pg	EPA-5 1613B
OCDF	ND	15	pg	EPA-5 1613B

(Continued on next page)

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-LS-002

Trace Level Organic Compounds

Lot-Sample #...: A6E220167-002    Work Order #...: H5XJT2AA    Matrix.....: SW

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C-2,3,7,8-TCDD	98	(25 - 164)
13C-1,2,3,7,8-PeCDD	106	(25 - 181)
13C-1,2,3,4,7,8-HxCDD	112	(32 - 141)
13C-1,2,3,6,7,8-HxCDD	97	(28 - 130)
13C-1,2,3,4,6,7,8-HpCDD	94	(23 - 140)
13C-OCDD	106	(17 - 157)
13C-2,3,7,8-TCDF	78	(24 - 169)
13C-1,2,3,7,8-PeCDF	90	(24 - 185)
13C-2,3,4,7,8-PeCDF	94	(21 - 178)
13C-1,2,3,6,7,8-HxCDF	85	(26 - 123)
13C-2,3,4,6,7,8-HxCDF	89	(28 - 136)
13C-1,2,3,7,8,9-HxCDF	90	(29 - 147)
13C-1,2,3,4,6,7,8-HpCDF	83	(28 - 143)
13C-1,2,3,4,7,8,9-HpCDF	86	(26 - 138)
13C-1,2,3,4,7,8-HxCDF	81	(26 - 152)

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
37C14-2,3,7,8-TCDD	81	(35 - 197)



Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-LS-003

Trace Level Organic Compounds

Lot-Sample #...: A6E220167-003    Work Order #...: H5XJV2AA    Matrix.....: SW  
 Date Sampled...: 05/21/06 14:45    Date Received..: 05/22/06  
 Prep Date.....: 05/23/06    Analysis Date...: 05/26/06  
 Prep Batch #...: 6146423  
 Dilution Factor: 1

PARAMETER	RESULT	DETECTION		
		LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	11	pg	EPA-5 1613B
Total TCDD	ND	11	pg	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	22	pg	EPA-5 1613B
Total PeCDD	ND	22	pg	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	16	pg	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	16	pg	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	15	pg	EPA-5 1613B
Total HxCDD	ND	16	pg	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	6.4	pg	EPA-5 1613B
Total HpCDD	ND	6.4	pg	EPA-5 1613B
OCDD	ND	29	pg	EPA-5 1613B
2,3,7,8-TCDF	ND	19	pg	EPA-5 1613B
Total TCDF	ND	19	pg	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	10	pg	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	11	pg	EPA-5 1613B
Total PeCDF	ND	18	pg	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	22	pg	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	20	pg	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	15	pg	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	12	pg	EPA-5 1613B
Total HxCDF	ND	22	pg	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	6.0	pg	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	7.3	pg	EPA-5 1613B
Total HpCDF	ND	7.3	pg	EPA-5 1613B
OCDF	ND	21	pg	EPA-5 1613B

(Continued on next page)

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-LS-003

Trace Level Organic Compounds

Lot-Sample #...: A6E220167-003    Work Order #...: H5XJV2AA    Matrix.....: SW

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C-2,3,7,8-TCDD	94	(25 - 164)
13C-1,2,3,7,8-PeCDD	96	(25 - 181)
13C-1,2,3,4,7,8-HxCDD	101	(32 - 141)
13C-1,2,3,6,7,8-HxCDD	96	(28 - 130)
13C-1,2,3,4,6,7,8-HpCDD	92	(23 - 140)
13C-OCDD	103	(17 - 157)
13C-2,3,7,8-TCDF	73	(24 - 169)
13C-1,2,3,7,8-PeCDF	87	(24 - 185)
13C-2,3,4,7,8-PeCDF	86	(21 - 178)
13C-1,2,3,6,7,8-HxCDF	86	(26 - 123)
13C-2,3,4,6,7,8-HxCDF	90	(28 - 136)
13C-1,2,3,7,8,9-HxCDF	87	(29 - 147)
13C-1,2,3,4,6,7,8-HpCDF	84	(28 - 143)
13C-1,2,3,4,7,8,9-HpCDF	86	(26 - 138)
13C-1,2,3,4,7,8-HxCDF	81	(26 - 152)

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
37C14-2,3,7,8-TCDD	82	(35 - 197)

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-LS-004

Trace Level Organic Compounds

Lot-Sample #...: A6E220167-004    Work Order #...: H5XJW2AA    Matrix.....: SW  
 Date Sampled...: 05/21/06 15:30    Date Received..: 05/22/06  
 Prep Date.....: 05/23/06    Analysis Date...: 05/26/06  
 Prep Batch #...: 6146423  
 Dilution Factor: 1

PARAMETER	RESULT	DETECTION		
		LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	9.8	pg	EPA-5 1613B
Total TCDD	ND	9.8	pg	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	23	pg	EPA-5 1613B
Total PeCDD	ND	23	pg	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	16	pg	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	16	pg	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	15	pg	EPA-5 1613B
Total HxCDD	ND	16	pg	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	5.9	pg	EPA-5 1613B
Total HpCDD	ND	5.9	pg	EPA-5 1613B
OCDD	ND	31	pg	EPA-5 1613B
2,3,7,8-TCDF	ND	17	pg	EPA-5 1613B
Total TCDF	ND	17	pg	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	11	pg	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	11	pg	EPA-5 1613B
Total PeCDF	ND	19	pg	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	23	pg	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	21	pg	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	14	pg	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	13	pg	EPA-5 1613B
Total HxCDF	ND	23	pg	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	7.8	pg	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	8.8	pg	EPA-5 1613B
Total HpCDF	ND	8.8	pg	EPA-5 1613B
OCDF	ND	17	pg	EPA-5 1613B

(Continued on next page)

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-LS-004

Trace Level Organic Compounds

Lot-Sample #...: A6E220167-004    Work Order #...: H5XJW2AA    Matrix.....: SW

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C-2,3,7,8-TCDD	94	(25 - 164)
13C-1,2,3,7,8-PeCDD	97	(25 - 181)
13C-1,2,3,4,7,8-HxCDD	102	(32 - 141)
13C-1,2,3,6,7,8-HxCDD	97	(28 - 130)
13C-1,2,3,4,6,7,8-HpCDD	91	(23 - 140)
13C-OCDD	99	(17 - 157)
13C-2,3,7,8-TCDF	75	(24 - 169)
13C-1,2,3,7,8-PeCDF	87	(24 - 185)
13C-2,3,4,7,8-PeCDF	90	(21 - 178)
13C-1,2,3,6,7,8-HxCDF	83	(26 - 123)
13C-2,3,4,6,7,8-HxCDF	88	(28 - 136)
13C-1,2,3,7,8,9-HxCDF	86	(29 - 147)
13C-1,2,3,4,6,7,8-HpCDF	77	(28 - 143)
13C-1,2,3,4,7,8,9-HpCDF	88	(26 - 138)
13C-1,2,3,4,7,8-HxCDF	78	(26 - 152)

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
37C14-2,3,7,8-TCDD	82	(35 - 197)

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-LS-005

Trace Level Organic Compounds

Lot-Sample #...: A6E220167-005    Work Order #...: H5XJX2AA    Matrix.....: SW  
 Date Sampled...: 05/21/06 15:50    Date Received..: 05/22/06  
 Prep Date.....: 05/23/06    Analysis Date...: 05/26/06  
 Prep Batch #...: 6146423  
 Dilution Factor: 1

PARAMETER	RESULT	DETECTION		
		LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	13	pg	EPA-5 1613B
Total TCDD	ND	13	pg	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	25	pg	EPA-5 1613B
Total PeCDD	ND	25	pg	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	14	pg	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	14	pg	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	13	pg	EPA-5 1613B
Total HxCDD	ND	14	pg	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	8.4	pg	EPA-5 1613B
Total HpCDD	ND	8.4	pg	EPA-5 1613B
OCDD	ND	47	pg	EPA-5 1613B
2,3,7,8-TCDF	ND	18	pg	EPA-5 1613B
Total TCDF	ND	18	pg	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	15	pg	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	15	pg	EPA-5 1613B
Total PeCDF	ND	20	pg	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	22	pg	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	20	pg	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	14	pg	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	12	pg	EPA-5 1613B
Total HxCDF	ND	22	pg	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	7.6	pg	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	8.7	pg	EPA-5 1613B
Total HpCDF	ND	8.7	pg	EPA-5 1613B
OCDF	ND	20	pg	EPA-5 1613B

(Continued on next page)

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-LS-005

Trace Level Organic Compounds

Lot-Sample #...: A6E220167-005    Work Order #...: H5XJX2AA    Matrix.....: SW

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C-2,3,7,8-TCDD	93	(25 - 164)
13C-1,2,3,7,8-PeCDD	89	(25 - 181)
13C-1,2,3,4,7,8-HxCDD	98	(32 - 141)
13C-1,2,3,6,7,8-HxCDD	93	(28 - 130)
13C-1,2,3,4,6,7,8-HpCDD	91	(23 - 140)
13C-OCDD	97	(17 - 157)
13C-2,3,7,8-TCDF	69	(24 - 169)
13C-1,2,3,7,8-PeCDF	83	(24 - 185)
13C-2,3,4,7,8-PeCDF	85	(21 - 178)
13C-1,2,3,6,7,8-HxCDF	81	(26 - 123)
13C-2,3,4,6,7,8-HxCDF	85	(28 - 136)
13C-1,2,3,7,8,9-HxCDF	85	(29 - 147)
13C-1,2,3,4,6,7,8-HpCDF	72	(28 - 143)
13C-1,2,3,4,7,8,9-HpCDF	79	(26 - 138)
13C-1,2,3,4,7,8-HxCDF	75	(26 - 152)
<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
37C14-2,3,7,8-TCDD	80	(35 - 197)

# ***QUALITY CONTROL SECTION***

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: A6E220167  
 MB Lot-Sample #: G6E260000-423

Work Order #...: H6AR21AA

Matrix.....: WIPE

Prep Date.....: 05/23/06

Analysis Date...: 05/26/06

Prep Batch #...: 6146423

Dilution Factor: 1

PARAMETER	RESULT	DETECTION		METHOD
		LIMIT	UNITS	
2,3,7,8-TCDD	ND	8.3	pg	EPA-5 1613B
Total TCDD	ND	8.3	pg	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	21	pg	EPA-5 1613B
Total PeCDD	ND	21	pg	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	15	pg	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	15	pg	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	14	pg	EPA-5 1613B
Total HxCDD	ND	15	pg	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	8.4	pg	EPA-5 1613B
Total HpCDD	ND	8.4	pg	EPA-5 1613B
OCDD	ND	28	pg	EPA-5 1613B
2,3,7,8-TCDF	ND	16	pg	EPA-5 1613B
Total TCDF	ND	16	pg	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	10	pg	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	11	pg	EPA-5 1613B
Total PeCDF	ND	15	pg	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	23	pg	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	21	pg	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	14	pg	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	12	pg	EPA-5 1613B
Total HxCDF	ND	23	pg	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	7.1	pg	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	8.0	pg	EPA-5 1613B
Total HpCDF	ND	8.0	pg	EPA-5 1613B
OCDF	ND	15	pg	EPA-5 1613B

(Continued on next page)



METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: A6E220167

Work Order #...: H6AR21AA

Matrix.....: WIPE

<u>PARAMETER</u>	<u>RESULT</u>	<u>DETECTION LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>
	PERCENT	RECOVERY		
<u>INTERNAL STANDARDS</u>	<u>RECOVERY</u>	<u>LIMITS</u>		
13C-2,3,7,8-TCDD	103	(25 - 164)		
13C-1,2,3,7,8-PeCDD	103	(25 - 181)		
13C-1,2,3,4,7,8-HxCDD	106	(32 - 141)		
13C-1,2,3,6,7,8-HxCDD	101	(28 - 130)		
13C-1,2,3,4,6,7,8-HpCDD	99	(23 - 140)		
13C-OCDD	105	(17 - 157)		
13C-2,3,7,8-TCDF	78	(24 - 169)		
13C-1,2,3,7,8-PeCDF	98	(24 - 185)		
13C-2,3,4,7,8-PeCDF	96	(21 - 178)		
13C-1,2,3,6,7,8-HxCDF	87	(26 - 123)		
13C-2,3,4,6,7,8-HxCDF	92	(28 - 136)		
13C-1,2,3,7,8,9-HxCDF	93	(29 - 147)		
13C-1,2,3,4,6,7,8-HpCDF	86	(28 - 143)		
13C-1,2,3,4,7,8,9-HpCDF	90	(26 - 138)		
13C-1,2,3,4,7,8-HxCDF	81	(26 - 152)		
	PERCENT	RECOVERY		
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>		
37C14-2,3,7,8-TCDD	87	(35 - 197)		

**NOTE(S):**

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #...: A6E220167      Work Order #...: H6AR21AC      Matrix.....: WIPE  
 LCS Lot-Sample#: G6E260000-423  
 Prep Date.....: 05/23/06      Analysis Date...: 05/26/06  
 Prep Batch #...: 6146423  
 Dilution Factor: 1

<u>PARAMETER</u>	PERCENT <u>RECOVERY</u>	RECOVERY <u>LIMITS</u>	<u>METHOD</u>
2,3,7,8-TCDD	90	(67 - 158)	EPA-5 1613B
1,2,3,7,8-PeCDD	99	(70 - 142)	EPA-5 1613B
1,2,3,4,7,8-HxCDD	96	(70 - 164)	EPA-5 1613B
1,2,3,6,7,8-HxCDD	103	(76 - 134)	EPA-5 1613B
1,2,3,7,8,9-HxCDD	101	(64 - 162)	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	100	(70 - 140)	EPA-5 1613B
OCDD	106	(78 - 144)	EPA-5 1613B
2,3,7,8-TCDF	83	(75 - 158)	EPA-5 1613B
1,2,3,7,8-PeCDF	101	(80 - 134)	EPA-5 1613B
2,3,4,7,8-PeCDF	95	(68 - 160)	EPA-5 1613B
1,2,3,4,7,8-HxCDF	110	(72 - 134)	EPA-5 1613B
1,2,3,6,7,8-HxCDF	100	(84 - 130)	EPA-5 1613B
2,3,4,6,7,8-HxCDF	98	(70 - 156)	EPA-5 1613B
1,2,3,7,8,9-HxCDF	103	(78 - 130)	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	100	(82 - 122)	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	99	(78 - 138)	EPA-5 1613B
OCDF	96	(63 - 170)	EPA-5 1613B

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #...: A6E220167      Work Order #...: H6AR21AC      Matrix.....: WIPE  
 LCS Lot-Sample#: G6E260000-423

<u>INTERNAL STANDARD</u>	PERCENT <u>RECOVERY</u>	RECOVERY <u>LIMITS</u>
13C-2,3,7,8-TCDD	107	(25 - 164)
13C-1,2,3,7,8-PeCDD	103	(25 - 181)
13C-1,2,3,4,7,8-HxCDD	103	(32 - 141)
13C-1,2,3,6,7,8-HxCDD	93	(28 - 130)
13C-1,2,3,4,6,7,8-HpCDD	94	(23 - 140)
13C-OCDD	107	(17 - 157)
13C-2,3,7,8-TCDF	80	(24 - 169)
13C-1,2,3,7,8-PeCDF	92	(24 - 185)
13C-2,3,4,7,8-PeCDF	97	(21 - 178)
13C-1,2,3,6,7,8-HxCDF	86	(26 - 123)
13C-2,3,4,6,7,8-HxCDF	92	(28 - 136)
13C-1,2,3,7,8,9-HxCDF	88	(29 - 147)
13C-1,2,3,4,6,7,8-HpCDF	82	(28 - 143)
13C-1,2,3,4,7,8,9-HpCDF	88	(26 - 138)
13C-1,2,3,4,7,8-HxCDF	78	(26 - 152)
<u>SURROGATE</u>	PERCENT <u>RECOVERY</u>	RECOVERY <u>LIMITS</u>
37C14-2,3,7,8-TCDD	84	(35 - 197)

**NOTE(S):**

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Calculations are performed before rounding to avoid round-off errors in calculated results.  
 Bold print denotes control parameters



STL Cooler Receipt Form/Narrative

Lot Number: A1880107

North Canton Facility

Client: BBL Project: \_\_\_\_\_ Quote#: \_\_\_\_\_  
Cooler Received on: 5/22/04 Opened on: 5/22/04 by: [Signature] (Signature)

Fedx  Client Drop Off  UPS  DHL  FAS  STL Courier

Stetson  US Cargo

Other: \_\_\_\_\_

STL Cooler No# Soo back Foam Box  Client Cooler  Other \_\_\_\_\_  
Intact? Yes  No  NA

- Were custody seals on the outside of the cooler? Yes  No  Intact? Yes  No  NA   
If YES, Quantity \_\_\_\_\_  
Were the custody seals signed and dated? Yes  No  NA
  - Shipper's packing slip attached to this form? Yes  No  NA
  - Did custody papers accompany the samples? Yes  No  Relinquished by client? Yes  No
  - Did you sign the custody papers in the appropriate place? Yes  No
  - Packing material used: Bubble Wrap  Foam  None  Other: \_\_\_\_\_
  - Cooler temperature upon receipt \_\_\_\_\_ °C (see back of form for multiple coolers/temp)  
METHOD: Temp Vial  Coolant & Sample  Against Bottles  IR  ICE/H<sub>2</sub>O Slurry   
COOLANT: Wet Ice  Blue Ice  Dry Ice  Water  None
  - Did all bottles arrive in good condition (Unbroken)? Yes  No
  - Could all bottle labels and/or tags be reconciled with the COC? Yes  No
  - Were samples at the correct pH? (record below/on back) Yes  No  NA
  - Were correct bottles used for the tests indicated? Yes  No
  - Were air bubbles >6 mm in any VOA vials? Yes  No  NA
  - Sufficient quantity received to perform indicated analyses? Yes  No
  - Was a Trip Blank present in the cooler? Yes  No  Were VOAs on the COC? Yes  No
  - Does the trip blank number match the cooler number in which it was received? Yes  No  NA
- Contacted PM \_\_\_\_\_ Date: \_\_\_\_\_ by: \_\_\_\_\_ via Voice Mail  Verbal  Other
- Concerning: \_\_\_\_\_

1. CHAIN OF CUSTODY

The following discrepancies occurred:

2. SAMPLE CONDITION

Sample(s) \_\_\_\_\_ were received after the recommended holding time had expired.  
Sample(s) \_\_\_\_\_ were received in a broken container.

3. SAMPLE PRESERVATION

Sample(s) \_\_\_\_\_ were further preserved in sample receiving to meet recommended pH level(s). Nitric Acid Lot # 122805-HNO<sub>3</sub>; Sulfuric Acid Lot # 100405-H<sub>2</sub>SO<sub>4</sub>; Sodium Hydroxide Lot # -100405 -NaOH; Hydrochloric Acid Lot # 100504-HCl; Sodium Hydroxide and Zinc Acetate Lot # 071604-CH<sub>3</sub>COO<sub>2</sub>ZN/NaOH  
Sample(s) \_\_\_\_\_ were received with bubble > 6 mm in diameter (cc: PM)

4. Other (see below or back)

Due 5/25/04 per MR 5/22/04 [Signature]

Client ID	pH	Date	Initials



***END OF REPORT***

<b>Analytical Report Cover Page A6E220171 .....</b>	<b>1</b>
Case Narrative .....	2
Executive Summary .....	5
Analytical Method Summary .....	6
Sample Summary .....	7
Analytical Results by Sample .....	8
Quality Control Section .....	13
Shipping/Receiving Documents .....	16
<b>Total # of Pages in this Document .....</b>	<b>19</b>



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## ANALYTICAL REPORT

PROJECT NO. 38032-001 EXTERIOR

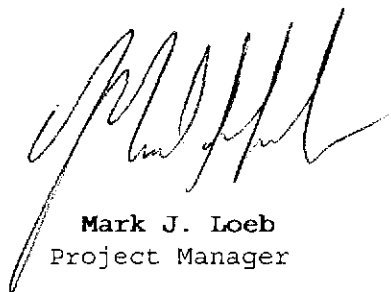
LMC AIRDOCK, AKRON, OH

Lot #: A6E220171

Dave Gunnarson

Lockheed Martin Corporation  
Maritime Systems and Sensors  
1210 Massillon Road  
Akron, OH 44315-0001

SEVERN TRENT LABORATORIES, INC.



Mark J. Loeb  
Project Manager

May 30, 2006

# **CASE NARRATIVE**

A6E220171

The following report contains the analytical results for five wipe samples submitted to STL North Canton by Lockheed Martin Tactical Defense Systems from the LMC Airdock, Akron, OH Site, project number 38032-001 EXTERIOR. The samples were received May 22, 2006, according to documented sample acceptance procedures.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. Preliminary results were provided to Brad Heim, Dave Gunnarson, Dan Kemp, Mark Hurban, and Shawn Wolf on May 25, 2006. A summary of QC data for these analyses is included at the back of the report.

STL North Canton attests to the validity of the laboratory data generated by STL facilities reported herein. All analyses performed by STL facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. STL's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

If you have any questions, please call the Project Manager, Mark J. Loeb, at 330-497-9396.

This report is sequentially paginated. The final page of the report is labeled as "END OF REPORT." The total number of pages in this report is 19.

## **SUPPLEMENTAL QC INFORMATION**

### **SAMPLE RECEIVING**

The temperatures of the coolers upon sample receipt were 4.4 and 5.2°C.

### **POLYCHLORINATED BIPHENYLS-8082**

The reporting limits are elevated due to matrix interference for samples LMC-LS-001, LMC-LS-002, LMC-LS-003, LMC-LS-004 and LMC-LS-005.

## QUALITY CONTROL ELEMENTS OF SW-846 METHODS

STL North Canton conducts a quality assurance/quality control (QA/QC) program designed to provide scientifically valid and legally defensible data. Toward this end, several types of quality control indicators are incorporated into the QA/QC program, which is described in detail in QA Policy, QA-003. These indicators are introduced into the sample testing process to provide a mechanism for the assessment of the analytical data.

### **QC BATCH**

Environmental samples are taken through the testing process in groups called QUALITY CONTROL BATCHES (QC batches). A QC batch contains up to twenty environmental samples of a similar matrix (water, soil) that are processed using the same reagents and standards. STL North Canton requires that each environmental sample be associated with a QC batch.

Several quality control samples are included in each QC batch and are processed identically to the twenty environmental samples. These QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) pair or a MATRIX SPIKE/SAMPLE DUPLICATE (MS/DU) pair. If there is insufficient sample to perform an MS/MSD or an MS/DU, then a LABORATORY CONTROL SAMPLE DUPLICATE (LCSD) is included in the QC batch.

### **LABORATORY CONTROL SAMPLE**

The Laboratory Control Sample is a QC sample that is created by adding known concentrations of a full or partial set of target analytes to a matrix similar to that of the environmental samples in the QC batch. The LCS analyte recovery results are used to monitor the analytical process and provide evidence that the laboratory is performing the method within acceptable guidelines. All control analytes indicated by a bold type in the LCS must meet acceptance criteria. Failure to meet the established recovery guidelines requires the reparation and reanalysis of all samples in the QC batch. The only exception is that if the LCS recoveries are biased high and the associated sample is ND (non-detected) for the parameter(s) of interest, the batch is acceptable.

At times, a Laboratory Control Sample Duplicate (LCSD) is also included in the QC batch. An LCSD is a QC sample that is created and handled identically to the LCS. Analyte recovery data from the LCSD is assessed in the same way as that of the LCS. The LCSD recoveries, together with the LCS recoveries, are used to determine the reproducibility (precision) of the analytical system. Precision data are expressed as relative percent differences (RPDs). If the RPD fails for an LCS/LCSD and yet the recoveries are within acceptance criteria, the batch is still acceptable.

### **METHOD BLANK**

The Method Blank is a QC sample consisting of all the reagents used in analyzing the environmental samples contained in the QC batch. Method Blank results are used to determine if interference or contamination in the analytical system could lead to the reporting of false positive data or elevated analyte concentrations. All target analytes must be below the reporting limits (RL) or the associated sample(s) must be ND except under the following circumstances:

- Common organic contaminants may be present at concentrations up to 5 times the reporting limits. Common metals contaminants may be present at concentrations up to 2 times the reporting limit, or the reported blank concentration must be twenty fold less than the concentration reported in the associated environmental samples. (See common laboratory contaminants listed below.)
- 

<b><u>Volatile (GC or GC/MS)</u></b>	<b><u>Semivolatile (GC/MS)</u></b>	<b><u>Metals ICP-MS</u></b>	<b><u>Metals ICP Trace</u></b>
Methylene Chloride, Acetone, 2-Butanone	Phthalate Esters	Copper, Iron, Zinc, Lead, Calcium, Magnesium, Potassium, Sodium, Barium, Chromium, Manganese	Copper, Iron, Zinc, Lead

## QUALITY CONTROL ELEMENTS OF SW-846 METHODS (Continued)

- Organic blanks will be accepted if compounds detected in the blank are present in the associated samples at levels 10 times the blank level. Inorganic blanks will be accepted if elements detected in the blank are present in the associated samples at 20 times the blank level.
- Blanks will be accepted if the compounds/elements detected are not present in any of the associated environmental samples.

Failure to meet these Method Blank criteria requires the repreparation and reanalysis of all samples in the QC batch.

### **MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

A Matrix Spike and a Matrix Spike Duplicate are a pair of environmental samples to which known concentrations of a full or partial set of target analytes are added. The MS/MSD results are determined in the same manner as the results of the environmental sample used to prepare the MS/MSD. The analyte recoveries and the relative percent differences (RPDs) of the recoveries are calculated and used to evaluate the effect of the sample matrix on the analytical results. Due to the potential variability of the matrix of each sample, the MS/MSD results may not have an immediate bearing on any samples except the one spiked; therefore, the associated batch MS/MSD may not reflect the same compounds as the samples contained in the analytical report. When these MS/MSD results fail to meet acceptance criteria, the data is evaluated. If the LCS is within acceptance criteria, the batch is considered acceptable. The acceptance criteria do not apply to samples that are diluted for organics if the native sample amount is 4x the concentration of the spike.

For certain methods, a Matrix Spike/Sample Duplicate (MS/DU) may be included in the QC batch in place of the MS/MSD. For the parameters (i.e. pH, ignitability) where it is not possible to prepare a spiked sample, a Sample Duplicate may be included in the QC batch. However, a Sample Duplicate is less likely to provide usable precision statistics depending on the likelihood of finding concentrations below the standard reporting limit. When the Sample Duplicate result fails to meet acceptance criteria, the data is evaluated.

### **SURROGATE COMPOUNDS**

In addition to these batch-related QC indicators, each organic environmental and QC sample is spiked with surrogate compounds. Surrogates are organic chemicals that behave similarly to the analytes of interest and that are rarely present in the environment. Surrogate recoveries are used to monitor the individual performance of a sample in the analytical system.

If surrogate recoveries are biased high in the LCS, LCSD, or the Method Blank, and the associated sample(s) are ND, the batch is acceptable. Otherwise, if the LCS, LCSD, or Method Blank surrogate(s) fail to meet recovery criteria, the entire sample batch is repped and reanalyzed. If the surrogate recoveries are outside criteria for environmental samples, the samples will be repped and reanalyzed unless there is objective evidence of matrix interference or if the sample dilution is greater than the threshold outlined in the associated method SOP.

For the GC/MS BNA methods, the surrogate criterion is that two of the three surrogates for each fraction must meet acceptance criteria. The third surrogate must have a recovery of ten percent or greater.

For the Pesticide, PCB, and PAH methods, the surrogate criterion is that one of two surrogate compounds must meet acceptance criteria.



### **STL North Canton Certifications and Approvals:**

California (#01144CA), Connecticut (#PH-0590), Florida (#E87225), Illinois (#200004), Kansas (#E10336), Minnesota (#39-999-348), New Jersey (#OH001), New York (#10975), Ohio (#6090), OhioVAP (#CL0024), Utah (#QUAN9), West Virginia (#210), Wisconsin (#999518190), NAVY, ARMY, USDA Soil Permit, ACIL Seal of Excellence – Participating Lab Status Award (#82)

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# EXECUTIVE SUMMARY - Detection Highlights

A6E220171

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>ANALYTICAL METHOD</u>
NO DETECTABLE PARAMETERS				

# ANALYTICAL METHODS SUMMARY

A6E220171

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>
PCBs by SW-846 8082	SW846 8082

## References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

# SAMPLE SUMMARY

A6E220171

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED DATE</u>	<u>SAMP TIME</u>
H5XKR	001	LMC-LS-001	05/21/06	11:27
H5XKW	002	LMC-LS-002	05/21/06	11:40
H5XK0	003	LMC-LS-003	05/21/06	12:00
H5XK1	004	LMC-LS-004	05/21/06	12:45
H5XK2	005	LMC-LS-005	05/21/06	13:05

## **NOTE(S) :**

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-LS-001

GC Semivolatiles

Lot-Sample #...: A6E220171-001    Work Order #...: H5XKR1AA    Matrix.....: SW  
 Date Sampled...: 05/21/06 11:27    Date Received..: 05/22/06  
 Prep Date.....: 05/23/06    Analysis Date..: 05/23/06  
 Prep Batch #...: 6143042  
 Dilution Factor: 10    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	5.0	ug/wipe
Aroclor 1221	ND	5.0	ug/wipe
Aroclor 1232	ND	5.0	ug/wipe
Aroclor 1242	ND	5.0	ug/wipe
Aroclor 1248	ND	5.0	ug/wipe
Aroclor 1254	ND	5.0	ug/wipe
Aroclor 1260	ND	5.0	ug/wipe
Aroclor 1268	ND	5.0	ug/wipe

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Tetrachloro-m-xylene	50 DIL, *	(52 - 171)
Decachlorobiphenyl	70 DIL	(39 - 187)

**NOTE(S):**

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

\* Surrogate recovery is outside stated control limits.

Elevated reporting limits. The reporting limits are elevated due to matrix interference.



Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-LS-002

GC Semivolatiles

Lot-Sample #...: A6E220171-002    Work Order #...: H5XKW1AA    Matrix.....: SW  
Date Sampled...: 05/21/06 11:40    Date Received..: 05/22/06  
Prep Date.....: 05/23/06    Analysis Date..: 05/23/06  
Prep Batch #...: 6143042  
Dilution Factor: 10    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	5.0	ug/wipe
Aroclor 1221	ND	5.0	ug/wipe
Aroclor 1232	ND	5.0	ug/wipe
Aroclor 1242	ND	5.0	ug/wipe
Aroclor 1248	ND	5.0	ug/wipe
Aroclor 1254	ND	5.0	ug/wipe
Aroclor 1260	ND	5.0	ug/wipe
Aroclor 1268	ND	5.0	ug/wipe

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
Tetrachloro-m-xylene	52 DIL	(52 - 171)
Decachlorobiphenyl	66 DIL	(39 - 187)

**NOTE(S):**

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.  
Elevated reporting limits. The reporting limits are elevated due to matrix interference.

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-LS-003

GC Semivolatiles

Lot-Sample #...: A6E220171-003    Work Order #...: H5XK01AA    Matrix.....: SW  
Date Sampled...: 05/21/06 12:00    Date Received..: 05/22/06  
Prep Date.....: 05/23/06    Analysis Date..: 05/23/06  
Prep Batch #...: 6143042  
Dilution Factor: 10    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	5.0	ug/wipe
Aroclor 1221	ND	5.0	ug/wipe
Aroclor 1232	ND	5.0	ug/wipe
Aroclor 1242	ND	5.0	ug/wipe
Aroclor 1248	ND	5.0	ug/wipe
Aroclor 1254	ND	5.0	ug/wipe
Aroclor 1260	ND	5.0	ug/wipe
Aroclor 1268	ND	5.0	ug/wipe

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
Tetrachloro-m-xylene	60 DIL	(52 - 171)
Decachlorobiphenyl	75 DIL	(39 - 187)

**NOTE(S):**

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.  
Elevated reporting limits. The reporting limits are elevated due to matrix interference.

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-LS-004

GC Semivolatiles

Lot-Sample #...: A6E220171-004    Work Order #...: H5XK11AA    Matrix.....: SW  
Date Sampled...: 05/21/06 12:45    Date Received..: 05/22/06  
Prep Date.....: 05/23/06    Analysis Date..: 05/23/06  
Prep Batch #...: 6143042  
Dilution Factor: 10    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	5.0	ug/wipe
Aroclor 1221	ND	5.0	ug/wipe
Aroclor 1232	ND	5.0	ug/wipe
Aroclor 1242	ND	5.0	ug/wipe
Aroclor 1248	ND	5.0	ug/wipe
Aroclor 1254	ND	5.0	ug/wipe
Aroclor 1260	ND	5.0	ug/wipe
Aroclor 1268	ND	5.0	ug/wipe

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
Tetrachloro-m-xylene	61 DIL	(52 - 171)
Decachlorobiphenyl	78 DIL	(39 - 187)

**NOTE(S):**

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.  
Elevated reporting limits. The reporting limits are elevated due to matrix interference.

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-LS-005

GC Semivolatiles

Lot-Sample #...: A6E220171-005    Work Order #...: H5XK21AA    Matrix.....: SW  
Date Sampled...: 05/21/06 13:05    Date Received..: 05/22/06  
Prep Date.....: 05/23/06    Analysis Date..: 05/23/06  
Prep Batch #...: 6143042  
Dilution Factor: 10    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	5.0	ug/wipe
Aroclor 1221	ND	5.0	ug/wipe
Aroclor 1232	ND	5.0	ug/wipe
Aroclor 1242	ND	5.0	ug/wipe
Aroclor 1248	ND	5.0	ug/wipe
Aroclor 1254	ND	5.0	ug/wipe
Aroclor 1260	ND	5.0	ug/wipe
Aroclor 1268	ND	5.0	ug/wipe

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Tetrachloro-m-xylene	60 DIL	(52 - 171)
Decachlorobiphenyl	79 DIL	(39 - 187)

**NOTE(S):**

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.  
Elevated reporting limits. The reporting limits are elevated due to matrix interference.

# ***QUALITY CONTROL SECTION***

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: A6E220171  
MB Lot-Sample #: A6E230000-042

Work Order #...: H5X7P1AA

Matrix.....: WIPE

Analysis Date...: 05/23/06  
Dilution Factor: 1

Prep Date.....: 05/23/06

Prep Batch #...: 6143042

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		
		<u>LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>
Aroclor 1016	ND	0.50	ug/wipe	SW846 8082
Aroclor 1221	ND	0.50	ug/wipe	SW846 8082
Aroclor 1232	ND	0.50	ug/wipe	SW846 8082
Aroclor 1242	ND	0.50	ug/wipe	SW846 8082
Aroclor 1248	ND	0.50	ug/wipe	SW846 8082
Aroclor 1254	ND	0.50	ug/wipe	SW846 8082
Aroclor 1260	ND	0.50	ug/wipe	SW846 8082
Aroclor 1268	ND	0.50	ug/wipe	SW846 8082

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
Tetrachloro-m-xylene	61	(52 - 171)
Decachlorobiphenyl	76	(39 - 187)

**NOTE(S):**

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #...: A6E220171      Work Order #...: H5X7P1AC-LCS      Matrix.....: WIPE  
 LCS Lot-Sample#: A6E230000-042      H5X7P1AD-LCSD  
 Prep Date.....: 05/23/06      Analysis Date...: 05/23/06  
 Prep Batch #...: 6143042  
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>
Aroclor 1268	80	(68 - 110)			SW846 8082
	80	(68 - 110)	1.1	(0-30)	SW846 8082

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Tetrachloro-m-xylene	52	(52 - 171)
	54	(52 - 171)
Decachlorobiphenyl	136	(39 - 187)
	134	(39 - 187)

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.  
 Bold print denotes control parameters

Chain of Custody Record

L-4124 (0901)

Client: LMC/BBL Project Manager: Mark Hurban 412-231-6624 Date: 5-21-06 Chain of Custody Number: 272311

Address: 600 Waterfront Drive Telephone Number (Area Code)/Fax Number: 412-231-6147 - 330-796-2532 Lab Number: \_\_\_\_\_ Page 1 of 1

City: Pittsburg State: PA Zip Code: 15222 Site Contact: Dan Kemp Lab Contact: Mark Loch

Project Name and Location (State): LMC Airdock, Akron, OH Carrier/Waybill Number: \_\_\_\_\_

Contract/Purchase Order/Quote No.: 38032-001 Exterior

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix						Containers & Preservatives						Analysis (Attach list if more space is needed)	Special Instructions/Conditions of Receipt			
			Air	Aqueous	Sed.	Soil	Loose	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Hexanes			PCBs		
LMC-LS-001	5-21-06	1127					X									X	X		
LMC-LS-002	5-21-06	1140					X									X	X		
LMC-LS-003	5-21-06	1200					X									X	X		
LMC-LS-004	5-21-06	1245					X									X	X		
LMC-LS-005	5-21-06	1305					X									X	X		

Possible Hazard Identification:  Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown  Return To-Client  Disposal By Lab  Archive For 1 (one) Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required:  24 Hours  48 Hours  7 Days  14 Days  21 Days  Other 22 hours

QC Requirements (Specify)

1. Relinquished By: <u>[Signature]</u>	Date: <u>5-22-06</u>	Time: <u>1424</u>	1. Received By: <u>[Signature]</u>	Date: <u>5/22/06</u>	Time: <u>1424</u>
2. Relinquished By:	Date:	Time:	2. Received By:	Date:	Time:
3. Relinquished By:	Date:	Time:	3. Received By:	Date:	Time:

Comments: \_\_\_\_\_



**STL Cooler Receipt Form/Narrative**  
**North Canton Facility**

Lot Number: AUE20041

Client: BBL Project: \_\_\_\_\_ Quote#: \_\_\_\_\_  
 Cooler Received on: 5/22/04 Opened on: 5/22/04 by: [Signature] (Signature)

Fedx  Client Drop Off  UPS  DHL  FAS  STL Courier   
 Stetson  US Cargo  Other: \_\_\_\_\_

STL Cooler No# See back Foam Box  Client Cooler  Other \_\_\_\_\_  
 1. Were custody seals on the outside of the cooler? Yes  No  Intact? Yes  No  NA

If YES, Quantity \_\_\_\_\_  
 Were the custody seals signed and dated? Yes  No  NA

2. Shipper's packing slip attached to this form? Yes  No  NA   
 3. Did custody papers accompany the samples? Yes  No  Relinquished by client? Yes  No

4. Did you sign the custody papers in the appropriate place? Yes  No   
 5. Packing material used: Bubble Wrap  Foam  None  Other: \_\_\_\_\_

6. Cooler temperature upon receipt \_\_\_\_\_ °C (see back of form for multiple coolers/temp)  
 METHOD: Temp Vial  Coolant & Sample  Against Bottles  IR  ICE/H<sub>2</sub>O Slurry

COOLANT: Wet Ice  Blue Ice  Dry Ice  Water  None

7. Did all bottles arrive in good condition (Unbroken)? Yes  No

8. Could all bottle labels and/or tags be reconciled with the COC? Yes  No

9. Were samples at the correct pH? (record below/on back) Yes  No  NA

10. Were correct bottles used for the tests indicated? Yes  No

11. Were air bubbles >6 mm in any VOA vials? Yes  No  NA

12. Sufficient quantity received to perform indicated analyses? Yes  No

13. Was a Trip Blank present in the cooler? Yes  No  Were VOAs on the COC? Yes  No

14. Does the trip blank number match the cooler number in which it was received? Yes  No  NA

Contacted PM \_\_\_\_\_ Date: \_\_\_\_\_ by: \_\_\_\_\_ via Voice Mail  Verbal  Other

Concerning: \_\_\_\_\_

**1. CHAIN OF CUSTODY**

The following discrepancies occurred:

**2. SAMPLE CONDITION**

Sample(s) \_\_\_\_\_ were received after the recommended holding time had expired.  
 Sample(s) \_\_\_\_\_ were received in a broken container.

**3. SAMPLE PRESERVATION**

Sample(s) \_\_\_\_\_ were further preserved in sample receiving to meet recommended pH level(s). Nitric Acid Lot # 122805-HNO<sub>3</sub>; Sulfuric Acid Lot # 100405-H<sub>2</sub>SO<sub>4</sub>; Sodium Hydroxide Lot # -100405 -NaOH; Hydrochloric Acid Lot # 100504-HCl; Sodium Hydroxide and Zinc Acetate Lot # 071604-CH<sub>3</sub>COO<sub>2</sub>ZN/NaOH

Sample(s) \_\_\_\_\_ were received with bubble > 6 mm in diameter (cc: PM)

**4. Other (see below or back)**

Client ID	pH	Date	Initials



***END OF REPORT***

## **Appendix B**

### **Second Sampling Round Laboratory Analysis Reports**

**Lot Number A6F030117: PCBs for fire investigation samples (wipes/bulks)**  
**Lot Number A6F050110: Dioxin/Furans for fire investigation samples (wipes/bulks)**

# **ANALYTICAL REPORT**

PROJECT NO. 38032-004

LMC AIRDOCK, AKRON, OH

Lot #: A6F030117

Brad Heim

Lockheed Martin Corporation  
Maritime Systems and Sensors  
1210 Massillon Road  
Akron, OH 44315-0001

SEVERN TRENT LABORATORIES, INC.

Mark J. Loeb  
Project Manager

June 7, 2006

# EXECUTIVE SUMMARY - Detection Highlights

A6F030117

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>ANALYTICAL METHOD</u>
<b>LMC-FI-002 A 06/02/06 08:17 001</b>				
Aroclor 1268	0.99	0.50	ug/wipe	SW846 8082
<b>LMC-FI-003 A 06/02/06 08:40 002</b>				
Aroclor 1268	3.0	0.50	ug/wipe	SW846 8082
<b>LMC-FI-005 06/02/06 09:32 003</b>				
Aroclor 1268	40 J	49	ug/kg	SW846 8082
Percent Solids	66.9	10.0	%	MCAWW 160.3 MOD
<b>LMC-FI-006 06/02/06 09:53 004</b>				
Aroclor 1268	3900	430	ug/kg	SW846 8082
Percent Solids	76.1	10.0	%	MCAWW 160.3 MOD
<b>LMC-FI-007 06/02/06 10:05 005</b>				
Aroclor 1268	7400	900	ug/kg	SW846 8082
Percent Solids	73.4	10.0	%	MCAWW 160.3 MOD
<b>LMC-FI-008 A 06/02/06 14:15 006</b>				
Aroclor 1268	12000	1400	ug/kg	SW846 8082
Percent Solids	22.8	10.0	%	MCAWW 160.3 MOD
<b>LMC-FI-008 C 06/02/06 14:25 007</b>				
Aroclor 1268	83000	760	ug/kg	SW846 8082
Percent Solids	86.6	10.0	%	MCAWW 160.3 MOD
<b>LMC-FI-009 A 06/02/06 14:50 008</b>				
Aroclor 1268	42000	4100	ug/kg	SW846 8082
Percent Solids	15.9	10.0	%	MCAWW 160.3 MOD
<b>LMC-FI-009 C 06/02/06 15:00 009</b>				
Aroclor 1268	2000000	41000	ug/kg	SW846 8082
Percent Solids	80.0	10.0	%	MCAWW 160.3 MOD

# ANALYTICAL METHODS SUMMARY

A6F030117

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>
PCBs by SW-846 8082	SW846 8082
Total Residue as Percent Solids	MCAWW 160.3 MOD

## References:

- MCAWW "Methods for Chemical Analysis of Water and Wastes",  
EPA-600/4-79-020, March 1983 and subsequent revisions.
- SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical  
Methods", Third Edition, November 1986 and its updates.

# SAMPLE SUMMARY

A6F030117

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED DATE</u>	<u>SAMP TIME</u>
H6M93	001	LMC-FI-002 A	06/02/06	08:17
H6M94	002	LMC-FI-003 A	06/02/06	08:40
H6M95	003	LMC-FI-005	06/02/06	09:32
H6M97	004	LMC-FI-006	06/02/06	09:53
H6M98	005	LMC-FI-007	06/02/06	10:05
H6M99	006	LMC-FI-008 A	06/02/06	14:15
H6NAC	007	LMC-FI-008 C	06/02/06	14:25
H6NAD	008	LMC-FI-009 A	06/02/06	14:50
H6NAF	009	LMC-FI-009 C	06/02/06	15:00
H6NAG	010	LMC-FI-011	06/02/06	13:47
H6NAH	011	LMC-FI-012	06/02/06	13:55

## NOTE(S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.



Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-002 A

GC Semivolatiles

Lot-Sample #...: A6F030117-001    Work Order #...: H6M931AA    Matrix.....: SW  
Date Sampled...: 06/02/06 08:17    Date Received..: 06/02/06  
Prep Date.....: 06/05/06    Analysis Date..: 06/06/06  
Prep Batch #...: 6156027  
Dilution Factor: 1    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	0.50	ug/wipe
Aroclor 1221	ND	0.50	ug/wipe
Aroclor 1232	ND	0.50	ug/wipe
Aroclor 1242	ND	0.50	ug/wipe
Aroclor 1248	ND	0.50	ug/wipe
Aroclor 1254	ND	0.50	ug/wipe
Aroclor 1260	ND	0.50	ug/wipe
<b>Aroclor 1268</b>	<b>0.99</b>	<b>0.50</b>	<b>ug/wipe</b>

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Tetrachloro-m-xylene	72	(52 - 171)
Decachlorobiphenyl	77	(39 - 187)

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-003 A

GC Semivolatiles

Lot-Sample #...: A6F030117-002    Work Order #...: H6M941AA    Matrix.....: SW  
Date Sampled...: 06/02/06 08:40    Date Received..: 06/02/06  
Prep Date.....: 06/05/06    Analysis Date..: 06/06/06  
Prep Batch #...: 6156027  
Dilution Factor: 1    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	0.50	ug/wipe
Aroclor 1221	ND	0.50	ug/wipe
Aroclor 1232	ND	0.50	ug/wipe
Aroclor 1242	ND	0.50	ug/wipe
Aroclor 1248	ND	0.50	ug/wipe
Aroclor 1254	ND	0.50	ug/wipe
Aroclor 1260	ND	0.50	ug/wipe
<b>Aroclor 1268</b>	<b>3.0</b>	<b>0.50</b>	<b>ug/wipe</b>

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Tetrachloro-m-xylene	68	(52 - 171)
Decachlorobiphenyl	324 *	(39 - 187)

**NOTE(S):**

\* Surrogate recovery is outside stated control limits.

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-005

GC Semivolatiles

Lot-Sample #...: A6F030117-003    Work Order #...: H6M951AC    Matrix.....: SO  
 Date Sampled...: 06/02/06 09:32    Date Received..: 06/02/06  
 Prep Date.....: 06/05/06    Analysis Date..: 06/07/06  
 Prep Batch #...: 6156030  
 Dilution Factor: 1  
 % Moisture.....: 33    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	49	ug/kg
Aroclor 1221	ND	49	ug/kg
Aroclor 1232	ND	49	ug/kg
Aroclor 1242	ND	49	ug/kg
Aroclor 1248	ND	49	ug/kg
Aroclor 1254	ND	49	ug/kg
Aroclor 1260	ND	49	ug/kg
<b>Aroclor 1268</b>	<b>40 J</b>	<b>49</b>	<b>ug/kg</b>

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Tetrachloro-m-xylene	99	(10 - 127)
Decachlorobiphenyl	111	(40 - 138)

**NOTE(S):**

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-005

General Chemistry

Lot-Sample #...: A6F030117-003    Work Order #...: H6M95    Matrix.....: SO  
Date Sampled...: 06/02/06 09:32    Date Received..: 06/02/06  
% Moisture.....: 33

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Percent Solids	66.9	10.0	%	MCAWW 160.3 MOD	06/03-06/05/06	6154078

Dilution Factor: 1

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-006

GC Semivolatiles

Lot-Sample #...: A6F030117-004    Work Order #...: H6M971AC    Matrix.....: SO  
 Date Sampled...: 06/02/06 09:53    Date Received..: 06/02/06  
 Prep Date.....: 06/05/06    Analysis Date..: 06/07/06  
 Prep Batch #...: 6156030  
 Dilution Factor: 10  
 % Moisture.....: 24    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	430	ug/kg
Aroclor 1221	ND	430	ug/kg
Aroclor 1232	ND	430	ug/kg
Aroclor 1242	ND	430	ug/kg
Aroclor 1248	ND	430	ug/kg
Aroclor 1254	ND	430	ug/kg
Aroclor 1260	ND	430	ug/kg
<b>Aroclor 1268</b>	<b>3900</b>	<b>430</b>	<b>ug/kg</b>

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
Tetrachloro-m-xylene	104 DIL	(10 - 127)
Decachlorobiphenyl	1940 DIL, *	(40 - 138)

**NOTE(S):**

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

\* Surrogate recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-006

General Chemistry

Lot-Sample #...: A6F030117-004    Work Order #...: H6M97    Matrix.....: SO  
Date Sampled...: 06/02/06 09:53    Date Received..: 06/02/06  
% Moisture.....: 24

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Percent Solids	76.1	10.0	%	MCAWW 160.3 MOD	06/03-06/05/06	6154078

Dilution Factor: 1

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-007

GC Semivolatiles

Lot-Sample #...: A6F030117-005    Work Order #...: H6M981AC    Matrix.....: SO  
 Date Sampled...: 06/02/06 10:05    Date Received..: 06/02/06  
 Prep Date.....: 06/05/06    Analysis Date..: 06/07/06  
 Prep Batch #...: 6156030  
 Dilution Factor: 20  
 % Moisture.....: 27    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	900	ug/kg
Aroclor 1221	ND	900	ug/kg
Aroclor 1232	ND	900	ug/kg
Aroclor 1242	ND	900	ug/kg
Aroclor 1248	ND	900	ug/kg
Aroclor 1254	ND	900	ug/kg
Aroclor 1260	ND	900	ug/kg
<b>Aroclor 1268</b>	<b>7400</b>	<b>900</b>	<b>ug/kg</b>

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Tetrachloro-m-xylene	94 DIL	(10 - 127)
Decachlorobiphenyl	4390 DIL, *	(40 - 138)

**NOTE(S):**

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

\* Surrogate recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-007

General Chemistry

Lot-Sample #...: A6F030117-005    Work Order #...: H6M98    Matrix.....: SO  
Date Sampled...: 06/02/06 10:05    Date Received..: 06/02/06  
% Moisture.....: 27

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Percent Solids	73.4	10.0	%	MCAWW 160.3 MOD	06/03-06/05/06	6154078

Dilution Factor: 1



Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-008 A

GC Semivolatiles

Lot-Sample #...: A6F030117-006    Work Order #...: H6M991AC    Matrix.....: SO  
 Date Sampled...: 06/02/06 14:15    Date Received..: 06/02/06  
 Prep Date.....: 06/05/06    Analysis Date..: 06/07/06  
 Prep Batch #...: 6156030  
 Dilution Factor: 10  
 % Moisture.....: 77    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	1400	ug/kg
Aroclor 1221	ND	1400	ug/kg
Aroclor 1232	ND	1400	ug/kg
Aroclor 1242	ND	1400	ug/kg
Aroclor 1248	ND	1400	ug/kg
Aroclor 1254	ND	1400	ug/kg
Aroclor 1260	ND	1400	ug/kg
<b>Aroclor 1268</b>	<b>12000</b>	<b>1400</b>	<b>ug/kg</b>

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
Tetrachloro-m-xylene	91 DIL	(10 - 127)
Decachlorobiphenyl	1900 DIL, *	(40 - 138)

**NOTE(S):**

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

\* Surrogate recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-008 A

General Chemistry

Lot-Sample #...: A6F030117-006    Work Order #...: H6M99    Matrix.....: SO  
Date Sampled...: 06/02/06 14:15    Date Received..: 06/02/06  
% Moisture.....: 77

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Percent Solids	22.8	10.0	%	MCAWW 160.3 MOD	06/03-06/05/06	6154078

Dilution Factor: 1

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-008 C

GC Semivolatiles

Lot-Sample #...: A6F030117-007    Work Order #...: H6NAC1AC    Matrix.....: SO  
 Date Sampled...: 06/02/06 14:25    Date Received..: 06/02/06  
 Prep Date.....: 06/05/06    Analysis Date..: 06/07/06  
 Prep Batch #...: 6156030  
 Dilution Factor: 20  
 % Moisture.....: 13    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	760	ug/kg
Aroclor 1221	ND	760	ug/kg
Aroclor 1232	ND	760	ug/kg
Aroclor 1242	ND	760	ug/kg
Aroclor 1248	ND	760	ug/kg
Aroclor 1254	ND	760	ug/kg
Aroclor 1260	ND	760	ug/kg
<b>Aroclor 1268</b>	<b>83000</b>	<b>760</b>	<b>ug/kg</b>

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
Tetrachloro-m-xylene	103 DIL	(10 - 127)
Decachlorobiphenyl	8280 DIL, *	(40 - 138)

**NOTE(S):**

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

\* Surrogate recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-008 C

General Chemistry

Lot-Sample #...: A6F030117-007    Work Order #...: H6NAC    Matrix.....: SO  
Date Sampled...: 06/02/06 14:25    Date Received..: 06/02/06  
% Moisture.....: 13

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Percent Solids	86.6	10.0	%	MCAWW 160.3 MOD	06/03-06/05/06	6154078

Dilution Factor: 1

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-009 A

GC Semivolatiles

Lot-Sample #...: A6F030117-008    Work Order #...: H6NAD1AC    Matrix.....: SO  
 Date Sampled...: 06/02/06 14:50    Date Received..: 06/02/06  
 Prep Date.....: 06/05/06    Analysis Date..: 06/07/06  
 Prep Batch #...: 6156030  
 Dilution Factor: 20  
 % Moisture.....: 84    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	4100	ug/kg
Aroclor 1221	ND	4100	ug/kg
Aroclor 1232	ND	4100	ug/kg
Aroclor 1242	ND	4100	ug/kg
Aroclor 1248	ND	4100	ug/kg
Aroclor 1254	ND	4100	ug/kg
Aroclor 1260	ND	4100	ug/kg
<b>Aroclor 1268</b>	<b>42000</b>	<b>4100</b>	<b>ug/kg</b>

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
Tetrachloro-m-xylene	114 DIL	(10 - 127)
Decachlorobiphenyl	4320 DIL, *	(40 - 138)

**NOTE(S):**

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

\* Surrogate recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-009 A

General Chemistry

Lot-Sample #...: A6F030117-008    Work Order #...: H6NAD    Matrix.....: SO  
Date Sampled...: 06/02/06 14:50    Date Received..: 06/02/06  
% Moisture.....: 84

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Percent Solids	15.9	10.0	%	MCAWW 160.3 MOD	06/03-06/05/06	6154078

Dilution Factor: 1

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-009 C

GC Semivolatiles

Lot-Sample #...: A6F030117-009    Work Order #...: H6NAF1AC    Matrix.....: SO  
 Date Sampled...: 06/02/06 15:00    Date Received..: 06/02/06  
 Prep Date.....: 06/05/06    Analysis Date..: 06/07/06  
 Prep Batch #...: 6156030  
 Dilution Factor: 1000  
 % Moisture.....: 20    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	41000	ug/kg
Aroclor 1221	ND	41000	ug/kg
Aroclor 1232	ND	41000	ug/kg
Aroclor 1242	ND	41000	ug/kg
Aroclor 1248	ND	41000	ug/kg
Aroclor 1254	ND	41000	ug/kg
Aroclor 1260	ND	41000	ug/kg
<b>Aroclor 1268</b>	<b>2000000</b>	<b>41000</b>	<b>ug/kg</b>

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
Tetrachloro-m-xylene	0.0 DIL, *	(10 - 127)
Decachlorobiphenyl	23100 DIL, *	(40 - 138)

**NOTE(S):**

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

\* Surrogate recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-009 C

General Chemistry

Lot-Sample #...: A6F030117-009    Work Order #...: H6NAF    Matrix.....: SO  
Date Sampled...: 06/02/06 15:00    Date Received..: 06/02/06  
% Moisture.....: 20

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Percent Solids	80.0	10.0	%	MCAWW 160.3 MOD	06/03-06/05/06	6154078

Dilution Factor: 1



Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-011

GC Semivolatiles

Lot-Sample #...: A6F030117-010    Work Order #...: H6NAG1AA    Matrix.....: SW  
Date Sampled...: 06/02/06 13:47    Date Received..: 06/02/06  
Prep Date.....: 06/05/06    Analysis Date..: 06/06/06  
Prep Batch #...: 6156027  
Dilution Factor: 1    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	0.50	ug/wipe
Aroclor 1221	ND	0.50	ug/wipe
Aroclor 1232	ND	0.50	ug/wipe
Aroclor 1242	ND	0.50	ug/wipe
Aroclor 1248	ND	0.50	ug/wipe
Aroclor 1254	ND	0.50	ug/wipe
Aroclor 1260	ND	0.50	ug/wipe
Aroclor 1268	ND	0.50	ug/wipe

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Tetrachloro-m-xylene	70	(52 - 171)
Decachlorobiphenyl	71	(39 - 187)

Lockheed Martin Tactical Defense Systems

Client Sample ID: LMC-FI-012

GC Semivolatiles

Lot-Sample #...: A6F030117-011    Work Order #...: H6NAH1AA    Matrix.....: SW  
Date Sampled...: 06/02/06 13:55    Date Received..: 06/02/06  
Prep Date.....: 06/05/06    Analysis Date..: 06/06/06  
Prep Batch #...: 6156027  
Dilution Factor: 1    Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	0.50	ug/wipe
Aroclor 1221	ND	0.50	ug/wipe
Aroclor 1232	ND	0.50	ug/wipe
Aroclor 1242	ND	0.50	ug/wipe
Aroclor 1248	ND	0.50	ug/wipe
Aroclor 1254	ND	0.50	ug/wipe
Aroclor 1260	ND	0.50	ug/wipe
Aroclor 1268	ND	0.50	ug/wipe

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Tetrachloro-m-xylene	68	(52 - 171)
Decachlorobiphenyl	64	(39 - 187)

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: A6F030117  
MB Lot-Sample #: A6F050000-027

Work Order #...: H6PCF1AA

Matrix.....: WIPE

Analysis Date...: 06/06/06  
Dilution Factor: 1

Prep Date.....: 06/05/06

Prep Batch #...: 6156027

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		
		<u>LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>
Aroclor 1016	ND	0.50	ug/wipe	SW846 8082
Aroclor 1221	ND	0.50	ug/wipe	SW846 8082
Aroclor 1232	ND	0.50	ug/wipe	SW846 8082
Aroclor 1242	ND	0.50	ug/wipe	SW846 8082
Aroclor 1248	ND	0.50	ug/wipe	SW846 8082
Aroclor 1254	ND	0.50	ug/wipe	SW846 8082
Aroclor 1260	ND	0.50	ug/wipe	SW846 8082
Aroclor 1268	ND	0.50	ug/wipe	SW846 8082

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Tetrachloro-m-xylene	90	(52 - 171)
Decachlorobiphenyl	72	(39 - 187)

**NOTE(S):**

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

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: A6F030117  
MB Lot-Sample #: A6F050000-030

Work Order #...: H6PCK1AA

Matrix.....: SOLID

Analysis Date...: 06/07/06  
Dilution Factor: 1

Prep Date.....: 06/05/06

Prep Batch #...: 6156030

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>
		<u>LIMIT</u>	<u>UNITS</u>	
Aroclor 1016	ND	33	ug/kg	SW846 8082
Aroclor 1221	ND	33	ug/kg	SW846 8082
Aroclor 1232	ND	33	ug/kg	SW846 8082
Aroclor 1242	ND	33	ug/kg	SW846 8082
Aroclor 1248	ND	33	ug/kg	SW846 8082
Aroclor 1254	ND	33	ug/kg	SW846 8082
Aroclor 1260	ND	33	ug/kg	SW846 8082
Aroclor 1268	ND	33	ug/kg	SW846 8082

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
Tetrachloro-m-xylene	78	(10 - 127)
Decachlorobiphenyl	109	(40 - 138)

**NOTE(S):**

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

METHOD BLANK REPORT

General Chemistry

Client Lot #...: A6F030117

Matrix.....: SOLID

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION-</u> <u>ANALYSIS DATE</u>	<u>PREP</u> <u>BATCH #</u>
Percent Solids	ND	Work Order #: H6N1R1AA 10.0	%	MB Lot-Sample #: MCAWW 160.3 MOD	A6F030000-078 06/03-06/05/06	6154078
		Dilution Factor: 1				

**NOTE(S):**

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #...: A6F030117      Work Order #...: H6PCF1AC-LCS      Matrix.....: WIPE  
 LCS Lot-Sample#: A6F050000-027      H6PCF1AD-LCSD  
 Prep Date.....: 06/05/06      Analysis Date..: 06/06/06  
 Prep Batch #...: 6156027  
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>
Aroclor 1268	<b>70</b>	<b>(68 - 110)</b>			<b>SW846 8082</b>
	<b>68</b>	<b>(68 - 110)</b>	<b>1.6</b>	<b>(0-30)</b>	<b>SW846 8082</b>

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Tetrachloro-m-xylene	88	(52 - 171)
	86	(52 - 171)
Decachlorobiphenyl	341 *	(39 - 187)
	330 *	(39 - 187)

**NOTE(S):**

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

Bold print denotes control parameters

\* Surrogate recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #...: A6F030117      Work Order #...: H6PCK1AC      Matrix.....: SOLID  
 LCS Lot-Sample#: A6F050000-030  
 Prep Date.....: 06/05/06      Analysis Date...: 06/07/06  
 Prep Batch #...: 6156030  
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>
Aroclor 1268	86	( 50 - 150)	SW846 8082

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Tetrachloro-m-xylene	86	( 10 - 127)
Decachlorobiphenyl	430 *	( 40 - 138)

**NOTE(S):**

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

Bold print denotes control parameters

\* Surrogate recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #...: A6F030117      Work Order #...: H6M951AD-MS      Matrix.....: SO  
 MS Lot-Sample #: A6F030117-003      H6M951AE-MSD  
 Date Sampled...: 06/02/06 09:32      Date Received...: 06/02/06  
 Prep Date.....: 06/05/06      Analysis Date...: 06/07/06  
 Prep Batch #...: 6156030  
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>
Aroclor 1268	<b>78</b>	<b>(50 - 150)</b>			<b>SW846 8082</b>
	<b>88</b>	<b>(50 - 150)</b>	<b>10</b>	<b>(0-30)</b>	<b>SW846 8082</b>

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Tetrachloro-m-xylene	89	(10 - 127)
	104	(10 - 127)
Decachlorobiphenyl	398 *	(40 - 138)
	446 *	(40 - 138)

**NOTE(S):**

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

Bold print denotes control parameters

\* Surrogate recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.



SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A6F030117

Work Order #...: H6NAD-SMP  
H6NAD-DUP

Matrix.....: SO

Date Sampled...: 06/02/06 14:50 Date Received...: 06/02/06

% Moisture.....: 84

<u>PARAM</u>	<u>RESULT</u>	<u>DUPLICATE</u>	<u>UNITS</u>	<u>RPD</u>	<u>RPD</u>	<u>LIMIT</u>	<u>METHOD</u>	<u>PREPARATION-</u>	<u>PREP</u>
		<u>RESULT</u>						<u>ANALYSIS DATE</u>	<u>BATCH #</u>
Percent Solids	15.9	20.9	%	27	(0-20)	MCAWW 160.3 MOD	SD Lot-Sample #: A6F030117-008	06/03-06/05/06	6154078

Dilution Factor: 1

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A6F030117

Work Order #...: H6NA0-SMP  
H6NA0-DUP

Matrix.....: SOLID

Date Sampled...: 05/26/06 11:50 Date Received...: 06/03/06

% Moisture.....: 14

<u>PARAM</u>	<u>RESULT</u>	<u>DUPLICATE</u>	<u>UNITS</u>	<u>RPD</u>	<u>RPD</u>	<u>METHOD</u>	<u>PREPARATION-</u>	<u>PREP</u>
		<u>RESULT</u>		<u>RPD</u>	<u>LIMIT</u>		<u>ANALYSIS DATE</u>	<u>BATCH #</u>
Percent Solids	86.3	86.8	%	0.49	(0-20)	SD Lot-Sample #: A6F030121-005 MCAWW 160.3 MOD	06/03-06/05/06	6154078

Dilution Factor: 1

**Lockheed Martin Tactical Defense Systems**

**Dioxins/Furans, HRGC/HRMS (1613B)**

**Client Sample ID: LMC-FI-001**

Lot-Sample #...: A6F050110 - 001  
 Date Sampled...: 06/02/06  
 Prep Date.....: 06/06/06  
 Prep Batch #...: 6157516

Work Order #...: H6PJL1AA  
 Date Received...: 06/02/06  
 Analysis Date...: 06/07/06  
 Dilution Factor: 1

Matrix.....: WIPE  
 Instrument: 1D5  
 Units.....: pg  
 % Moisture:

<u>PARAMETER</u>	<u>RESULT</u>	<u>DETECTION LIMIT</u>	<u>TEF FACTOR</u>	<u>TEQ CONCENTRATION</u>
2,3,7,8-TCDD	ND	6.8	1.000	0
Total TCDD	ND	6.8		0
1,2,3,7,8-PeCDD	ND	14	0.500	0
Total PeCDD	ND	21		0
1,2,3,4,7,8-HxCDD	ND	13	0.100	0
1,2,3,6,7,8-HxCDD	ND	12	0.100	0
1,2,3,7,8,9-HxCDD	ND	11	0.100	0
Total HxCDD	ND	13		0
1,2,3,4,6,7,8-HpCDD	ND	19	0.010	0
Total HpCDD	ND	19		0
OCDD	ND	64	0.001	0
<b>2,3,7,8-TCDF</b>	<b>47</b>	<b>CON</b>	<b>0.100</b>	<b>4.7000</b>
<b>Total TCDF</b>	<b>350</b>			
1,2,3,7,8-PeCDF	ND	28	0.050	0
<b>2,3,4,7,8-PeCDF</b>	<b>69</b>	<b>J</b>	<b>0.500</b>	<b>34.0000</b>
<b>Total PeCDF</b>	<b>200</b>			
<b>1,2,3,4,7,8-HxCDF</b>	<b>100</b>		<b>0.100</b>	<b>10.0000</b>
1,2,3,6,7,8-HxCDF	ND	37	0.100	0
<b>2,3,4,6,7,8-HxCDF</b>	<b>60</b>	<b>J</b>	<b>0.100</b>	<b>6.0000</b>
1,2,3,7,8,9-HxCDF	ND	10	0.100	0
<b>Total HxCDF</b>	<b>350</b>			
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>160</b>		<b>0.010</b>	<b>1.6000</b>
1,2,3,4,7,8,9-HpCDF	ND	16	0.010	0
<b>Total HpCDF</b>	<b>160</b>			
OCDF	ND	28	0.001	0
<b>Total TEQ Concentration</b>				<b>56.3000</b>

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C-2,3,7,8-TCDD	100	25 - 164
13C-1,2,3,7,8-PeCDD	88	25 - 181
13C-1,2,3,4,7,8-HxCDD	105	32 - 141
13C-1,2,3,6,7,8-HxCDD	115	28 - 130
13C-1,2,3,4,6,7,8-HpCDD	93	23 - 140
13C-OCDD	75	17 - 157
13C-2,3,7,8-TCDF	103	24 - 169
13C-1,2,3,7,8-PeCDF	99	24 - 185
13C-2,3,4,7,8-PeCDF	104	21 - 178
13C-1,2,3,6,7,8-HxCDF	120	26 - 123
13C-2,3,4,6,7,8-HxCDF	114	28 - 136
13C-1,2,3,7,8,9-HxCDF	106	29 - 147
13C-1,2,3,4,6,7,8-HpCDF	110	28 - 143
13C-1,2,3,4,7,8,9-HpCDF	100	26 - 138
13C-1,2,3,4,7,8-HxCDF	105	26 - 152

Lockheed Martin Tactical Defense Systems

Dioxins/Furans, HRGC/HRMS (1613B)

Client Sample ID: LMC-FI-001

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
37Cl4-2,3,7,8-TCDD	103	35 - 197

**Notes:**

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/605/3-R09/016

- CON Confirmation analysis.
- J Estimated result. Result is less than the reporting limit.

Lockheed Martin Tactical Defense Systems

Dioxins/Furans, HRGC/HRMS (1613B)

Client Sample ID: LMC-FI-002B

Lot-Sample #...: A6F050110 - 002  
 Date Sampled...: 06/02/06  
 Prep Date.....: 06/06/06  
 Prep Batch #...: 6157516

Work Order #...: H6PJP1AA  
 Date Received...: 06/02/06  
 Analysis Date...: 06/07/06  
 Dilution Factor: 1

Matrix.....: WIPE  
 Instrument: 1D5  
 Units.....: pg  
 % Moisture:

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND	6.3	1.000	0
Total TCDD	ND	6.3		0
1,2,3,7,8-PeCDD	ND	15	0.500	0
Total PeCDD	ND	15		0
1,2,3,4,7,8-HxCDD	ND	13	0.100	0
1,2,3,6,7,8-HxCDD	ND	12	0.100	0
1,2,3,7,8,9-HxCDD	ND	11	0.100	0
Total HxCDD	ND	13		0
1,2,3,4,6,7,8-HpCDD	ND	18	0.010	0
Total HpCDD	ND	18		0
OCDD	ND	34	0.001	0
<b>2,3,7,8-TCDF</b>	<b>12</b>	<b>J CON</b>	<b>0.100</b>	<b>1.2000</b>
<b>Total TCDF</b>	<b>95</b>			
1,2,3,7,8-PeCDF	ND	9.8	0.050	0
2,3,4,7,8-PeCDF	ND	10	0.500	0
Total PeCDF	ND	21		0
1,2,3,4,7,8-HxCDF	ND	12	0.100	0
1,2,3,6,7,8-HxCDF	ND	9.3	0.100	0
2,3,4,6,7,8-HxCDF	ND	8.8	0.100	0
1,2,3,7,8,9-HxCDF	ND	10	0.100	0
Total HxCDF	ND	17		0
1,2,3,4,6,7,8-HpCDF	ND	14	0.010	0
1,2,3,4,7,8,9-HpCDF	ND	15	0.010	0
Total HpCDF	ND	15		0
OCDF	ND	37	0.001	0
<b>Total TEQ Concentration</b>				<b>1.2000</b>

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	96	25 - 164
13C-1,2,3,7,8-PeCDD	84	25 - 181
13C-1,2,3,4,7,8-HxCDD	98	32 - 141
13C-1,2,3,6,7,8-HxCDD	106	28 - 130
13C-1,2,3,4,6,7,8-HpCDD	88	23 - 140
13C-OCDD	68	17 - 157
13C-2,3,7,8-TCDF	97	24 - 169
13C-1,2,3,7,8-PeCDF	92	24 - 185
13C-2,3,4,7,8-PeCDF	96	21 - 178
13C-1,2,3,6,7,8-HxCDF	114	26 - 123
13C-2,3,4,6,7,8-HxCDF	108	28 - 136
13C-1,2,3,7,8,9-HxCDF	103	29 - 147
13C-1,2,3,4,6,7,8-HpCDF	101	28 - 143
13C-1,2,3,4,7,8,9-HpCDF	93	26 - 138
13C-1,2,3,4,7,8-HxCDF	97	26 - 152

Lockheed Martin Tactical Defense Systems

Dioxins/Furans, HRGC/HRMS (1613B)

Client Sample ID: LMC-FI-002B

SURROGATE

PERCENT  
RECOVERY

RECOVERY  
LIMITS

37Cl4-2,3,7,8-TCDD

99

35 - 197

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/605/R-89/016

CON

Confirmation analysis.

J

Estimated result. Result is less than the reporting limit.

**Lockheed Martin Tactical Defense Systems**

**Dioxins/Furans, HRGC/HRMS (1613B)**

**Client Sample ID: LMC-FI-003B**

Lot-Sample #...: A6F050110 - 003  
 Date Sampled...: 06/02/06  
 Prep Date.....: 06/06/06  
 Prep Batch #...: 6157516

Work Order #...: H6PJQ1AA  
 Date Received...: 06/02/06  
 Analysis Date...: 06/07/06  
 Dilution Factor: 1

Matrix.....: WIPE  
 Instrument: 1D5  
 Units.....: pg  
 % Moisture:

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND	5.8	1.000	0
Total TCDD	ND	5.8		0
1,2,3,7,8-PeCDD	ND	14	0.500	0
Total PeCDD	ND	14		0
1,2,3,4,7,8-HxCDD	ND	11	0.100	0
1,2,3,6,7,8-HxCDD	ND	10	0.100	0
1,2,3,7,8,9-HxCDD	ND	9.8	0.100	0
Total HxCDD	ND	11		0
1,2,3,4,6,7,8-HpCDD	ND	15	0.010	0
Total HpCDD	ND	15		0
OCDD	ND	45	0.001	0
<b>2,3,7,8-TCDF</b>	<b>42</b>	<b>CON</b>	<b>0.100</b>	<b>4.2000</b>
<b>Total TCDF</b>	<b>310</b>			
1,2,3,7,8-PeCDF	ND	23	0.050	0
<b>2,3,4,7,8-PeCDF</b>	<b>69</b>	<b>J</b>	<b>0.500</b>	<b>34.0000</b>
<b>Total PeCDF</b>	<b>180</b>			
<b>1,2,3,4,7,8-HxCDF</b>	<b>78</b>	<b>J</b>	<b>0.100</b>	<b>7.8000</b>
1,2,3,6,7,8-HxCDF	ND	32	0.100	0
<b>2,3,4,6,7,8-HxCDF</b>	<b>53</b>	<b>J</b>	<b>0.100</b>	<b>5.3000</b>
1,2,3,7,8,9-HxCDF	ND	8.8	0.100	0
<b>Total HxCDF</b>	<b>260</b>			
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>100</b>		<b>0.010</b>	<b>1.0000</b>
1,2,3,4,7,8,9-HpCDF	ND	13	0.010	0
<b>Total HpCDF</b>	<b>100</b>			
OCDF	ND	58	0.001	0
<b>Total TEQ Concentration</b>				<b>52.3000</b>

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	97	25 - 164
13C-1,2,3,7,8-PeCDD	86	25 - 181
13C-1,2,3,4,7,8-HxCDD	98	32 - 141
13C-1,2,3,6,7,8-HxCDD	108	28 - 130
13C-1,2,3,4,6,7,8-HpCDD	86	23 - 140
13C-OCDD	72	17 - 157
13C-2,3,7,8-TCDF	108	24 - 169
13C-1,2,3,7,8-PeCDF	99	24 - 185
13C-2,3,4,7,8-PeCDF	99	21 - 178
13C-1,2,3,6,7,8-HxCDF	115	26 - 123
13C-2,3,4,6,7,8-HxCDF	113	28 - 136
13C-1,2,3,7,8,9-HxCDF	103	29 - 147
13C-1,2,3,4,6,7,8-HpCDF	101	28 - 143
13C-1,2,3,4,7,8,9-HpCDF	94	26 - 138
13C-1,2,3,4,7,8-HxCDF	100	26 - 152

Lockheed Martin Tactical Defense Systems

Dioxins/Furans, HRGC/HRMS (1613B)

Client Sample ID: LMC-FI-003B

SURROGATE

PERCENT  
RECOVERY

RECOVERY  
LIMITS

37Cl4-2,3,7,8-TCDD

99

35 - 197

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-R00/016

CON

Confirmation analysis.

J

Estimated result. Result is less than the reporting limit.



Lockheed Martin Tactical Defense Systems

Dioxins/Furans, HRGC/HRMS (1613B)

Client Sample ID: LMC-FI-008B

Lot-Sample #...: A6F050110 - 004  
 Date Sampled...: 06/02/06  
 Prep Date.....: 06/06/06  
 Prep Batch #...: 6157510

Work Order #...: H6PJR1AA  
 Date Received...: 06/02/06  
 Analysis Date...: 06/08/06  
 Dilution Factor: 1

Matrix....: SOLID  
 Instrument: 1D5  
 Units.....: pg/g  
 % Moisture:

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND	2.6	1.000	0
Total TCDD	ND	2.6		0
1,2,3,7,8-PeCDD	ND	6.1	0.500	0
Total PeCDD	ND	6.1		0
1,2,3,4,7,8-HxCDD	ND	4.7	0.100	0
1,2,3,6,7,8-HxCDD	ND	4.6	0.100	0
1,2,3,7,8,9-HxCDD	ND	4.4	0.100	0
Total HxCDD	ND	4.7		0
1,2,3,4,6,7,8-HpCDD	ND	7.2	0.010	0
Total HpCDD	ND	7.2		0
OCDD	ND	11	0.001	0
<b>2,3,7,8-TCDF</b>	<b>130</b>	<b>CON</b>	<b>0.100</b>	<b>13.0000</b>
<b>Total TCDF</b>	<b>1300</b>			
<b>1,2,3,7,8-PeCDF</b>	<b>140</b>		<b>0.050</b>	<b>7.0000</b>
<b>2,3,4,7,8-PeCDF</b>	<b>350</b>		<b>0.500</b>	<b>180.0000</b>
<b>Total PeCDF</b>	<b>1900</b>			
<b>1,2,3,4,7,8-HxCDF</b>	<b>490</b>		<b>0.100</b>	<b>49.0000</b>
<b>1,2,3,6,7,8-HxCDF</b>	<b>180</b>		<b>0.100</b>	<b>18.0000</b>
<b>2,3,4,6,7,8-HxCDF</b>	<b>290</b>		<b>0.100</b>	<b>29.0000</b>
1,2,3,7,8,9-HxCDF	ND	6.7	0.100	0
<b>Total HxCDF</b>	<b>2300</b>			
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>660</b>		<b>0.010</b>	<b>6.6000</b>
<b>1,2,3,4,7,8,9-HpCDF</b>	<b>46</b>	<b>J</b>	<b>0.010</b>	<b>0.4600</b>
<b>Total HpCDF</b>	<b>990</b>			
<b>OCDF</b>	<b>110</b>		<b>0.001</b>	<b>0.1100</b>
<b>Total TEQ Concentration</b>				<b>303.1700</b>

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	98	25 - 164
13C-1,2,3,7,8-PeCDD	95	25 - 181
13C-1,2,3,4,7,8-HxCDD	104	32 - 141
13C-1,2,3,6,7,8-HxCDD	98	28 - 130
13C-1,2,3,4,6,7,8-HpCDD	83	23 - 140
13C-OCDD	66	17 - 157
13C-2,3,7,8-TCDF	108	24 - 169
13C-1,2,3,7,8-PeCDF	104	24 - 185
13C-2,3,4,7,8-PeCDF	103	21 - 178
13C-1,2,3,6,7,8-HxCDF	112	26 - 123
13C-2,3,4,6,7,8-HxCDF	116	28 - 136
13C-1,2,3,7,8,9-HxCDF	105	29 - 147
13C-1,2,3,4,6,7,8-HpCDF	103	28 - 143
13C-1,2,3,4,7,8,9-HpCDF	93	26 - 138
13C-1,2,3,4,7,8-HxCDF	100	26 - 152

**Lockheed Martin Tactical Defense Systems**

**Dioxins/Furans, HRGC/HRMS (1613B)**

**Client Sample ID: LMC-FI-008B**

SURROGATE

PERCENT  
RECOVERY

RECOVERY  
LIMITS

37Cl4-2,3,7,8-TCDD

102

35 - 197

**Notes:**

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/605/R-89/016

CON

Confirmation analysis.

J

Estimated result. Result is less than the reporting limit.

Lockheed Martin Tactical Defense Systems

Dioxins/Furans, HRGC/HRMS (1613B)

Client Sample ID: LMC-FI-008D

Lot-Sample #...: A6F050110 - 005  
 Date Sampled...: 06/02/06  
 Prep Date.....: 06/06/06  
 Prep Batch #...: 6157548

Work Order #...: H6PJT1AA  
 Date Received...: 06/02/06  
 Analysis Date...: 06/07/06  
 Dilution Factor: 1

Matrix....: SOLID  
 Instrument: 1D5  
 Units.....: pg/g  
 % Moisture:

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND	3.8	1.000	0
Total TCDD	ND	3.8		0
1,2,3,7,8-PeCDD	ND	8.4	0.500	0
Total PeCDD	ND	8.4		0
1,2,3,4,7,8-HxCDD	ND	7.2	0.100	0
1,2,3,6,7,8-HxCDD	ND	6.6	0.100	0
1,2,3,7,8,9-HxCDD	ND	6.4	0.100	0
Total HxCDD	ND	7.2		0
1,2,3,4,6,7,8-HpCDD	ND	12	0.010	0
Total HpCDD	ND	12		0
OCDD	ND	23	0.001	0
2,3,7,8-TCDF	ND	CON 5.9	0.100	0
<b>Total TCDF</b>	<b>150</b>			
1,2,3,7,8-PeCDF	ND	14	0.050	0
2,3,4,7,8-PeCDF	ND	18	0.500	0
<b>Total PeCDF</b>	<b>160</b>			
1,2,3,4,7,8-HxCDF	ND	31	0.100	0
1,2,3,6,7,8-HxCDF	ND	21	0.100	0
2,3,4,6,7,8-HxCDF	ND	22	0.100	0
1,2,3,7,8,9-HxCDF	ND	7.4	0.100	0
<b>Total HxCDF</b>	<b>160</b>			
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>70</b>	<b>J</b>	<b>0.010</b>	<b>0.7000</b>
1,2,3,4,7,8,9-HpCDF	ND	11	0.010	0
<b>Total HpCDF</b>	<b>70</b>			
OCDF	ND	26	0.001	0
<b>Total TEQ Concentration</b>				<b>0.7000</b>

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	96	25 - 164
13C-1,2,3,7,8-PeCDD	96	25 - 181
13C-1,2,3,4,7,8-HxCDD	95	32 - 141
13C-1,2,3,6,7,8-HxCDD	104	28 - 130
13C-1,2,3,4,6,7,8-HpCDD	75	23 - 140
13C-OCDD	61	17 - 157
13C-2,3,7,8-TCDF	96	24 - 169
13C-1,2,3,7,8-PeCDF	100	24 - 185
13C-2,3,4,7,8-PeCDF	102	21 - 178
13C-1,2,3,6,7,8-HxCDF	114	26 - 123
13C-2,3,4,6,7,8-HxCDF	108	28 - 136
13C-1,2,3,7,8,9-HxCDF	97	29 - 147
13C-1,2,3,4,6,7,8-HpCDF	91	28 - 143
13C-1,2,3,4,7,8,9-HpCDF	77	26 - 138
13C-1,2,3,4,7,8-HxCDF	97	26 - 152

Lockheed Martin Tactical Defense Systems

Dioxins/Furans, HRGC/HRMS (1613B)

Client Sample ID: LMC-FI-008D

SURROGATE

PERCENT  
RECOVERY

RECOVERY  
LIMITS

37Cl4-2,3,7,8-TCDD

100

35 - 197

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-R0/016

CON

Confirmation analysis.

J

Estimated result. Result is less than the reporting limit.

**Lockheed Martin Tactical Defense Systems**

**Dioxins/Furans, HRGC/HRMS (1613B)**

**Client Sample ID: LMC-FI-009B**

Lot-Sample #...: A6F050110 - 006  
 Date Sampled...: 06/02/06  
 Prep Date.....: 06/06/06  
 Prep Batch #...: 6157510

Work Order #...: H6PJV1AA  
 Date Received...: 06/02/06  
 Analysis Date...: 06/08/06  
 Dilution Factor: 1

Matrix....: SOLID  
 Instrument: 1D5  
 Units.....: pg/g  
 % Moisture:

<u>PARAMETER</u>	<u>RESULT</u>	<u>DETECTION LIMIT</u>	<u>TEF FACTOR</u>	<u>TEQ CONCENTRATION</u>
2,3,7,8-TCDD	ND	3.1	1.000	0
Total TCDD	ND	3.1		0
1,2,3,7,8-PeCDD	ND	7.2	0.500	0
Total PeCDD	ND	7.2		0
1,2,3,4,7,8-HxCDD	ND	6.1	0.100	0
1,2,3,6,7,8-HxCDD	ND	5.6	0.100	0
1,2,3,7,8,9-HxCDD	ND	5.4	0.100	0
Total HxCDD	ND	6.1		0
1,2,3,4,6,7,8-HpCDD	ND	8.4	0.010	0
Total HpCDD	ND	8.4		0
OCDD	ND	13	0.001	0
<b>2,3,7,8-TCDF</b>	<b>120</b>	<b>CON</b>	<b>0.100</b>	<b>12.0000</b>
<b>Total TCDF</b>	<b>1600</b>			
<b>1,2,3,7,8-PeCDF</b>	<b>140</b>		<b>0.050</b>	<b>7.0000</b>
<b>2,3,4,7,8-PeCDF</b>	<b>320</b>		<b>0.500</b>	<b>160.0000</b>
<b>Total PeCDF</b>	<b>2400</b>			
<b>1,2,3,4,7,8-HxCDF</b>	<b>470</b>		<b>0.100</b>	<b>47.0000</b>
<b>1,2,3,6,7,8-HxCDF</b>	<b>180</b>		<b>0.100</b>	<b>18.0000</b>
<b>2,3,4,6,7,8-HxCDF</b>	<b>260</b>		<b>0.100</b>	<b>26.0000</b>
1,2,3,7,8,9-HxCDF	ND	6.2	0.100	0
<b>Total HxCDF</b>	<b>2700</b>			
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>680</b>		<b>0.010</b>	<b>6.8000</b>
<b>1,2,3,4,7,8,9-HpCDF</b>	<b>47</b>	<b>J</b>	<b>0.010</b>	<b>0.4700</b>
<b>Total HpCDF</b>	<b>1000</b>			
<b>OCDF</b>	<b>140</b>		<b>0.001</b>	<b>0.1400</b>
<b>Total TEQ Concentration</b>				<b>277.4100</b>

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C-2,3,7,8-TCDD	102	25 - 164
13C-1,2,3,7,8-PeCDD	90	25 - 181
13C-1,2,3,4,7,8-HxCDD	96	32 - 141
13C-1,2,3,6,7,8-HxCDD	105	28 - 130
13C-1,2,3,4,6,7,8-HpCDD	80	23 - 140
13C-OCDD	65	17 - 157
13C-2,3,7,8-TCDF	108	24 - 169
13C-1,2,3,7,8-PeCDF	104	24 - 185
13C-2,3,4,7,8-PeCDF	98	21 - 178
13C-1,2,3,6,7,8-HxCDF	118	26 - 123
13C-2,3,4,6,7,8-HxCDF	109	28 - 136
13C-1,2,3,7,8,9-HxCDF	96	29 - 147
13C-1,2,3,4,6,7,8-HpCDF	91	28 - 143
13C-1,2,3,4,7,8,9-HpCDF	84	26 - 138
13C-1,2,3,4,7,8-HxCDF	104	26 - 152

Lockheed Martin Tactical Defense Systems

Dioxins/Furans, HRGC/HRMS (1613B)

Client Sample ID: LMC-FI-009B

SURROGATE

PERCENT  
RECOVERY

RECOVERY  
LIMITS

37Cl4-2,3,7,8-TCDD

105

35 - 197

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016

CON

Confirmation analysis.

J

Estimated result. Result is less than the reporting limit.

**Lockheed Martin Tactical Defense Systems**

**Dioxins/Furans, HRGC/HRMS (1613B)**

**Client Sample ID: LMC-FI-009D**

Lot-Sample #...: A6F050110 - 007  
 Date Sampled...: 06/02/06  
 Prep Date.....: 06/06/06  
 Prep Batch #...: 6157548

Work Order #...: H6PJX1AA  
 Date Received...: 06/02/06  
 Analysis Date...: 06/07/06  
 Dilution Factor: 1

Matrix.....: SOLID  
 Instrument: 1D5  
 Units.....: pg/g  
 % Moisture:

<u>PARAMETER</u>	<u>RESULT</u>	<u>DETECTION LIMIT</u>	<u>TEF FACTOR</u>	<u>TEQ CONCENTRATION</u>
2,3,7,8-TCDD	ND	1.9	1.000	0
Total TCDD	ND	2.0		0
1,2,3,7,8-PeCDD	ND	3.8	0.500	0
Total PeCDD	ND	16		0
1,2,3,4,7,8-HxCDD	ND	2.9	0.100	0
1,2,3,6,7,8-HxCDD	ND	2.8	0.100	0
1,2,3,7,8,9-HxCDD	ND	2.6	0.100	0
Total HxCDD	ND	5.1		0
1,2,3,4,6,7,8-HpCDD	ND	3.9	0.010	0
Total HpCDD	ND	3.9		0
OCDD	ND	5.8	0.001	0
<b>2,3,7,8-TCDF</b>	<b>6.9</b>	<b>CON</b>	<b>0.100</b>	<b>0.6900</b>
<b>Total TCDF</b>	<b>98</b>			
1,2,3,7,8-PeCDF	ND	8.8	0.050	0
<b>2,3,4,7,8-PeCDF</b>	<b>25</b>	<b>J</b>	<b>0.500</b>	<b>12.0000</b>
<b>Total PeCDF</b>	<b>120</b>			
<b>1,2,3,4,7,8-HxCDF</b>	<b>44</b>		<b>0.100</b>	<b>4.4000</b>
<b>1,2,3,6,7,8-HxCDF</b>	<b>18</b>	<b>J</b>	<b>0.100</b>	<b>1.8000</b>
<b>2,3,4,6,7,8-HxCDF</b>	<b>34</b>		<b>0.100</b>	<b>3.4000</b>
1,2,3,7,8,9-HxCDF	ND	2.8	0.100	0
<b>Total HxCDF</b>	<b>220</b>			
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>190</b>		<b>0.010</b>	<b>1.9000</b>
1,2,3,4,7,8,9-HpCDF	ND	7.3	0.010	0
<b>Total HpCDF</b>	<b>240</b>			
<b>OCDF</b>	<b>400</b>		<b>0.001</b>	<b>0.4000</b>
<b>Total TEQ Concentration</b>				<b>24.5900</b>

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C-2,3,7,8-TCDD	99	25 - 164
13C-1,2,3,7,8-PeCDD	94	25 - 181
13C-1,2,3,4,7,8-HxCDD	102	32 - 141
13C-1,2,3,6,7,8-HxCDD	102	28 - 130
13C-1,2,3,4,6,7,8-HpCDD	82	23 - 140
13C-OCDD	68	17 - 157
13C-2,3,7,8-TCDF	98	24 - 169
13C-1,2,3,7,8-PeCDF	104	24 - 185
13C-2,3,4,7,8-PeCDF	103	21 - 178
13C-1,2,3,6,7,8-HxCDF	111	26 - 123
13C-2,3,4,6,7,8-HxCDF	110	28 - 136
13C-1,2,3,7,8,9-HxCDF	102	29 - 147
13C-1,2,3,4,6,7,8-HpCDF	104	28 - 143
13C-1,2,3,4,7,8,9-HpCDF	91	26 - 138
13C-1,2,3,4,7,8-HxCDF	98	26 - 152

**Lockheed Martin Tactical Defense Systems**

**Dioxins/Furans, HRGC/HRMS (1613B)**

**Client Sample ID: LMC-FI-009D**

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
37Cl4-2,3,7,8-TCDD	106	35 - 197

**Notes:**

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/605/P-89/016

- CON Confirmation analysis.
- J Estimated result. Result is less than the reporting limit.



Lockheed Martin Tactical Defense Systems

Dioxins/Furans, HRGC/HRMS (1613B)

Client Sample ID: LMC-FI-010

Lot-Sample #...: A6F050110 - 008  
 Date Sampled...: 06/02/06  
 Prep Date.....: 06/06/06  
 Prep Batch #...: 6157516

Work Order #...: H6PJ11AA  
 Date Received...: 06/02/06  
 Analysis Date...: 06/07/06  
 Dilution Factor: 1

Matrix.....: WIPE  
 Instrument: 1D5  
 Units.....: pg  
 % Moisture:

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND	5.6	1.000	0
Total TCDD	ND	5.6		0
1,2,3,7,8-PeCDD	ND	14	0.500	0
Total PeCDD	ND	20		0
1,2,3,4,7,8-HxCDD	ND	9.7	0.100	0
1,2,3,6,7,8-HxCDD	ND	9.3	0.100	0
1,2,3,7,8,9-HxCDD	ND	8.8	0.100	0
Total HxCDD	ND	11		0
1,2,3,4,6,7,8-HpCDD	ND	32	0.010	0
Total HpCDD	ND	32		0
OCDD	ND	74	0.001	0
<b>2,3,7,8-TCDF</b>	<b>70</b>	<b>CON</b>	<b>0.100</b>	<b>7.0000</b>
<b>Total TCDF</b>	<b>560</b>			
1,2,3,7,8-PeCDF	ND	27	0.050	0
<b>2,3,4,7,8-PeCDF</b>	<b>52</b>	<b>J</b>	<b>0.500</b>	<b>26.0000</b>
<b>Total PeCDF</b>	<b>290</b>			
<b>1,2,3,4,7,8-HxCDF</b>	<b>53</b>	<b>J</b>	<b>0.100</b>	<b>5.3000</b>
1,2,3,6,7,8-HxCDF	ND	26	0.100	0
2,3,4,6,7,8-HxCDF	ND	44	0.100	0
1,2,3,7,8,9-HxCDF	ND	9.3	0.100	0
<b>Total HxCDF</b>	<b>210</b>			
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>110</b>		<b>0.010</b>	<b>1.1000</b>
1,2,3,4,7,8,9-HpCDF	ND	15	0.010	0
<b>Total HpCDF</b>	<b>110</b>			
OCDF	ND	62	0.001	0
<b>Total TEQ Concentration</b>				<b>39.4000</b>

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	100	25 - 164
13C-1,2,3,7,8-PeCDD	88	25 - 181
13C-1,2,3,4,7,8-HxCDD	105	32 - 141
13C-1,2,3,6,7,8-HxCDD	111	28 - 130
13C-1,2,3,4,6,7,8-HpCDD	83	23 - 140
13C-OCDD	65	17 - 157
13C-2,3,7,8-TCDF	106	24 - 169
13C-1,2,3,7,8-PeCDF	97	24 - 185
13C-2,3,4,7,8-PeCDF	97	21 - 178
13C-1,2,3,6,7,8-HxCDF	113	26 - 123
13C-2,3,4,6,7,8-HxCDF	116	28 - 136
13C-1,2,3,7,8,9-HxCDF	105	29 - 147
13C-1,2,3,4,6,7,8-HpCDF	99	28 - 143
13C-1,2,3,4,7,8,9-HpCDF	86	26 - 138
13C-1,2,3,4,7,8-HxCDF	101	26 - 152

**Lockheed Martin Tactical Defense Systems**

**Dioxins/Furans, HRGC/HRMS (1613B)**

**Client Sample ID: LMC-FI-010**

SURROGATE

PERCENT  
RECOVERY

RECOVERY  
LIMITS

37Cl4-2,3,7,8-TCDD

102

35 - 197

**Notes:**

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/605/R-89/016

CON

Confirmation analysis.

J

Estimated result. Result is less than the reporting limit.