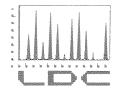


Port of Seattle / City of Seattle / King County / The Boeing Company

Fish/crab Data Addendum Appendices



LABORATORY DATA CONSULTANTS, INC.

7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Windward Environmental, LLC 200 West Mercer Street, Suite 401 Seattle, WA 98119 ATTN: Ms. Susie McGroddy

LDC #13502/13517/13576 June 20, 2005

SUBJECT: Lower Duwamish Waterway Group Tissue Sample Data Validation

Dear Ms. McGroddy,

Enclosed is our EPA Level II data validation of analytical chemistry results generated in support of the Lower Duwamish Waterway Group project. The analyses were performed by Axys Analytical Services, Ltd. Samples were analyzed for HRGC/HRMS Polychlorinated Biphenyl Congeners by modified EPA Method 1668A. Samples are referenced under the following Sample Delivery Groups: DPWG15710, DPWG15741, DPWQ15924, and DPWG15926. See the Sample Analysis Table (Attachment 1) for the number of samples reviewed.

Please feel free to contact us if you have any questions.

Sincerely,

Stella S. Cuenco Project Manager/Senior Chemist

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CHEMICAL DATA QUALITY REVIEW FOR FISH AND CRAB TISSUE SAMPLES

Lower Duwamish Waterway Group LDC# 13502, 13517 & 13576

This report details the findings of an EPA Level IV data validation review of Analytical chemistry results generated in support of the Lower Duwamish Waterway Group project. The analyses were performed by Axys Analytical Services, Ltd. Samples were analyzed for HRGC/HRMS Polychlorinated Biphenyl Congeners by modified EPA Method 1668A. Samples are referenced under the following Sample Delivery Groups: DPWG15710, DPWG15741, DPWQ15924, and DPWG15926. See the Sample Analysis Table (Attachment 1) for the number of samples reviewed and the Sample Validation Table (Attachment 2) for the sample identifications and analyses.

The QC guidelines used for data qualification arc those specified in the EPA Region 10 SOP for the Validation of 1668 Toxic, Dioxin-like PCB Data (Revision 1.0, December 8, 1995). Specific QC criteria used follows the Fish and Crab Collection and Chemical Analyses Quality Assurance Project Plan (August 27, 2004). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The following items were evaluated during the review:

- Holding Times
- Sample Preservation
- Cooler Temperatures
- Instrument Calibration
- Blanks
- Matrix Spike/Matrix Spike Duplicates
- Internal Standards
- Laboratory Control Samples
- Target Compound Identifications
- Compound Quantitation and CRQLs
- System Performance
- Field Duplicates

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SDG#: DPWG15741				VALIDA	VALIDATION SAMPLE TABLE	LE TABLE				LDC#: 13517A	17A
Project Name: Lower Duwamish Waterway Group	wamish Waterway G	roup		Parame	Parameters/Analytical Method	cal Method			Proje	Project #04-08-06-21	6-21
Client ID #	Lab ID #	trix	Date Collected	PCB Cong. (1668)		1					
LDW-T4-SS-WB-comp-1	L7311-24	tissue	08/02/04	×							
LDW-M-PP-FL-comp-1	L7311-34	tissue	08/03/04	×							
LDW-M-SP-FL-comp-1	L7311-35	tissue	08/04/04	×							
LDW-T2-C-PS-WB-comp-1	L7311-44	tissue	08/04/04	×							
LDW-T4-C-PS-WB-comp-1	L7311-56	tissue	08/04/04	×							
LDW-T4-D-PS-WB-comp-2	L7311-58	tissue	08/30/04	×							
LDW-T4-M-SF-WB-comp-1	L7311-112	tissue	08/04/04	×							
LDW-T4-M-SF-FL-comp-1	L7311-115	tissue	08/30/04	×							
LDW-T1-M-SC-EB-comp-2	L7311-125	tissue	08/30/04	×							
LDW-T2-M-SC-EM-comp-5	L7311-133	tissue	08/31/04	×							
LDW-T2-M-SC-EM-comp-6	L7311-134	tissue	08/31/04	×							
LDW-T3-M-SC-EM-comp-2	L7311-137	tissue	09/30/04	×							
LDW-T1-M-DC-EM-comp-2	L7311-149	tissue	08/30/04	×							
LDW-T3-M-DC-EM-comp-1	L7311-152	tissue	08/30/04	×				 			
LD/N-T4-M-DC-EM-comp-1	L7311-156	tissue	08/31/04	×							
LDW-M-PP-FL-comp-1DUP	L7311-34DUF	tissue	08/03/04	×				 			
Note: X = Validation was performed.	as performed.								13517	13517VALA.wpd	

LDW-T2-E-SS-WB-comp-1 LDW-T3-E-SS-WB-comp-1 LDW-T3-D-PS-WB-comp-1 LDW-T1-M-ES-WB-comp-2 LDW-T1-M-ES-WB-comp-4 LDW-T2-M-ES-WB-comp-3 LDW-T2-M-ES-WB-comp-5	Client ID # Lab ID # Ma DW-T2-E-SS-WB-comp-1 L7311-11 tiss DW-T3-E-SS-WB-comp-1 L7311-17 tiss DW-T3-E-SS-WB-comp-1 L7311-17 tiss DW-T3-E-SS-WB-comp-1 L7311-17 tiss DW-T3-E-SS-WB-comp-1 L7311-18 tiss DW-T3-E-SS-WB-comp-1 L7311-51 tiss DW-T3-D-PS-WB-comp-2 L7311-92 tiss DW-T1-M-ES-WB-comp-3 L7311-94 tiss DW-T2-M-ES-WB-comp-5 L7311-99 tiss	trix sue sue sue sue sue	Date Collected 08/03/04 08/03/04 08/05/04 08/05/04 08/05/04 08/05/04 08/05/04 08/05/04 08/05/04 08/03/04 08/05/04 08/03/04 08/03/04	Param Pores Cong. X X X X X X X X X X X X X X X X X X X	Parameters/Analytical Method PCB Cong. × × × × × × × × × × × × × × × × × × ×	cal Method	Parameters/Analytical Method PCB Cong. X X X X X X X X X X X X X X X X X X X		Project #04-08-06-22	06-22
LDW-13-M-ES-WB-comp-3 LDW-T3-M-DC-HP-comp-1 LDW-T3-D-PS-WB-comp-1DUP LDW-T3-D-PS-WB-comp-1DUP	L/311-105 L7311-155 L7311-51DUP	tissue tissue tissue	08/03/04 08/30/04 08/31/04 08/03/04	× × × ×						

			0 100 1		Attachment 2	C ANALY TO A STATE	25	- Statements			
SDG#: DPWG15926	Address of the second sec			VALIDA.	VALIDATION SAMPLE TABLE	TABLE				LDC#: 13576B	
Project Name: Lower Duwamish Waterway Group	wamish Waterway (Group	- Jumoi	Parame	Parameters/Analytical Method	Method			à	Project #04-08-06-22	
Client ID #	Lab ID #	Matrix	Date Collected	PCB Cong. (1668)							
LDW-T1-F-SS-WB-comp-1	L7311-6	tissue	08/03/04	×							
LDW-T2-B-SS-WB-comp-1	L7311-8	tissue	08/03/04	×					 		
LDW-T3-C-SS-WB-comp-1	L7311-15	tissue	08/03/04	×							
LDW-T3-E-PS-WB-comp-	L7311-52	tissue	08/03/04	×							
LDW-T1-M-ES-FL-comp-1	L7311-72	tissue	08/02/04	×							
LDW-T1-M-ES-FL-comp-2	L7311-73	tissue	08/02/04	×							
LDW-T2-M-ES-FL-comp-1	L7311-74	tissue	08/03/04	×							
LDW-T2-M-ES-FL-comp-2	L7311-75	tissue	08/03/04	×							
LDW-T3-M-ES-FL-comp-2	L7311-77	tissue	08/03/04	×							
LDW-T3-M-ES-WB-comp-2	L7311-104	tissue	08/03/04	×							
LDW-T4-M-ES-WB-comp-1	L7311-109	tissue	08/02/04	×					 		
LDW-T1-M-SC-HP-comp-	L7311-127	tissue	08/30/04	×							
LDW-T2-M-SC-HP-comp-2	L7311-135	tissue	08/31/04	×					 		
LDW-T1-M-ES-FL-comp-2DUP		tissue	08/02/04	×							
Note: X = Validation was performed.	as performed.								<u>1</u> 0	13576VALB.wpd	1

Only issues which require comment or action are discussed in this report. Data deficiencies are arranged by method. Potential effects of data anomalies have been described where possible.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
 - J1 Blank Contamination: Indicates possible high bias and/or false positives.
 - J2 Calibration Range exceeded: Indicates possible low bias.
 - J3 Holding times not met: Indicates low bias for most analytes.
 - J4 Other QC parameters outside control limits: bias not readily determined.
 - J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.
 - J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

Overall Data Assessment

I. Method Compliance

PCB-1 was not reported for sample LDW-T1-M-ES-FL-comp-1 in SDG DPWG15926 due to internal standard quantification problems.

II. Usability

Method blank contamination have warranted the qualification of several compounds as non-detected (U).

Internal standard recovery exceedances have warranted the qualification of detected results as estimated (J) and non-detected results as estimated (UJ) in two samples for SDGs DPWG15924 and DPWG15926.

The frequency of matrix spike (MS) and matrix spike duplicate (MSD) was not met as required by the QAPP. MS/MSD analyses are not required for EPA Method 1668A. The laboratory consulted with the client on this discrepancy and was instructed to proceed with the extraction and analysis despite the absence of MS/MSDs.

The required frequency of SRM was not met in SDGs DPWG15710 and DPWG15741.

Field duplicates were not collected for this sampling event.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

HRGC/HRMS Polychlorinated Biphenyl Congeners by modified EPA Method 1668A

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all congeners. The chromatographic resolution was less than or equal to 40% for congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187.

The static resolving power was at least 10,000 (10% valley definition).

III. Initial Calibration

A five point initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The minimum S/N ratio for each target compound was greater than or equal to 2.5 and greater than or equal to 10 for each recovery and internal standard compound.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration percent differences (%D) between the initial calibration RRF and the routine calibration RRF were less than or equal to 25.0% for unlabeled compounds and less than or equal to 35.0% for labeled compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polychlorinated biphenyl contaminants were found in the method blanks with the following exceptions:

Associated SDG	Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
DPWC15710	WC15208 101	3/2/05	PCB-1 PCB-2 PCB-3 PCB-4 PCB-7 PCB-8 PCB-11 PCB-12 PCB-12 PCB-15 PCB-16 PCB-17 PCB-18 PCB-20 PCB-20 PCB-21 PCB-22 PCB-26 PCB-31 PCB-32 PCB-32 PCB-32 PCB-37 PCB-44 PCB-44 PCB-45 PCB-45 PCB-48 PCB-49 PCB-50 PCB-50 PCB-52 PCB-56 PCB-59 PCB-66 PCB-59 PCB-66 PCB-59 PCB-66 PCB-77 PCB-82 PCB-83 PCB-83 PCB-84 PCB-85 PCB-86 PCB-85 PCB-86 PCB-87 PCB-83 PCB-85 PCB-86 PCB-85 PCB-86 PCB-85 PCB-86 PCB-85 PCB-86 PCB-90 PCB-105 PCB-105 PCB-105 PCB-105 PCB-123 PCB-123 PCB-123 PCB-135 PCB-135 PCB-141 PCB-144 PCB-146 PCB-147 PCB-153	0.082 ng/Kg 0.095 ng/Kg 0.136 ng/Kg 0.134 ng/Kg 0.134 ng/Kg 0.181 ng/Kg 0.181 ng/Kg 0.181 ng/Kg 0.181 ng/Kg 0.181 ng/Kg 0.183 ng/Kg 0.161 ng/Kg 0.161 ng/Kg 0.177 ng/Kg 0.139 ng/Kg 0.139 ng/Kg 0.139 ng/Kg 0.139 ng/Kg 0.101 ng/Kg 0.113 ng/Kg 0.113 ng/Kg 0.129 ng/Kg 0.129 ng/Kg 0.129 ng/Kg 0.137 ng/Kg 0.137 ng/Kg 0.171 ng/Kg 0.176 ng/Kg 0.171 ng/Kg 0.177 ng/Kg 0.177 ng/Kg 0.177 ng/Kg 0.177 ng/Kg 0.177 ng/Kg 0.177 ng/Kg 0.177 ng/Kg 0.179 ng/Kg 0.179 ng/Kg 0.177 ng/Kg 0.179 ng/Kg 0.130 ng/Kg 0.130 ng/Kg 0.135 ng/Kg 0.135 ng/Kg 0.135 ng/Kg 0.067 ng/Kg	LDW-T1-A-SS-WB-comp-1 LDW-T1-D-PS-WB-comp-1 LDW-T1-F-PS-WB-comp-1 LDW-T2-F-PS-WB-comp-1 LDW-T3-M-ES-FL-comp-1 LDW-T4-M-ES-FL-comp-1

Associated SDG	Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
DPWG15710	WG15208-101	3/2/05	PCB-156 PCB-158 PCB-164 PCB-167 PCB-170 PCB-170 PCB-172 PCB-172 PCB-174 PCB-177 PCB-180 PCB-180 PCB-183 PCB-183 PCB-183 PCB-189 PCB-194 PCB-194 PCB-194 PCB-203 PCB-206 PCB-209 PCB-208 PCB-209 PCB-208 PCB-209 Total Monochloro Biphenyls Total Trichloro Biphenyls Total Tetrachloro Biphenyls Total Heptachloro Biphenyls Total Heptachloro Biphenyls Total Heptachloro Biphenyls Total Heptachloro Biphenyls Total Heptachloro Biphenyls Total Nonachloro Biphenyls Total PCBs	0 378 ng/Kg 0.157 ng/Kg 0.327 ng/Kg 0.327 ng/Kg 0.327 ng/Kg 0.327 ng/Kg 0.115 ng/Kg 0.055 ng/Kg 0.141 ng/Kg 0.555 ng/Kg 0.561 ng/Kg 0.561 ng/Kg 0.561 ng/Kg 0.58 ng/Kg 0.58 ng/Kg 0.53 ng/Kg 0.683 ng/Kg 0.683 ng/Kg 0.683 ng/Kg 0.667 ng/Kg 0.667 ng/Kg 0.6141 ng/Kg 0.6141 ng/Kg 0.667 ng/Kg 0.6141 ng/Kg 0.6141 ng/Kg 0.6153 ng/Kg 0.617 ng/Kg 0.614 ng/Kg 0.614 ng/Kg 0.614 ng/Kg 0.6144 ng/Kg 0.614 ng/Kg 0.614 ng/Kg 0.614 ng/Kg	LDW-T1-A-SS-WB-comp-1 LDW-T1-D-PS-WB-comp-1 LDW-T1-D-PS-WB-comp-1 LDW-T2-F-PS-WB-comp-1 LDW-T3-M-ES-FL-comp-1 LDW-T4-M-ES-FL-comp-1

Associated SDG	Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
DPWG15741	WG15204-101	3/2/05	PCB-1 PCB-1 PCB-15 PCB-16 PCB-17 PCB-18 PCB-20 PCB-20 PCB-21 PCB-22 PCD-20 PCB-31 PCB-32 PCB-37 PCB-44 PCB-48 PCB-49 PCB-44 PCB-48 PCB-52 PCB-56 PCB-56 PCB-56 PCB-66 PCB-66 PCB-83 PCB-84 PCB-88 PCB-88 PCB-88 PCB-90 PCB-90 PCB-92 PCB-93 PCB-110 PCB-118 PCB-128 PCB-135 PCB-135 PCB-135 PCB-135 PCB-158 PCB-167 PCB-177 PCB-177 PCB-178 PCB-183 PCB-183 PCB-183 PCB-183 PCB-177 PCB-177 PCB-178 PCB-190 PCB-190 PCB-191 PCB-177 PCB-177 PCB-178 PCB-183 PCB-183 PCB-183 PCB-183 PCB-177 PCB-177 PCB-178 PCB-183 PCB-183 PCB-183 PCB-183 PCB-183 PCB-183 PCB-187 PCB-177 PCB-177 PCB-177 PCB-178 PCB-190 PCB-194 PCB-194 PCB-194 PCB-195 PCB-195 PCB-195 PCB-196	0.158 ng/Kg 0.305 ng/Kg 0.305 ng/Kg 0.239 ng/Kg 0.239 ng/Kg 0.261 ng/Kg 0.536 ng/Kg 0.351 ng/Kg 0.351 ng/Kg 0.351 ng/Kg 0.351 ng/Kg 0.214 ng/Kg 0.214 ng/Kg 0.214 ng/Kg 0.214 ng/Kg 0.380 ng/Kg 0.214 ng/Kg 0.360 ng/Kg 0.204 ng/Kg 0.363 ng/Kg 0.353 ng/Kg 0.422 ng/Kg 0.353 ng/Kg 0.422 ng/Kg 0.245 ng/Kg 0.245 ng/Kg 0.245 ng/Kg 0.245 ng/Kg 0.245 ng/Kg 0.245 ng/Kg 0.510 ng/Kg 1.15 ng/Kg 1.15 ng/Kg 1.15 ng/Kg 1.15 ng/Kg 1.15 ng/Kg 0.538 ng/Kg 0.535 ng/Kg	LDW-T4-D-SS-WB-comp-1 LDW-M-M-SP-FL-comp-1 LDW-T4-C-PS-WB-comp-1 LDW-T4-C-PS-WB-comp-2 LDW-T4-M-SF-WB-comp-2 LDW-T4-M-SF-FL-comp-1 LDW-T2-M-SC-EM-comp-2 LDW-T2-M-SC-EM-comp-2 LDW-T3-M-SC-EM-comp-2 LDW-T3-M-DC-EM-comp-1 LDW-T4-M-DC-EM-comp-1

Associated SDG	Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
DPWG15741	WG15204-101	3/2/05	PCB-197 PCB-198 PCB-201 PCB-202 PCB-203 PCB-204 PCB-205 PCB-206 PCB-206 PCB-209 Total Dichloro Biphenyls Total Trichloro Biphenyls Total Tetrachloro Biphenyls Total Pentachloro Biphenyls Total Heptachloro Biphenyls Total Heptachloro Biphenyls Total Heptachloro Biphenyls Total Octachloro Biphenyls Total PCBs	0.083 ng/Kg 0.305 ng/Kg 0.056 ng/Kg 0.089 ng/Kg 0.185 ng/Kg 0.015 ng/Kg 0.069 ng/Kg 0.240 ng/Kg 0.127 ng/Kg 0.127 ng/Kg 0.158 ng/Kg 1.40 ng/Kg 1.40 ng/Kg 13.2 ng/Kg 13.2 ng/Kg 10.9 ng/Kg 3.62 ng/Kg 0.515 ng/Kg	LDW-T4-D-SS-WB-comp-1 LDW-M-M-PP-FL-comp-1 LDW-T4-C-PS-WB-comp-1 LDW-T4-C-PS-WB-comp-1 LDW-T4-D-PS-WB-comp-1 LDW-T4-D-PS-WB-comp-1 LDW-T4-M-SF-FL-comp-1 LDW-T4-M-SF-FL-comp-1 LDW-T2-M-SC-EM-comp-5 LDW-T2-M-SC-EM-comp-5 LDW-T3-M-SC-EM-comp-2 LDW-T1-M-DC-EM-comp-1 LDW-T4-M-DC-EM-comp-1 LDW-T4-M-DC-EM-comp-1

Associated SDG	Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
DPWG15021	WG15449-101	4/6/05	PCB-1 PCB-3 PCB-4 PCB-3 PCB-11 PCB-12 PCB-15 PCB-17 PCB-18 PCB-20 PCB-27 PCB-31 PCB-32 PCB-37 PCB-37 PCB-32 PCB-37 PCB-40 PCB-44 PCB-49 PCB-50 PCB-50 PCB-52 PCB-61 PCB-64 PCB-66 PCB-83 PCB-66 PCB-83 PCB-90 PCB-92 PCB-90 PCB-92 PCB-93 PCB-110 PCB-118 PCB-129 PCB-136 PCB-147 PCB-156 PCB-170 PCB-175 PCB-176 PCB-177 PCB-175 PCB-176 PCB-177 PCB-176 PCB-177 PCB-181 PCB-182 PCB-184 PCB-186 PCB-186 PCB-187 PCB-186 PCB-187 PCB-186 PCB-187 PCB-186 PCB-187 PCB-186 PCB-190 PCB-191 PCB-192 PCB-194 PCB-195 PCB-194 PCB-195 PCB-204 PCB-205 PCB-209	5 43 ng/Kg 8.04 ng/Kg 11.4 ng/Kg 10.8 ng/Kg 6.82 ng/Kg 6.82 ng/Kg 6.41 ng/Kg 22.3 ng/Kg 4.22 ng/Kg 6.56 ng/Kg 7.69 ng/Kg 16.9 ng/Kg 16.9 ng/Kg 13.2 ng/Kg 13.2 ng/Kg 13.2 ng/Kg 13.2 ng/Kg 13.5 ng/Kg 2.97 ng/Kg 10.9 ng/Kg 5.44 ng/Kg 10.9 ng/Kg 5.44 ng/Kg 10.9 ng/Kg 5.44 ng/Kg 15.9 ng/Kg 5.61 ng/Kg 12.2 ng/Kg 16.8 ng/Kg 3.11 ng/Kg 2.65 ng/Kg 3.11 ng/Kg 2.67 ng/Kg 3.11 ng/Kg 2.67 ng/Kg 3.11 ng/Kg 2.67 ng/Kg 3.11 ng/Kg 2.67 ng/Kg 3.11 ng/Kg 2.67 ng/Kg 3.78 ng/Kg 0.79 ng/Kg 0.378 ng/Kg 0.79 ng/Kg 1.43 ng/Kg 0.779 ng/Kg 0.378 ng/Kg 0.378 ng/Kg 0.378 ng/Kg 1.43 ng/Kg 0.378 ng/Kg 0.378 ng/Kg 1.43 ng/Kg 0.364 ng/Kg 1.43 ng/Kg 0.378 ng/Kg 0.378 ng/Kg 0.378 ng/Kg 0.364 ng/Kg 1.43 ng/Kg 0.364 ng/Kg 0.364 ng/Kg 0.364 ng/Kg 0.378 ng/Kg 0.364 ng/Kg 0.364 ng/Kg 0.364 ng/Kg 0.364 ng/Kg 0.378 ng/Kg 0.364 ng/Kg 0.568 ng/Kg 0.630 ng/Kg	LDW-T2-E-SS-WB-comp-1 LDW-T3-F-SS-WB-comp-1 LDW-T3-D-PS-WB-comp-1 LDW-T1-M-ES-WB-comp-3 LDW-T2-M-ES-WB-comp-3 LDW-T3-M-ES-WB-comp-5 LDW-T3-M-ES-WB-comp-1 LDW-T4-M-DC-HP-comp-1 LDW-T4-M-DC-HP-comp-1

Associated SDG	Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
DPWG15924	WG15449-101	4/6/05	Total Monochloro Biphenyls Total Dichloro Biphenyls Total Trichloro Biphenyls Total Tetrachloro Biphenyls Total Pentachloro Biphenyls Total Heptachloro Biphenyls Total Octachloro Biphenyls Total PCBs	8.04 ng/Kg 51.0 ng/Kg 30.3 ng/Kg 51.7 ng/Kg 75.9 ng/Kg 180 ng/Kg 2.28 ng/Kg 221 ng/Kg	I DW-T2-F-SS-WB-comp-1 LDW-T3-E-SS-WB-comp-1 LDW-T3-F-SS-WB-comp-1 LDW-T3-D-PS-WB-comp-1 LDW-T1-M-ES-WB-comp-2 LDW-T1-M-ES-WB-comp-3 LDW-T2-M-ES-WB-comp-3 LDW-T3-M-ES-WB-comp-3 LDW-T3-M-ES-WB-comp-1 LDW-T3-M-DC-HP-comp-1

Associated SDG	Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
DPWG15926	WG15450-101	4/14/05	PCD-1 PCB-2 PCB-3 PCB-17 PCB-18 PCB-20 PCB-21 PCB-22 PCB-22 PCB-23 PCB-26 PCB-31 PCB-32 PCB-36 PCB-37 PCB-44 PCB-52 PCB-61 PCB-61 PCB-61 PCB-61 PCB-61 PCB-61 PCB-70 PCB-104 PCB-105 PCB-107 PCB-110 PCB-114 PCB-118 PCB-128 PCB-128 PCB-129 PCB-135 PCB-145 PCB-158 PCB-158 PCB-158 PCB-158 PCB-158 PCB-158 PCB-177 PCB-178 PCB-178 PCB-178 PCB-178 PCB-180 PCB-181 PCB-180 PCB-181 PCB-180 PCB-181 PCB-181 PCB-181 PCB-181 PCB-181 PCB-181 PCB-191 PCB-191 PCB-191 PCB-192 PCB-197 PCB-197 PCB-108 PCB-205 PCB-209 PCB-77 PCB-123	2.57 ng/Kg 2.75 ng/Kg 2.79 ng/Kg 2.79 ng/Kg 2.00 ng/Kg 2.00 ng/Kg 1.62 ng/Kg 2.45 ng/Kg 1.29 ng/Kg 2.87 ng/Kg 0.870 ng/Kg 0.870 ng/Kg 0.870 ng/Kg 5.89 ng/Kg 6.13 ng/Kg 2.55 ng/Kg 0.326 ng/Kg 2.55 ng/Kg 0.326 ng/Kg 1.00 ng/Kg 3.69 ng/Kg 3.69 ng/Kg 3.69 ng/Kg 2.31 ng/Kg 2.35 ng/Kg 1.05 ng/Kg 2.31 ng/Kg 1.05 ng/Kg 2.36 ng/Kg 3.36 n	LDW-T1-F-SS-WR-comp-1 LDW-T3-C-SS-WB-comp-1 LDW-T3-E-PS-WB-comp-1 LDW-T1-M-ES-FL-comp-2 LDW-T2-M-ES-FL-comp-2 LDW-T3-M-ES-WB-comp-2 LDW-T3-M-ES-WB-comp-2 LDW-T4-M-ES-WB-comp-1 LDW-T1-M-SC-HP-comp-1 LDW-T2-M-SC-HP-comp-2

Associated SDG	Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
DPWG15926	WG15450-101	4/14/05	PCB-126 Total Monochloro Biphenyls Total Trichloro Biphenyls Total Tetrachloro Biphenyls Total Pentachloro Biphenyls Total Hexachloro Biphenyls Total Heptachloro Biphenyls Decachloro Biphenyls Total PCBs	0.276 ng/Kg 5.31 ng/Kg 20.2 ng/Kg 10.2 ng/Kg 60.6 ng/Kg 41.4 ng/Kg 3.60 ng/Kg 174 ng/Kg	LDW-T1-F-SS-WB-comp-1 LDW-T2-B-SS-WB-comp-1 LDW-T3-C-SS-WB-comp-1 LDW-T1-M-ES-FL-comp-1 LDW-T1-M-ES-FL-comp-2 LDW-T2-M-ES-FL-comp-2 LDW-T3-M-ES-FL-comp-2 LDW-T3-M-ES-WB-comp-2 LDW-T4-M-E3-WB-comp-1 LDW-T4-M-SC-HP-comp-1 LDW-T2-M-SC-HP-comp-2

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Associated SDG	Sample	Compound	Reported Concentration	Modified Final Concentration
DPWG15710	LDW-T1-D-PS-WB-comp-1	PCB-2	0.457 ng/Kg	0.457U ng/Kg
DPWG15710	LDW-T1-F-PS-WB-comp-1	PCB-2 PCB-11	0.334 ng/Kg 1.95 ng/Kg	0.334U ng/Kg 1.95U ng/Kg
DPWG15710	LDW-T2-F-PS-WB-comp-1	PCB-2 PCB-11 PCB-3	0.243 ng/Kg 1.79 ng/Kg 0.460 ng/Kg	0.243U ng/Kg 1.79U ng/Kg 0.460U ng/Kg
DPWG15710	LDW-T3-M-ES-FL-comp-1	PCB-2 PCB 11 PCB-3	0.338 ng/Kg 2.00 ng/Kg 0.580 ng/Kg	0.338U ng/Kg 2 00U ng/Kg 0.580U ng/Kg
DPWG15710	LDW-T4-M-ES-FL-comp-1	PCB-2 PCB-11 PCB-3	0.269 ng/Kg 2.05 ng/Kg 0.466 ng/Kg	0.269U ng/Kg 2.05U ng/Kg 0.466U ng/Kg
DPWQ15741	LDW-M-M-PP-FL-comp-1	PCD-11	3.15 ng/Kg	3.16U ng/Kg
DPWQ15741	LDW-T2-C-PS-WB-comp-1	PCB-11	2.15 ng/Kg	2.15U ng/Kg
DPWQ15741	LDW-T4-C-PS-WB-comp-1	PCB-11	1.28 ng/Kg	1.28U ng/Kg
DPWQ15741	LDW-T4-D-PS-WB-comp-2	PCB-11	3.38 ng/Kg	3.38U ng/Kg
DPWQ15741	LDW-T1-M-SC-EB-comp-2	PCB-11 PCB-1	2.48 ng/Kg 0.686 ng/Kg	2.48U ng/Kg 0.686U ng/Kg
DPWQ15741	LDW-T2-M-SC-EM-comp-5	PCB-11 PCB-1 Total Monochloro Biphenyls	2.55 ng/Kg 0.780 ng/Kg 0.357 ng/Kg	2.55U ng/Kg 0.780U ng/Kg 0.357U ng/Kg

Associated SDG	Sample	Compound	Reported Concentration	Modified Final Concentration
DPWQ15741	LDW T2 M SC EM comp 6	PCB-11	2.07 ng/Kg	2 07U ng/Kg
DPWQ15741	LDW-T3-M-SC-EM-comp-2	PCB-11 PCB-1 Total Monochloro Biphenyls	3.43 ng/Kg 0.695 ng/Kg 0.695 ng/Kg	3.43U ng/Kg 0.695U ng/Kg 0.695U ng/Kg
DPWG15924	LDW-T2-E-SS-WB-comp-1	PCB-1 PCB-11 Total Monochloro Biphenyls	23.7 ng/Kg 31.7 ng/Kg 23.7 ng/Kg	23.7U ng/Kg 31.7U ng/Kg 23.7U ng/Kg
DPWG15924	LDW-T3-E-SS-WB-comp-1	PCB-1 PCB-11 Total Monochloro Biphenyls PCB-3 PCB-12	6.58 ng/Kg 8.27 ng/Kg 12.8 ng/Kg 6.18 ng/Kg 12.4 ng/Kg	6.58U ng/Kg 8.27U ng/Kg 12.8U ng/Kg 6.18U ng/Kg 12.4U ng/Kg
DPWG15924	LDW-T3-F-SS-WB-comp-1	PCB-1 Total Monochloro Biphenyls PCB-3	7.55 ng/Kg 12.7 ng/Kg 5.15 ng/Kg	7.55U ng/Kg 12.7U ng/Kg 5.15U ng/Kg
DPWG15924	LDW-T3-D-PS-WB-comp-1	PCB-1 Total Monochloro Biphenyls PCB-3 PCB-15	3.90 ng/Kg 7.42 ng/Kg 3.52 ng/Kg 25.7 ng/Kg	3.90U ng/Kg 7.42U ng/Kg 3.52U ng/Kg 25.7U ng/Kg
DPWG15924	I DW-T1-M-ES-WB-comp-2	PCB-1 PCB-11 Total Monochloro Biphenyls PCB-12 PCB-15	12.5 ng/Kg 7.38 ng/Kg 12.5 ng/Kg 14.9 ng/Kg 88.5 ng/Kg	12.5U ng/Kg 7.38U ng/Kg 12.5U ng/Kg 14.9U ng/Kg 88.5U ng/Kg
DPWG15924	LDW-T1-M-ES-WB-comp-4	PCB-1 Total Monochloro Biphenyls PCB-12	22.5 ng/Kg 22.5 ng/Kg 28.8 ng/Kg	22.5U ng/Kg 22.5U ng/Kg 28.8U ng/Kg
DPWG15924	LDW-T2-M-ES-WB-comp-3	PCB-1 Total Monochloro Biphenyls PCB-12	15.5 ng/Kg 15.5 ng/Kg 14.0 ng/Kg	15.5U ng/Kg 15.5U ng/Kg 14.0U ng/Kg
DPWG15924	LDW-T2-M-ES-WB-comp-5	PCB-1 Total Monochloro Biphenyls PCB-3 PCB-12	23.1 ng/Kg 29.1 ng/Kg 3.64 ng/Kg 26.2 ng/Kg	23.1U ng/Kg 29.1U ng/Kg 3.64U ng/Kg 26.2U ng/Kg
DPWG15924	LUW-I 3-M-ES-WB-comp-3	PCB-1 Total Monochloro Biphenyls PCB-3 PCB-12 PCB-15	9.05 ng/Kg 13.4 ng/Kg 3.73 ng/Kg 14.4 ng/Kg 96.2 ng/Kg	9.65U ng/Kg 13.4U ng/Kg 3.73U ng/Kg 14.4U ng/Kg 96.2U ng/Kg
DPWG15924	LDW-T3-M-DC-HP-comp-1	PCB-1 PCB-11 Total Monochloro Biphenyls PCB-3	8.44 ng/Kg 34.0 ng/Kg 14.9 ng/Kg 6.51 ng/Kg	8.44U ng/Kg 34.0U ng/Kg 14.9U ng/Kg 6.51U ng/Kg
DPWG15924	LDW-T4-M-DC-HP-comp-1	PCB-1 Total Monochloro Biphenyls PCB-3	8.21 ng/Kg 23.1 ng/Kg 10.5 ng/Kg	8.21U ng/Kg 23.1U ng/Kg 10.5U ng/Kg

Associated SDG	Sample	Compound	Reported Concentration	Modified Final Concentration	
DPWG15926	LDW-T3-E-PS-WB-corrip-1	PCB-1 PCB-2 PCB-3 Total Monochloro Biphenyls	7.38 ng/Kg 3.33 ng/Kg 7.31 ng/Kg 18.0 ng/Kg	7.30U ng/Kg 3.33U ng/Kg 7.31U ng/Kg 18.0U ng/Kg	
DPWG15926	LDW-T1-M-ES-FL-comp-1	PCB-2 PCB-3 PCB-23	8.43 ng/Kg 20.5 ng/Kg 10.7 ng/Kg	8.43U ng/Kg 20.5U ng/Kg 10.7U ng/Kg	
DPWG15926	LDW-T1-M-ES-FL-comp-2	PCB-1 PCB-2 PCB-3 PCB-23 I otal Monochloro Biphenyls	8.80 ng/Kg 2.76 ng/Kg 5.03 ng/Kg 10.1 ng/Kg 16.6 ng/Kg	8.80U ng/Kg 2.76U ng/Kg 5.03U ng/Kg 10.1U ng/Kg 16.6U ng/Kg	
DPWG15926	LDW-T2-M-ES-FL-comp-1	PCB-1 PCB-2 PCB-3 PCB-23 Total Monochloro Biphenyls	9.38 ng/Kg 2.74 ng/Kg 4.07 ng/Kg 9.58 ng/Kg 16.2 ng/Kg	9.38U ng/Kg 2.74U ng/Kg 4.07U ng/Kg 9.58U ng/Kg 16.2U ng/Kg	
DPWG15926	LDW-T2-M-ES-FL-comp-2	PCB-2 PCB-3 Total Monochloro Biphenyls	3.70 ng/Kg 6.73 ng/Kg 24.0 ng/Kg	3.70U ng/Kg 6.73U ng/Kg 24.0U ng/Kg	
DPWG15926	LDW-T3-M-ES-FL-comp-2	PCB-1 PCB-2 PCB-3 PCB-23 Total Monochloro Biphenyls	9.45 ng/Kg 2.46 ng/Kg 4.53 ng/Kg 6.84 ng/Kg 16.4 ng/Kg	9.45U ng/Kg 2.46U ng/Kg 4.53U ng/Kg 6.84U ng/Kg 16.4U ng/Kg	
DPWG15926	LDW-T3-M-ES-WB-comp-2	PCB-1 PCB-2 PCB-3 Total Monochloro Biphenyls	10.5 ng/Kg 2.96 ng/Kg 5.63 ng/Kg 19.0 ng/Kg	10.5U ng/Kg 2.96U ng/Kg 5.63U ng/Kg 19.0U ng/Kg	
DPWG15926	LDW-T4-M-ES-WB-comp-1	PCB-1 PCB-2 PCB-3 Total Monochloro Biphenyls	10.2 ng/Kg 2.42 ng/Kg 4.39 ng/Kg 17.0 ng/Kg	10.2U ng/Kg 2.42U ng/Kg 4.39U ng/Kg 17.0U ng/Kg	
DPWG15926	LDW-T1-M-SC-HP-comp-1	PCB-1 PCB-2 PCB-3 Total Monochloro Biphenyls	4.58 ng/Kg 3.24 ng/Kg 7.36 ng/Kg 15.2 ng/Kg	4.58U ng/Kg 3.24U ng/Kg 7.36U ng/Kg 15.2U ng/Kg	

Associated SDG	Sample	Compound	Reported Concentration	Modified Final Concentration
DPWG15926	LDW-T2-M-SC-HP-comp-2	PCB-1 PCB-2 PCB-3 Total Monochloro Biphenyls PCB-104	5.76 ng/Kg 4.29 ng/Kg 7.38 ng/Kg 17.4 ng/Kg 3.88 ng/Kg	5.76U na/Ka 4.29U ng/Kg 7.38U ng/Kg 17.4U ng/Kg 3.88U ng/Kg

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

No standard reference material analysis data were associated with SDGs DPWG15710 and DPWG15741.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries were reported for all sample extracts and blanks as required with the following exceptions:

Associated SDG	Sample	Internal Standards	Finding
DPWG15926	LDW-T1-M-ES-FL-comp-1	¹³ C-PCB-1	Internal standard recovery was not reported. The response was too low for quantification.

All internal standard recoveries were within QC limits with the following exceptions:

Associated SDG	Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
DPWG15924	LDW-T2-E-SS-WB-comp-1	¹³ C-PCB-126	156 (25-150)	PCB-126	J (all detects) UJ (all non-detects)	Ρ

Associated SDG	Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
UPWG15926	LDW-T1-M-ES-FL-comp-1	¹³ C-PCD-3 ¹³ C-PCB-4	10.0 (25 150) 13.6 (25-150)	PCB 2 PCB-3 PCB-4 PCB-5 PCB-6 PCB-7 PCB-7 PCB-7 PCB-8 PCB-9 PCB-10 PCB-10 PCB-11 PCB-12 PCB-13 PCB-14	J (all detects) UJ (all non-detects)	р

X. Target Compound Identifications

All target compound identifications were within validation criteria.

XI. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria with the following exceptions:

Associated SDG	Sample	Compound	Finding
DPWG15926	LDW-T1-M-ES-FL-comp-1	PCB-1	Sample result was not reported for this compound. The laboratory was unable to quantify this compound due to internal standard problems.

XII. System Performance

The system performance was acceptable.

XIII. Overall Assessment of Data

The overall assessment of data was acceptable.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

LDC #: 13502A3

SDG #: DPWG15710

VALIDATION COMPLETENESS WORKSHEET

Level IV

Laboratory: AXYS Analytical Services, Ltd.



METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
Ι.	Technical holding times	A	Sampling dates: $8/2 - 5/84$
11.	GC/MS Instrument performance check	A	
- 111.	Initial calibration	A	70 1250 520.
IV.	Routine calibration	A	70 70 5 2 5/35
V.	Blanks	m	
VI.	Matrix spike/Matrix spike duplicates	NA	Feet Not werd
VII.	Laboratory control samples	A	405
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
Х.	Target compound identifications	A	
XI.	Compound quantitation and CRQLs	A	
XII.	System performance	A	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A

A = Acceptable N = Not provided/applicable SW = See worksheet ND = No compounds detected R = Rinsate FB = Field blank D = Duplicate TB = Trip blank EB = Equipment blank

Validated Samples:

M	ISBULS_					
1	LDW-T1-A-SS-WB-comp-1	11	WG15208-10/	21	31	
2	LDW-T4-B-SS-WB-comp-1	12	/	22	32	
3	LDW-T1-D-PS-WB comp 1	13		23	 33	
4	LDW-T1-F-PS-WB-comp-1	14		24	34	
5	LDW-T2-F-PS-WB-comp-1	15		25	35	
6 /	LDW-T3-M-ES-FL-comp-1	16		26	36	
7 (LDW-T4-M-ES-FL-comp-1	17		27	37	
8	LDW-T3-M-ES-FL-comp-1DUP	18		28	38	
9		19		29	39	
10		20		30	40	

LDC #: 1350243 SDG #: 09WG /S \overline{Z}/D 15

VALIDATION FINDINGS CHECKLIST

Method: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times			,	
All technical holding times were met.	Ĺ			
Cooler temperature criteria was met.				
II. GC/M3 Instrument performance check	T		r	1
Was PFK exact mass 380.9760 verified?				
Were the retention time windows established for all homologues?			ļ	
Is the static resolving power at least 10,000 (10% valley definition)?	/			
Was the mass resolution adequately check with PFK?				
III. Initial calibration			r	
Was the initial calibration performed at 5 concentration levels?				
Were all percent relative standard deviations (%RSD) $\leq 25\%$ for unlabeled standards and $\leq 30\%$ for labeled standards?	1			
Did all calibration standards meet the Ion Abundance Ratio criteria?				
Was the signal to noise ratio for each target compound \geq 2.5 and for each recovery and internal standard \geq 10?				
IV. Continuing calibration			Г	
Was a routine calibration performed at the beginning of each 12 hour period?	\square			
Were all percent differences (%D) < 40% for unlabeled and labeled standards?	\square			
Did all routine calibration standards meet the Ion Abundance Ratio criteria?				
V Blanks				
Was a method blank associated with every sample in this SDG?				
Was a method blank performed for each matrix and concentration?				
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.				
VI. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		~		oup
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			/	
VII. Laboratory control samples				
Was an LCS analyzed for this SDG?				
Was an LCS analyzed per extraction batch?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the OC limits?				

LDC #: <u>/350243</u> SDG #: <u>0706 / 5</u>710

Validation Area	Yes	No	NA	Findings/Comments
VIII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?				
Were the performance evaluation (PE) samples within the acceptance limits?			K	
IX. Internal standards				
Were internal standard recoveries within the 25-150% criteria?	\square			
Was the minimum S/N ratio of all internal standard peaks > 10?				
X Target compound identification	1	· · · · · ·	r	
For polychlorinated biphenyl congeners with associated labeled standards, were the retention times of the two quantitation peaks within -1 to 3 sec. of the RT of the labeled standard?		-		
For polychlorinated biphenyl congeners without associated labeled standards, were the relative retention times of the two quantitation peaks within 0.005 time units of the RRT measured in the routine calibration?		-		
For other polychlorinated biphenyl congeners, were the retention times of the two quantitation peaks within RT established in the performance check solution?				
Did compound spectra contain all characteristic ions listed in the table attached?				
Was the Ion Abundance Ratio for the two quantitation ions within criteria?				
Was the signal to noise ratio for each target compound and labeled standard > 2.5?				
Does the maximum intensity of each specified characteristic ion coincide within <u>+</u> 2 seconds (includes labeled standards)?				
Was an acceptable lock mass recorded and monitored?				
XI. Compound quantitation/CRQLs	·1			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/	·		
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?				
XII. System performance				
System performance was found to be acceptable.				
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.				
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		/		
Target compounds were detected in the field duplicates.			/	
XV. Field blanks				
Field blanks were identified in this SDG.				,
Target compounds were detected in the field blanks.		/		

LDC #: 1350243 SDG #: 00 PN & 1571 0			VALIDAT	ION FINDING	VALIDATION FINDINGS WORKSHEET	KSHEET			Page:_ Reviewer:	e: /of /
METHOD: HRGC/HRMS Polychlorinated Biphenyls (EP	lychlorinated	Biphenyls (EP	A Method 1668)						2nd Reviewer:	er: X
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A". V N N/A Were all samples associated with a method blank? V N N/A West and hear bactored for each matrix and whenever a sample extraction was bactored	now for all que mples associa	ifications below for all questions answered "N". Not applicable questions are identified as "N/A". Were all samples associated with a method blank? Mee a method blank performed for each matrix and whenever a sample extraction was performed?	red "N". Not thod blank?	applicable qu	lestions are i	dentified as "	N/A". Mormed?			
<u>N N/A</u> N N/A ank extractio	d blank conta	was a memory plank perion euron each man Was method blank contamination less < CRQI n date: 3/3/05 Blank analysis date: 2/25	 CRQL for date: 3/3 	 CRQL for all target compounds? date: 3/3/05 	ounds?	Associate	Associated samples:	m		
Compound	Blank ID				S	Sample Identification	ation			
WG	5208-101	m	4	5	9	111	8	La .		
ANB 2	0.095	N 1540	0.334 VI	NEt= 0	0.338 N	1/24-0	1269/U	N/892'0		
PCB	195,59		1.95/4	Mbil	2,00 M	1.5XU	2. det la	7, 25/4		
N AA	0.136			0,460 W	10/285.0	NEaso	0408/1	NJOJ.0		
othins see	/	Objektere		. /		/				
attachmant	~	$\overline{}$	X							

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: All contaminants within five times the method blank concentration were qualified as not detected, "U".

	AXYS METHOD MLA-010 Rev 0 1668A-S1_209 Page 1 of 6	5	Form 1A PCB CONGENER ANALYSIS REPORT		CLIENT ID: LAB BLANK	
				Sample Collection:	N/A	
	Lab Name: AXYS ANALYTICAL	SERVICES		Project No.:	N/A	
	Contract No.:	4033		Lab Sample ID:	WG15208-101	
1990a	Matrix:	TISSUE		Sample Size:	10.0	g
	Sample Receipt Date:	N/A		Initial Calibration Date:	01-Mar-2005	
	Extraction Date:	02-Mar-2005		Instrument ID:	HR GC/MS	
	Analysis Date:	13-Mar-2005	Time: 23:45:23	GC Column ID:	SPB-OCTYL	
1.40623	Extract Volume (µL):	20		Sample Data Filename:	PB5C_134 S:5	
) 1. 1.	Injection Volume (µL):	1.0		Blank Data Filename:	PB5C_134 S:5	
_	Dilution Factor:	N/A		Cal. Ver. Data Filename:	PB5C_134 S:1	
TREE	Concentration Units :	ng/kg				

COMPOUND	IUPAC NO.	CO-ELUTIONS	LAB FLAG ¹	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
PED		5X.					
2 - MoCB	1	0.41	JB	0.082	0.0500	3.16	1.000
3 - MoCB	2	0.475	JB	0.095	0.0500	3.17	0.988
4 - MoCB	3	0.68	JB	0.136	0.0501	3.55	1.000
2,2' - İþiCB	4	0.67	JB	0.134	0.129	1.46	1.000
2,3 - Þ ÍCB	5		U		0.0852		
2,3' - ÞiCB	6		U		0.0796		
2,4 - DiCB	7	0.57	JB	0.114	0.0761	1.38	1.158
2,4' - Þ iCB	8	0.905	JB	0.181	0.0696	1.35	1.206
2,5 - DiCB	9		U		0.0791		
2,6 - DiCB	10		U		0 0820		
3,3' - DiCB	11	2.99	JB	0.598	0.0833	1.38	0.969
3,4 - DiCB	12	12 + 13 0.4	C JB	0.082	0.0817	1.43	0.984
3,4' - DiCB	13	12 + 13	C12				
3,5 - DiCB	14	0.0	U		0.0786		
4,4' - DICB	15	0.905	JB	0.181	0.0969	1.71	1.001
2,2',3 - TriCB	16	0.665		0.133	0.0500	1.10	1.165
2,2',4 - TriCB	17	0.805	JB	0.161	0.0500	0.92	1.138
2,2',5 - TriCB	18	18+30 1.585	C JB	0.317	0.0500	0.98	1.113
2,2',6 - TriCB	19	0.33/5		0.067	0.0500	0.65	1.001
2,3,3' - TriCB	20	20 + 28 2.425	CJB	0.485	0.0500	1.14	0.848

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apple _QA/QC Chemist Approved by:

TO'OF								
	AXYS METHOD MLA-010 Rev 05				CLIENT ID:		LAB BLANK	
	Form 1A				GEIENI ID.		LAD DLAINK	
	Page 2 of 6				Project No		N/A	
至风	5	WG15208-101			Sample Data F	lename:	PB5C_134 S:5	
	Lab Gample ib.	1010200101			earripte earer i		1 000_104 0.0	
-	COMPOUND	IUPAC	CO-ELUTIONS	LAB	CONC.	DETECTION	ION ABUND.	RRT
- 5259		NO.		5X FLAG	FOUND	LIMIT	RATIO	
	PCB			000				
	2,3,4 - TriCB	21	21 + 33	0.985 CJB	0.197	0.0500	1.14	0.857
	2,3,4' - †riCB	22		0.695 JB	0.139	0.0500	1.08	0.872
	2,3,5 - TriCB	23		U		0.0500		
	2,3,6 - TriCB	24		U		0.0500		
~	2,3',4 - TriCB	25		U		0.0500		
- 1950 B	2,3',5 - TriCB	26	26 + 29	0.445ски	0.089	0.0500	1.33	1.301
Note -	2,3',6 - TriCB	27		U		0.0500		
_	2,4,4' - TriCB	28	20 + 28	C20				
	2,4,5 - TriCB	29	26 + 29	C26				
1982	2,4,6 - TriCB	30	18 + 30	1.78 JB				
	2,4',5 - TriCB	31			0.356	0.0500	0.94	0.837
~	2,4',6 - TriCB	32		0.505 JB	0.101	0.0500	1.04	1.197
	2',3,4 - TriCB	33	21 + 33	C21				
	2',3,5 - TriCB	34		U		0.0500		
	3,3',4 - TriCB	35		U		0.0500		
۲.	3,3',5 - TriCB	36		U	0.4.40	0.0500		
7 Mill	3,4,4' - TriCB	37		O.T JB	0.140	0.0500	1.14	1.001
	3,4,5 - TriCB	38 39		U U		0.0500 0.0500		
-7	3,4',5 - TriCB		40 + 41 + 71	0.93 слв	0.186	0.0500	0.76	4 000
i	2,2',3,3' - TeCB	40 41	40 + 41 + 71 40 + 41 + 71	C40	0.100	0.0500	0.76	1.336
1820	2,2',3,4 - TeCB 2,2',3,4' - TeCB	42	40 + 41 + 71	0.39 JB	0.078	0.0500	0.70	1.312
	2,2',3,4 - TeCB 2,2',3,5 - TeCB	42		U U	0.070	0.0500	0.70	1.312
and the second	2,2',3,5' - TeCB	44	44 + 47 + 65	2,06 CJB	0.412	0.0500	0.74	1 286
T BREET	2,2',3,6 - TeCB	45	45 + 51	0.565CJB	0.113	0.0500	0.87	1.147
	2,2',3,6' - TeCB	46		U-262		0.0500		
-	2,2',4,4' - TeCB	47	44 + 47 + 65	C44				
the statements	2,2',4,5 - TeCB	48		0.475 KJB	0.095	0.0500	0.89	1.274
1223	2,2',4,5' - TeCB	49	49 + 69	1.145 CJB	0.229	0.0500	0.81	1.260
	2,2',4,6 - TeCB	50	50 + 53	0.42CKJB	0.084	0.0500	0.63	1.112
ana na si si si si si si si si si si si si si	2,2',4,6' - TeCB	51	45 + 51	C45				
1000	2,2',5,5' - TeCB	52		2,88 JB	0.576	0.0500	0.86	1.236
Californi	2,2',5,6' - TeCB	53	50 + 53	C50				
	2,2',6,6' - TeCB	54		U		0.0500		
	2,3,3',4 - TeCB	55		U		0.0500		
1000	2,3,3',4' - TeCB	56		0.65 кјв	0.130	0.0500	1.04	0.905
	2,3,3',5 - TeCB	57		U		0.0500		
·	2.3.3'.5' - TeCB	58		U		0.0500		
-	2,3,3',6 - TeCB	59	59 ÷ 62 ÷ 75	0.355 C JB	0.071	0.0500	0.74	1.303
(BRIED)	2,3,4,4' - TeCB	60		0.535 KJB	0.107	0.0500	0.98	0.911
~	2,3,4,5 - TeCB	61	61 + 70 + 74 + 76	э.765 с јв	0.553	0.0500	0.82	0.875
	2,3,4,0 - TeCB	02	50 ÷ 62 ÷ 75	C59		0.0500		
1823	2,3,4',5 - TeCB	63		U		0.0500		
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Approved by:

_QA/QC Chemist

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	AXYS METHOD MLA-010 Rev 05				CLIENT ID:		LAB BLANK	
~	Form 1A				Whether () 120.			
3 55 4	Page 3 of 6				Project No		N/A	
ZUNA	Lab Sample ID:	WG15208-101			Sample Data Fi	lename:	PB5C_134 S:5	
-								
(C) #	COMPOUNI	D IUPAC	CO-ELUTIONS	LAB	CONC.	DETECTION	ION ABUND.	RRT
	PCB	NO.		$5 \times FLAG^{1}$	FOUND	LIMIT	RATIO	
~	PCI			-15				
	2,3,4',6 - TeCI	64		0.745 JB	0.149	0.0500	0.71	1.349
, EEB	2,3,5,6 - TeCE	3 65	44 + 47 + 65	C44				
-4	2,3',4,4' - TeCE			1.52JB	0.304	0.0500	0.81	0.885
-	2,3',4,5 - TeCE			U		0.0500		
100	2,3',4,5' - TeCE			U		0.0500		
	2,3',4,6 - TeCE		49 + 69	C49				
٦	2,3',4',5 - TeCE		61 + 70 + 74 + 76	C61				
1	2,3',4',6 - TeCE		40 + 41 + 71	C40				
T BOOM	2,3',5,5' - TeCB			U		0.0500		
	2,3',5',6 - TeCB		04 - 70 - 74 - 70	U		0.0500		
2	2,4,4',5 - TeCB		61 + 70 + 74 + 76	C61				
122	2,4,4',6 - T⊌CB 2',3,4,5 - TeCB		50 + 62 + 75 61 + 70 + 74 + 76	C59 C61				
	3,3',4,4' TeCB		01+10+14+10	0.31 KJB	0.062	0.0500	3.36	4 004
7	3,3',4,5 - TeCB			U	0.002	0.0500	3.30	1.001
4.015	3,3',4,5' TeCB	79		U		0.0500		
ALC: N	3,3',5,5' - TeCB	80		U		0.0500		
	3,4,4',5 TeCB	81		U		0.0500		
Part of the second second second second second second second second second second second second second second s	2,2',3,3',4 PeCB	82		.385 кјв	0.077	0.0500	2.11	0.933
1	2,2',3,3',5 PeCB	83	83 + 99	.43 слв	0.286	0.0500	1.57	0.886
1000	2,2',3,3',6 - PeCB	84		0.585 KJB	0.117	0.0500	1.93	1.162
	2,2',3,4,4' - PeCB	85	85 + 116 + 117	0.695 CJB	0.139	0.0500	1.49	0.919
the Constantion	2,2',3,4,5 - PeCB	86	86 + 87 + 97 + 108 + 119 +	• •	0.358	0.0500	1.68	0.901
100	2,2',3,4,5' - PeCB	87	86 + 87 + 97 + 108 + 119 +					
and the second se	2,2',3,4,6 - PeCB	88	88 + 91	0,3/5 с кјв	0.070	0.0500	1.21	1.154
-	2,2',3,4,6' - PeCB	89		~ 27 U		0.0500		
	2,2',3,4',5 - PeCB	90	90 + 101 + 113	2,37 с јв	0.474	0.0500	1.34	0.870
	2,2',3,4',6 - PeCB	91	88 + 91	C88				
Å.	2,2',3,5,5' - PeCB	92	00 - 05 - 00 - 400 - 40	0.455KJB	0.091	0.0500	2.15	0.853
Manual Color	2,2',3,5,6 PoCB	93 94	93 + 95 + 98 + 100 + 10	2 [. 97 CJB U	0.382	0.0500 0.0500	1.43	1.123
1000	2,2',3,5,6' - PeCB	94 95	93 + 95 + 98 + 100 + 102			0.0500		
Conseller	2,2',3,5',6 - PeCB 2,2',3,6,6' - PeCB	96	33 + 35 + 36 + 100 + 10	U		0.0500		
n in the second	2,2',3',4,5 - PeCB	97	86 + 87 + 97 + 108 + 119 +			0.0000		
物形	2,2',3',4,6 - PeCB	98	93 + 95 + 98 + 100 + 102					
and the second se	2,2',4,4',5 - PeCB	99	83 + 99	C83				
and the second s	2,2'.4,4'.6 - PeCB	100	93 + 95 + 98 + 100 + 102					
-	2,2',4,5,5' - PeCB	101	90 + 101 + 113	C90				
NEU .	2,2',4,5,6' - PeCB	102	93 + 95 + 98 + 100 + 102					
harts. (Aprelet	2,2',4,5',6 - PeCB	103		U		0.0500		
and the second second	2,2',4,6,6' - PeCB	104		u ل		0.0500		
	2,3,3',4,4' - PeCB	105		2.08 JB	0.416	0.0500	1.63	1.001
£.,	2,3,3',4,5 - PeCB	106		U		0.0500		
	V							

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Approved by:

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MAXYS ANALYTICAL SERVICES LTD P.O. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., (ANADA V81 358 TEL (250) 655-5800 FAX (250) 655-5801

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	AXYS METHOD MLA-010 Rev 05				CLIENT ID:		LAB BLANK	
~~	Form 1A							
	Page 4 of 6				Project No		N/A	
à.a.	Lab Sample ID:	WG15208-101			Sample Data Fi	lename:	PB5C_134 S:5	
	Lab bample ib.	11010200 101						
<i>2</i> .8	COMPOUND	IUPAC	CO-ELUTIONS	5× LAB	CONC.	DETECTION	ION ABUND.	RRT
		NO.		FLAG ¹	FOUND	LIMIT	RATIO	
_	PCB							
	2,3,3,4,5 - PeCB	107	107 + 124	0,335c JB	0.067	0.0500	1.51	0.991
18228	2,3,3',4,5' - PeCB		86 + 87 + 97 + 108 + 119 -	-				
	2,3,3',4,6 - PeCB			0.325 јв	0.065	0.0500	1.75	0.997
-	2,3,3',4',6 - PeCB		110 + 115	2.175C JB	0.435	0.0500	1.52	0.925
2	2,3,3',5,5' - PeCB	111		ωU		0.0500		
100	2,3,3',5,6 - PeCB	112		U		0.0500		
	2,3,3',5',6 - PeCB	113	90 ÷ 101 ÷ 113	C90				
, ,	2,3,4,4',5 - PeCB	114		0.405 KJB	0.081	0.0500	1.28	1.001
	2,3,4,4',6 - PeCB	115	110 + 115	C110				
and the second s	2,3 4,5,6 - PeCB	116	85 + 116 + 117	C85				
	2,3,4',5,6 - PeCB	117	85 + 116 + 117	C85				
1	2,3',4,4',5 - PeCB	118		347 јв	0.694	0.0500	1.53	1.001
1.17	2,3',4,4',6 - PeCB	119	86 + 87 + 97 + 108 + 119 +	125 C86				
	2,3',4,5,5' - PeCB	120		U		0.0500		
7	2,3',4,5',6 - PeCB	121		U		0.0500		
1.000 miles	2',3,3',4,5 - PeCB	122		U		0.0500		
NES.	2',3,4,4',5 - PeCB	123		0.315 KJB	0.063	0.0500	4.92	1.001
	2',3,4,5,5' - PeCB	124	107 + 124	C107				
(and the second s	2',3,4,5,6' - PeCB	125	86 + 87 + 97 + 108 + 119 +					
877.080	3,3',4,4',5 - PeCB	126		0.3 (јв	0.062	0.0500	1.34	1.000
N. Horney	3,3',4,5,5' - PeCB	127		U		0.0500		
- The second sec	2,2',3,3',4,4' - HxCB	128	128 + 166	1.315 C KJB	0.263	0.0500	1.43	0.958
annun an	2,2',3,3',4,5 - HxCB	129	129 + 138 + 160 + 163		1.18	0.0500	1.38	0.929
100.9	2,2',3,3',4,5' - HxCB	130	0	.415 KJB	0.083	0.0500	1.54	0.913
and the second	2,2',3,3',4,6 - HxCB	131		, то и 1.83 јв	0.400	0.0500	4.00	4 474
\square	2,2',3,3'4,6' - HxCB	132		ý /	0.166	0.0500	1.36	1.174
1011.T	2,2',3,3' 5,5' - HxCB	133		U		0.0500		
000000	2,2',3,3 ,5,6 - HxCB	134	134 + 143	си 0.995скјв	0.400	0.0500	4.05	1.104
<u> </u>	2,2',3,3' 5,6' - HxCB	135	135 + 151 + 154	0.315 JB	0.199 0.063	0.0500 0.0500	1.05 1.06	1.023
	2,2',3,3' 6,6' - H×CB	136 137		0.43 JB	0.086	0.0500	1.23	0.918
-	2,2',3,4,4',5 - HxCB	137	129 + 138 + 160 + 163	C129	0.000	0.0000	1.20	0.010
	2,2',3,4,4',5' - HxCB 2,2',3,4,4',6 - HxCB	130	139 + 140	CU		0.0500		
		133	139 + 140	C139		010000		
	2,2',3,4,4',6' - HxCB 2,2',3,4,5,5' - HxCB	140	100 / 140	0.915 KJB	0.183	0.0500	0.98	0.903
	2,2',3,4 5,6 - HxCB	142		U		0.0500		
100	2,2',3,4,5,6' - HxCB	142	134 + 143	C134				
	2,2',3,4,5',6 - HxCB	144	104 - 110	U		0.0500		
1	2,2',3,4,6,6' - HxCB	145		U		0.0500		
and diffe	2,2',3,4',5,5' - HxCB	146		0.83 JB	0.166	0.0500	1.21	0.884
	2,2',3,4',5,0 - H×CB	147	147 + 149	J.08SC JB	0.417	0.0500	1.38	1.133
	2,2',3,4',5,6' - HxCB	148		U		0.0500		
	2,2',3,4',5',6 - HxCB	149	147 + 149	C147				
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4 Approved by:_ QA/QC Chemist

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	AXYS METHOD MLA-010 Rev 05				CLIENT ID:		LAB BLANK	
	Form 1A				Project No		N/A	
\$c~4	Page 5 of 6 Lab Sample ID:	WG15208-101			Sample Data F	ilename:	PB5C_134 S:5	
	Lab Sample ID.	IT OT OUL OF THE						
-	COMPOUND	IUPAC	CO-ELUTIONS	LAB	CONC.	DETECTION	ION ABUND.	RRT
Str. a	bas	NO.		5× FLAG	FOUND	LIMIT	RATIO	
¥.94	PEB							
_	2,2',3,4',6,6 - HxCB	150		U		0.0500		
	2,2',3,5,5',6 - H×CB		135 + 151 + 154	C135				
76.3F	2,2',3,5,6,6' - H×CB			U		0.0500		
	2,2',4,4',5,5' - HxCB		153 + 168	4.06 CJB	0.812	0.0500	1.28	0.899
	2,2',4,4',5,6' - H×CB		135 + 151 + 154	C135				
	2,2',4,4',6,6' - HxCB			U		0.0500		
- <u>199</u>	2,3,3',4,4',5 - HxCB		156 + 157	1.89 с јв	0.378	0.0500	1.29	1.000
	2,3,3',4,4',5' - HxCB	157	156 + 157	C156				
	2,3,3',4,4',6 - HxCB			0.785 JB	0.157	0.0500	1.30	0.938
1	2,3,3',4,5,5' - H×CB	159		U		0.0500		
	2,3,3',4,5,6 - HxCB		129 + 138 + 160 + 16					
***.9	2,3,3',4,5',6 - HxCB	161		U		0.0500		
	2,3,3',4',5,5' - HxCB			U		0.0500		
	2,3,3',4',5,6 - H×CB		129 + 138 + 160 + 16		0.000	0.0500	1.04	0.921
	2,3,3',4',5',6 - H×CB	164			0.062	0.0500	1.94	0.921
7	2,3,3',5,5',6 - H×CB			U		0.0500		
	2,3,4,4',5,6 - HxCB		128 + 166	0.5/5 JB	0.115	0.0500	1.09	1.001
1000	2,3',4,4',5,5' - HxCB		452 . 400	C153	0.115	0.0000	1.00	1.001
~1	2,3',4,4',5',6 - H×CB		153 + 168	U U		0.0500		
	3,3',4,4',5,5' - HxCB			1.63/5JB	0.327	0.0500	0.90	0.936
1000	2,2',3,3',4,4',5 - HpCB		171 + 173	0.STSCJB	0.115	0.0500	1.16	1.163
	2,2',3,3',4,4',6 - HpCB	171	171 + 175	a 37 Pm ID	0.055	0.0500	0.89	0.897
7	2,2',3,3',4,5,5' - HpCB	172 173	171 + 173	0.705 JB	0.000	0.0000		
2010	2,2',3,3',4,5,6 - HpCB			0.705 JB	0.141	0.0500	0.98	1.133
	2,2',3,3',4,5,6' - HpCB			U		0.0500		
	2,2',3,3',4,5',6 - HpCB			U		0.0500		
	2,2',3,3',4,6,6' - HpCB			O.TI JB	0.142	0.0500	1.20	1.145
10020	2,2',3,3',4',5,6 - HpCB 2,2',3,3',5,5',6 - HpCB			- U		0.0500		
	2,2',3,3',5,6,6' - HpCB			0.29 јв	0.058	0.0500	1.07	1.010
	2,2',3,4,4',5,5' HpCB		180 + 193	2.805 CJB	0.561	0.0500	0.95	0.910
-	2,2',3,4,4',5,6 - HpCB			U		0.0500		
1 1000	2,2',3,4,4',5,6' - HpCB			U		0.0500		
	2,2',3,4,4',5',6 - HpCB	183	183 + 185	0.805 CJB	0.161	0.0500	0.90	1.127
	2,2',3,4,4',6,6' - HpCB	184		U		0.0500		
TEAST	2,2',3,4,5,5',6 - HpCB	185	183 + 185	C183				
	2,2',3,4,5,6,6' - HpCB	186		U		0.0500		
	2,2'.3,4',5,5',6 - HpCB	187		1.155 JB	0.231	0.0500	1.13	1.110
	2,2',3,4',5,6,6' - HpCB	188				0.0500	4.64	4.004
T	2,3,3',4,4',5,5' - HpCB			0.29 JB	0.058	0.0500	1.04	1.001
	2,3,3',4,4',5,6 - HpCB	190			0.079	0.0500	1.01	0.947
·	2,3,3',4,4',5',0 - HpCB			* U		0.0500		
8 1803	2,3,3',4,5,5',6 - HpCB	192		U		0.0500		
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	AXYS METHOD MLA-010 Rev 05				CLIENT ID:		LAB BLANK	
	Form 1A							
Rind	Page 6 of 6				Project No		N/A	
	Lab Sample ID:	WG15208-101			Sample Data F	Filename:	PB5C_134 S:5	
-								
2)~~9	COMPOUND	IUPAC	CO-ELUTIONS	EX LAB	CONC.	DETECTION	ION ABUND.	RRT
	DAB	NO.		FLAG ¹	FOUND	LIMIT	RATIO	
	POL							
	2,3,3',4',5,5',6 - HpCB	193	180 + 193	C180				
20°7	2,2',3,3',4,4',5,5' - OcCB	194		0.445 JB	0.089	0.0500	0.81	0.991
	2,2',3,3',4,4',5,6 - OcCB	195		U		0.0500		
-	2,2',3,3',4,4',5,6' - OcCB	196		U		0.0500		
20	2,2',3,3',4,4',6,6' - OcCB	197	197 + 200	CU		0.0500		
700 a	2,2',3,3',4,5,5' 6 - OcCB	198	198 + 199	0.705 C KJB	0.141	0.0500	0.75	1.115
	2,2',3,3',4,5,5',6' - OcCB	199	198 + 199	C198				
	2,2',3,3',4,5,6,6' - OcCB	200	197 + 200	C197				
10.0 M	2,2',3,3',4,5',6,6' - OcCB	201		U		0.0500		
	2,2',3,3',5,5',6,6' - OcCB	202		0.265 кјв 0.415 кјв	0.053	0.0500	0.69	1.000
	2,2',3,4,4',5,5',6 - OcCB	203		0.415 KJB	0.083	0.0500	1.05	0.920
	2,2',3,4,4',5,6,6' - OcCB	204		U		0.0500		
2.7	2,3,3',4,4',5,5' , 6 - OcCB	205		- 0 - U		0.0500		
	2,2',3,3',4,4',5,5',6 - NoCB	206		0,385 JB	0.077	0.0559	0.67	1.000
-	2,2'.3,3'.4,4',5,6,6' - NoCB	207		U		0.0500		
	2,2',3,3',4,5,5',6,6' - NoCB	208		0.375 JB	0.067	0.0500	0.87	1.001
10.1	2,2',3,3',4,4',5,5',6, \$ ' - DeCB	209		0.375 јв 0.45 јв	0.090	0.0500	0.66	1.000
	V							

(1) C = co-eluting congener; U = not detected; K = peak detected, but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; E = exceeds calibrated linear range, see dilution data; D = dilution data; Z = compound not requested; J = concentration less than LMCL; B = analyte found in sample and the associated blank; X = results reported separately

These pages are part of a larger report that may contain information necessary for full data evaluation.

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AXYS ANALYTICAL SERVICES LTD P.O BOX 2219, 2045 MILLS RD. WEST SIDNEY, B.L. CANADA VOL 358 TEL (250) 655-5800 FAX (250) 655-5811

AXYS METHOD MLA-010 Rev 05 PCB-TOTAL_209 Page 1 of 1 CLIENT ID: LAB BLANK

Form 1A

HOMOLOGUE TOTAL POLYCHLORINATED BIPHENYLS (PCB) ANALYSIS REPORT

			Sample Collection:		N/A	
Lab Name: AXYS ANALYTICAL S	ERVICES		Project No.:		N/A	
Contract No.:	4033		Lab Sample ID:		WG15208-101	
Matrix:	TISSUE		Sample Size:		10.0	g
Sample Receipt Date:	N/A		Initial Calibration Dat	e:	01-Mar-2005	
Extraction Date:	02-Mar-2005		Instrument ID:		HR GC/MS	
Analysis Date:	13-Mar-2005	Time: 23:45:23	GC Column ID:		SPB-OCTYL	
Extract Volume (µL):	20		Blank Data Filename	:	PB5C_134 S:5	
Injection Volume (µL):	1.0		Cal. Ver. Data Filenar	me:	PB5C_134 S:1	
Dilution Factor:	N/A		Samplo Datafilo(s):		PR5C_134 S:5	
Concentration Units :	ng/kg					
PCB HOMOLOGUE GROUP		I AB FLAG ¹	CONC. FOUND	DETECTION LIMIT		
Total Monochloro Biphenyls			0.313	0.0501		
Total Dichloro Biphenyls			1.29	0.129		
Total Trichloro Biphenyls			2.03	0.0500		
Total Tetrachloro Biphenyls			2.67	0.0500		
Total Pentachloro Biphenyls			3.38	0.0500		
Total Hexachloro Biphenyls			3.54	0.0500		
Total Heptachloro Biphenyls			1.93	0.0500		
Total Octachloro Biphenyls			0.089	0.0500		
Total Nonachloro Biphenyls			0.144	0.0559		
Decachloro Biphenyl			0.090	0.0500		
TOTAL PCBs			15.5			

(1) U = Not detected

(2) All header information pertains to the initial instrumental analysis of the sample extract. Additional sample datafiles listed refer to secondary analysis of the sample extract.

These pages are part of a larger report that may contain information necessary for full data evaluation.

15208PCBTOTALS_1.xls, S3

Approved by:

QA/QC Chemist

26-04-2005 dd-mm-yyyy

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VALIDATION FINDINGS WORKSHEET Initial Calibration Calculation Verification

Page: <u>/of</u> Reviewer: <u>7</u> 2nd Reviewer: <u>8</u>

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = (A,)(C_s)((A_e)(C,) average RRF = sum of the RRFs/number of standards %RSD = 100 * (S/X)

 $A_x = Area of compound,$ $C_x = Concentration of compound$ S = Standard deviation of the RRFs,

Recalculated V 447 %RSD 4.8 0.0 3.0 Reported M 0 26 %RSD S.9 5.9 6 V CS 3std) Recalculated 20.1 0 90 m RRF P C 0 0 0 0 _ (CS 3 std) Reported 0.99 00. 0.96 0.93 Average RRF (initial) Recalculated 0.92 46.0 80 0.9 0 Average RRF Reported (initial) 790 92 79. 68.0 0 0 Compound (Reference Internal Standard) PCB-190 (¹³C-PC3-180) PCB-156 (¹³C-PC3-156) PCB-189 (13C-PCB-189) PCB-130 (¹³C-PCB-180) PCB-105 (¹³C-PCB-105) PCB-156 (¹³C-PCB-156) PCB-105 (¹³C-PCB-105) PCB-156 (13C-PCB-156) (¹³C-PC3-105) (¹³C-PCB-77) (77-EDG-D^{t1}) (¹³C-PCB-77) PCB-135 PCB-77 PCB-77 PCB-77 3/1/05 Calibration Date Standard ID ICA. ----2 e *

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results

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VALIDATION FINDINGS WORKSHEET Routine Calibration Results Verification

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent difference (%D) of the initial calibration average Felative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF RRF = (A_{, J})(C_{s})/(A_{is})(C_{, J})

: ave. RRF = initial calibration average RRF RRF = continuing calibration RRF $A_x = Area of compound$, $A_a = Ar C_x = Concentration of compound$, $C_a = C$

 A_{a} = Area of associated internal standard ound, C_{b} = Concentration of internal standard

Recalculated 0% Reported 0% RRF AWT 52,0 1 Recalculated 51.8 G N Ą 0 M Λ 5-0 0 5% 53 51. S 0 30 20 0 RRFXWT 52 2 Reported 52.8 Ø Q 102 50 102 20 05 3 521 0 SD J Average RRF (initial) 0.89 0.89 0.92 0.97 0.92 0.97 0.97 0.97 83 77.0 26:0 16.0 0 Compound (Reference Internal Standard) PCB-156 (13C-PCB-156) PCB-156 (¹³C-PCB-156) PCB-189 (13C-PCB-189) PCB-1C5 (¹³C-PCB-105) PCB-1EQ (13C-PCB-18Q) PCB-1C5 (13C-PCB-105) PCB-1C5 (13C-PCB-105) PCB-156 (¹³C-PCB-156) PCB-189 (13C-PCB-189) PCB-77 (13C-PCB-77) (¹³C-PCB-77) PCB-77 (13C-PCB-77) PCB-77 70/41 3/20/02 Calibratio n Date Ñ m m PB52-1465 3 PB5C-1355: Standard ID OBSC. 0 *

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recalculated results.

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the

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Laboratory Control Sample Results Verification VALIDATION FINDINGS WORKSHEET

of H 2 Page: Reviewer: 2nd Reviewer:

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation: METHOD/ HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

% Recovery = 100 * SSC/SA

SSC = Spiked sample concentration SA = Spike added Where:

RPC = I LCS - LCSD I * 2/(LCS + LCSD)

LCS = Laboraotry control sample percent recovery

LCSD = Laboratory control sample duplicate percent recovery

Compound ($n \ Addag$ Correntation Percent Recovery Percent Recovery Percent Recovery Percent Recovery RPD a crs LCS LCS LCS LCS LCS Reported Rep		sp	ike	Spiked Sample	ample	SOT	s	rcsD	0	rcs/rcsD	LCSD
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Compound	Ad (NS	ded ////	Concent (MS)	ration	Percent R	lecovery	Percent R	ecovery	æ	۵
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		LCS	LCSD	rcs	rcsD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PCB-77	R	NA		W	101	107				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PCB-81			~		106					
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PCB-105			× 1		107	107				nd sense war waarde aan oo warmen a waarde gegen op ander dat warmen ook
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PCB-114			•		108	108				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PCB-118			۴.		107	107				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PCB-123			1		108	801				Verset Weinig was a first of a definition of the second second second second second second second second second
$\frac{\sqrt{157}}{20}$ $\frac{\sqrt{157}}{20}$ $\frac{1}{20}$	PCB-126			•		106	901				
		100		105		201	105				
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	PGB-157-	¥		đ							
$\frac{1}{53.6} = \frac{10}{107}$	PCB-167	22		52.4		105	105				
50 53.6	PCB-169	1		~			(03				
23.6 107	PCB-170					`	\				
53.6 107	PCB-180-										
	PCB-189	50		· · ·		107	701				

LCSCLC.16A

	lons Moni	lons Monitored for HRGC/HRMS Analysis of Polychlorinated Biphenyls	of Polychlorinated Biphenyls		
Descriptor	Accurate mass ^(a)	lon ID	Analyte	Substance	
	289.9224	×	C12 H6 35Cl4	TCB	
	291.9194	M+2	C12 H6 35Cl3 37Cl4	TCB	
	301.9626	Ψ	13C12 H6 35Cl4	PeCB	
	303.9597	M+2	13C12 H6 35CI3 37CI	PeCB	00000000
	325.8804	M+2	C12 H5 35Cl4 37C	PeCB	
	[292.9825]		C7 F11	DEK	
0	325 8804	M+2	C12 H5 35Cl4 37Cl	PaCR	
1	327.8775	M+4	C12 H5 35Cl3 37Cl2	PeCB	wuhiheniti
	337.9207	M+2	13C12 H5 35Cl4 37Cl	PeCB	*******
	339.9178	M+4	13C12 H5 35Cl3 37Cl2	PeCB	
	359.8415	M+2	C12 H4 35CI5 37CI	HXCB	
	361.8385	M+4	C12 H4 35Cl4 37Cl2	HXCB	مدر معنی
	371.8817	M+2	13C12 H4 35Cl5 37Cl	HXCB	
	3/3.0/00	N1+4			otostetet
	333, 342, 342, 345, 7496	M+4	C12 H3 35Cl5 37Cl2	HDCB	M19404-07409
	405.8428	M+2	13C12 H3 35Cl6 37Cl	HpCB	
	407.8398	M+4	13C12 H3 35CI5 37CI2	HpCB	
	[354.9892]	Lock	C9F13	PFK	
3	509.7229	M+4	13C12 35Cl10 37Cl2	DCB	
	511.7199	M+6	13C12 35Cl9 37Cl3		
	513.7170	M+8	13C12 35Cl8 37Cl4		
	[442.9728]	Lock	C10 F17	ЯПК	1,00× frame.com
					- Jacobian and
S = internal/recovery standard	andard				
I		385.3			
	= 1.007023 = 12.0000000 a ⁷ Cl = 36.965903	555903			
13 C	$^{13}C = 13.003355$				
LL_	= 18.9984				
					OWNERS
					1999 (1993)
					rano n a i n i
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LDC #:1350-2A3 SDG #: DPWG15710

VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:	
Reviewer:	9
2nd reviewer:	x

Conce A _x A _s I _s RRF V _o Df	compound to be n = Area of the charact internal standard = Amount of internal (ng) = Relative response f	teristic ion (EICP) for the	Example: Sample I.D, $POB77$. Conc. = $(9.376+08)(2000)(')$ V.720+85(a0.97)(10.06)(-1116.5 $N8/N8$				
%3	 Percent colids, app matrices only. 	licable to soils and solid					
#	Sample ID	Compound		Reported Concentration ()	Calculated Concentration ()	Qualification	
	and the second second second second second second second second second second second second second second second						

LDC #: 13517A3

SDG #: DPWG15741

VALIDATION COMPLETENESS WORKSHEET

Level IV

Date:<u>6/r/05</u> Page:_/of/_ Reviewer:_<u>0</u>___ 2nd Reviewer:_1/___

Laboratory: AXYS Analytical Services, Ltd.

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Technical holding times	A	Sampling dates: 8/2 - 9/30/02
11.	GC/MS Instrument performance check	A	
111.	Initial calibration	A	76 FSD = 20
IV.	Routine calibration	A	70 D = 25/35
V.	Blanks	AN	
VI.	Matrix spike/Matrix spike duplicates	NÁ	
VII.	Laboratory control samples	A	409
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X .	Target compound identifications	\$	
XI.	Compound quantitation and CRQLs	A	
XII.	System performance	A	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected R = Rinsate FB = Field blank D = Duplicate TB = Trip blank EB = Equipment blank

Validated Samples:

_M	TISSKOS						
1	D= LDW-T4-SS-WB-comp-1	11	LDW-T2-M-SC-EM-comp-6	21	WG15204-101	31	
2	LDW-M-M-PP-FL-comp-1	12	LDW-T3-M-SC-EM-comp-2	22	/	32	
3	LDW-M-M-SP-FL-comp-1	13	LDW T1 M DC EM comp-2	23		33	
4	LDW-T2-C-PS-WB-comp-1	14	LDW-T3-M-DC-EM-comp-1	24		34	
5	LDW-T4-C-PS-WB-comp-1	15	LDW-T4-M-DC-EM-comp-1	25		35	
6	LDW-T4-D-PS-WB-comp-2	16	LDW-M-M-PP-FL-comp-1DUP	26		36	
7	LDW-T4-M-SF-WB-comp-1	17		27		37	
8	LDW-T4-M-SF-FL-comp-1	18		28		38	
9	LDW-T1-M-SC-EB-comp-2	19		29		39	
10	LDW-T2-M-SC-EM-comp-5	20		30		40	

LDC #:/3577 SDG #: DPW 74/

VALIDATION FINDINGS CHECKLIST

Method: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	Ĺ			
Cooler temperature criteria was met.				
II. GC/MS Instrument performance check			1	1
Was PFK exact mass 380.9760 verified?			ļ	
Were the retention time windows established for all homologues?	$\langle \rangle$		<u> </u>	
Is the static resolving power at least 10,000 (10% valley definition)?			<u> </u>	
Was the mass resolution adequately check with PFK?				
III. Initial calibration		[r	
Was the initial calibration performed at 5 concentration levels?				
Were all percent relative standard deviations (%RSD) <25% for unlabeled standards and < 30% for labeled standards?				
Did all calibration standards meet the Ion Abundance Ratio criteria?				
Was the signal to noise ratio for each target compound \geq 2.5 and for each recovery and internal standard \geq 10?				
IV. Continuing calibration			T	
Was a routine calibration performed at the beginning of each 12 hour period?	$\left \right $			
Were all percent differences (%D) < 40% for unlabeled and labeled standards?	$\left \right $			
Did all routine calibration standards meet the Ion Abundance Ratio criteria?				
V. Blanks			r	
Was a method blank associated with every sample in this SDG?	(
Was a method blank performed for each matrix and concentration?				
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.				
VI. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		/	-	DUP
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			<	
VII. Laboratory control samples				
Was an LCS analyzed for this SDG?	-			
Was an LCS analyzed per extraction batch?				
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the OC limits?				

LDC #:<u>13577 A 3</u> SDG #:<u>DPNG152</u>4/



Validation Area	Yes	No	NA	Findings/Comments
VIII Regional Quality Assurance and Quality Control				· · · · · · · · · · · · · · · · · · ·
Were performance evaluation (PE) samples performed?			ļ	
Were the performance evaluation (PE) samples within the acceptance limits?				
IX. Internal standards				
Were internal standard recoveries within the 25-150% criterla?	$\langle \rangle$		<u> </u>	
Was the minimum S/N ratio of all internal standard peaks > 10?				
X. Target compound identification	1	· · · · · ·	T	
For polychlorinated biphenyl congeners with associated labeled standards, were the retention times of the two quantitation peaks within -1 to 3 sec. of the RT of the labeled standard?	\langle	-		
For polychlorinated biphenyl congeners without associated labeled standards, were the relative retention times of the two quantitation peaks within 0.005 time units of the RRT measured in the routine calibration?	/			
For other polychlorinated biphenyl congeners, were the retention times of the two quantitation peaks within RT established in the performance check solution?				
Did compound spectra contain all characteristic ions listed in the table attached?	/			
Was the Ion Abundance Ratio for the two quantitation ions within criteria?				
Was the signal to noise ratio for each target compound and labeled standard > 2.5?				
Does the maximum intensity of each specified characteristic ion coincide within ± 2 seconds (includes labeled standards)?				
Was an acceptable lock mass recorded and monitored?				
XI. Compound quantitation/CRQLs	· · · · · ·			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?				
XII. System performance				
System performance was found to be acceptable.				
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	\square			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.				
Target compounds were detected in the field duplicates.			\mathbf{r}	-
XV. Field blanks			1	
Field blanks were identified in this SDG.				/ .
Target compounds were detected in the field blanks.				

LDC #:1351763 SDG #:200417741			VALIDATI	on Finding: <u>Blanks</u>	VALIDATION FINDINGS WORKSHEET <u>Blanks</u>	KSHEET			Page:	/of / 0
METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)	ychlorinated	3iphenyls (EP	A Method 16	68)					2nd Reviewer:	×
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A". <u>Y N N/A</u> Were all samples associated with a method blank? <u>Y N N/A</u> Was a method blank performed for each matrix and whenever a sample extraction was perform Was method blank contamination less < CROL for all target compounds?	ifications below for all questions answered "N". Not applicable questions are identified as "N/A". Were all samples associated with a method blank? Was a method blank performed for each matrix and whenever a sample extraction was performed? Was method blank contamination less < CRQL for all target compounds?	stions answer ed with a me prmed for eac	ed "N". Not a thod blank? th matrix and < CRQL for a	pplicable qu whenever a Il target com	estions are ic sample extra pounds?	lentified as "h ction was per	VA". formed?	Y		
Blank extraction date: 3/- Conc. units: <u>N5 F8</u>	8 50/2 B	Blank analysis	date: <u>3/4</u>	50/		Associate	Associated samples:	M		
Compound	Blank D				Se	Sample Identification	tion			
Wife R	101-402-	N	4	5	9	6	01	11	N	
RB	0.709	3.15/0	2.150	N 28.	3.38 1	&. 2.48U	2.55 M	2.070	3.430	
POB	0.158	-		/ /		0.6896	0.78901		0.6956	
Total Monachtro Biphenys	0.158					la .	0.357 W		0.695 G	
							- \			
othus see		/								
attachment		$\overline{\mathbf{v}}$	×							

CIRCLED RESULTS WERE NOT QUALIFIED ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: All contaminants within five times the method blank concentration were qualified as not detected, "U".

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	AXYS METHOD MLA-010 Rev 05 1006A-51_209 Page 1 of 6		Form 1A PCB CONGENER ANALYSIS REPORT		CLIENT ID: LAB BLANK	
				Sample Collection:	N/A	
•	Lab Name: AXYS ANALYTICAL S	BERVICES		Project No.:	N/A	
	Contract No.:	4033		Lab Sample ID:	WG15204-101	
	Matrix:	TISSUE		Sample Size:	10.0	g
	Sample Receipt Date:	N/A		Initial Calibration Date:	01-Mar-2005	
	Extraction Date:	02-Mar-2005		Instrument ID:	HR GC/MS	
	Analysis Date:	14-Mar-2005	Time: 13:51:07	GC Column ID:	SPB-OCTYL	
	Extract Volume (µL):	50		Sample Data Filename:	PB5C_135 S:7	
	Injection Volume (µL):	1.0		Blank Data Filename:	PB5C_135 S:7	
	Dilution Factor:	N/A		Cal. Ver. Data Filename:	PB5C_135 S:1	
	Concentration Units :	ng/kg				

COMPOUND	IUPAC NO.	CO-ELUTIONS	SX LA		DETECTION LIMIT	ION ABUND. RATIO	RRT
2 - MoCB	1		0.79 JE	0.158	0.110	2.74	1.001
3 - MoCB	2		΄ υ		0.118		
4 - MoCB	3		U		0.131		
2,2' - DiCB	4		υ		0.315		
2,3 - DiCB	5		U		0.254		
2,3' - DICB	6		U		0.221		
2,4 - DiCB	7		U		0.217		
2,4' - DiCB	8		1.525 JE	0.305	0.194	1.78	1.207
2,5 - DICB	9		' U		0.231		
2,6 - DICB	10		, U		0.232		
3,3' - DICB	11		3.545 JB	0.709	0.262	1.67	0.969
3,4 - DiCB	12	12 + 13	CL		0.237		
3,4' - DiCB	13	12 + 13	C1:	2			
3,5 - DiCB	14		_ U		0.238		
4,4' - DiCB	15		1.925 JB	0.385	0.314	1.35	1.000
2,2',3 - TriCB	16		1.195KJE	3 0.239	0.102	1.25	1.166
2,2',4 - TriCB	17		1.305 JB		0.103	0.96	1.139
2,2',5 - TriCB	18	18 + 30	2.68 CJ	3 0.536	0.0843	1.00	1.113
2,2',6 - TriCB	19		- U		0.120		
2,3,3' - TriCB	20	20 + 28	\$7.05CJ	3 1.41	0.115	1.11	0.848
			- (

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Alt QA/QC Chemist Approved by:

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AXYS ANALYTICAL SERVICES LTD P.O. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., CANADA V8L 358 TEL (250) 655-5800 FAX (250) 655-5811

7									
	ETHOD MLA-010 Rev 05					CLIENT ID:		LAB BLANK	
Form 1/	<u>A</u>					Decised Ma		N 1/4	
- 71	nfð	WG15204-101				Project No Sample Data Fi	lenome:	N/A PB5C_135 S:7	
Lab San	nple ID:	av G 15204-101				Sample Data P	lienanie.	FB00_130 3.7	
	COMPOUND	IUPAC	CO-ELUTIONS	5 X	LAB	CONC.	DETECTION	ION ABUND.	RRT
1-		NO.		and the second se	FLAG ¹	FOUND	LIMIT	RATIO	
U									
	2,3,4 - TriCB	21	21 + 33	1.755		0.351	0.107	1.00	0.857
1-	2,3,4' - TriCB	22		1.7	JB	0.340	0.121	0.96	0.872
	2,3,5 - TriCB	23			U		0.116		
4	2,3,6 - TriCB	24			U		0.0713		
7	2,3',4 - TriCB	25 26	26 + 29	1.47	U	0.294	0.0945 0.114	0.94	1.302
	2,3',5 - TriCB 2,3',6 - TriCB	27	20 + 29	1 /	U	0.234	0.0726	0.94	1.302
lange -	2,4,4' - TriCB	28	20 + 28		C20		0.0720		
	2,4,5 - TriCB	29	26 + 29		C26				
17	2,4,6 - TriCB	30	18 + 30		C18				
L	2,4',5 - TriCB	31		4.52	5 JB	0.905	0.107	0.94	0.836
	2,4',6 - TriCB	32		1.07	JB	0.214	0.115	1.19	1.196
y-	2',3,4 - TriCB	33	21 + 33		C21				
	2',3,5 - TriCB	34			U		0.122		
4.	3,3',4 - TriCB	35			U		0.133		
	3,3',5 - TriCB	36		,9	U		0.120		
	3,4,4' - TriCB	37		219		0.439	0.128	1.07	1.001
ł	3,4,5 - TriCB	38			U U		0.118		
	3,4',5 - TriCB	39	40 + 44 + 74	1.9	C KJB	0.390	0.119	1.01	4 000
T	2,2',3,3' - TeCB	40 41	40 + 41 + 71 40 + 41 + 71	1.1	C KJB C40	0.380	0.117	1.01	1.338
L	2,2',3,4 - TeCB 2,2',3,4' - TeCB	41	40 + 41 + 71	1.02	KJB	0.204	0.108	0.65	1.313
	2,2',3,5 - TeCB	42		,	11	0.204	0.116	0.00	1.010
6-	2,2',3,5' - ToCB	44	44 + 47 + 65	5.75	CJB	1.07	0.107	0.75	1.287
A Break	2,2',3,6 - TeCB	45	45 + 51		сu		0.118		
*	2,2',3,6' - TeCB	46			υ		0.132		
	2,2',4,4' - TeCB	47	44 + 47 + 65	.9	C44				
	2,2',4,5 - TeCB	48		060	KJB	0.136	0.112	1.15	1.275
1.	2,2',4,5' - TeCB	49	49 + 69	3.95	C JB	0.790	0.0998	0.82	1.261
	2,2',4,6 - TeCB	50	50 + 53	0.61	C KJB	0.122	0.116	0.97	1.111
F	2.2'.4,6' - TeCB	51	45 + 51	-	C45				
	2,2',5,5' - TeCB	52	50 50	8.5		1.70	0.117	0.85	1.236
	2,2',5,6' - TeCB	53	50 + 53		C50 U		0.102		
	2,2',6,6' - TeCB	54 55					0.216		
	2,3,3',4 - TeCB 2,3,3',4' - TeCB	55 56		1.765	KIB	0.353	0.219	1.09	0.905
	2,3,3',5 - TeCB	57		1	U	0.000	0.211	1.00	0.000
1-	2,3,3',5' - TeCB	58			Ŭ		0.211		
	2,3,3',6 - TeCB	59	59 + 62 + 75		сu		0.0902		
1	2,3,4,4' - TeCB	60		-2,11	JB	0.422	0.212	0.82	0.911
	2,3,4,5 - TeCB	61	61 + 70 + 74 + 76	10.45	C JB	2.09	0.201	0.84	0.875
I.	2,3,4,6 - TeCB	62	59 + 62 + 75		C59				
L	2,3,4',5 - TeCB	63			υ		0.208		
100									
5 M									
E									
(am)									

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(the Approved by:

25-04-2005 dd-mm-yyyy 0367

AXYS ANALYTICAL SERVICES LTD P.O BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., CANADA VBL 358 TEL (250) 655-5800 FAX (250) 655-5811

QA/QC Chemist

Ų	AXYS METHOD MLA-010 Rev 05				CLIENT ID:		LAB BLANK
-	Form 1A						
	Done 3 of 6				Project No.		N/A
P	Lab Sample ID:	WG15204-101			Sample Data F	ilename:	PB5C_135 S:7
Ū	COMPOUND	IUPAC NO.	CO-FI UTIONS	5 LAB FLAG	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO
1	0046 T-CP	64		2,15 JB 6.75 JB	0.430	0.0040	0.00
Γ-	2,3,4',6 - TeCB 2,3,5,6 - TeCB	65	44 + 47 + 65		0.430	0.0849	0.88
Ļ		66	44 + 47 + 05	175 10	1.35	0.240	0.07
	2,3',4,4' - TeCB 2,3',4,5 - TeCB	67		6.(- JB U	1.35	0.210 0.184	0.67
-	2,3',4,5' - TeCB	68		U		0.184	
1	2,3',4,6 - TeCB	69	49 + 69	C49		0.130	
1	2,3',4',5 - TeCB	70	61 + 70 + 74 + 76	C61			
	2,3',4',6 - TeCB	70	40 + 41 + 71	C40			
Γ	2,3',5,5' - TeCB	72	10 - 11 - 11	U		0.198	
L	2,3',5',6 - TeCB	73		U		0.0935	
	2,4,4',5 - TeCB	74	61 + 70 + 74 + 76	C61		0.0000	
4	2,4,4',6 - TeCB	75	59 + 62 + 75	C59			
1	2',3,4,5 - TeCB	76	61 + 70 + 74 + 76	C61			
<u>ب</u>	3,3',4,4' - TeCB	77		U		0.244	
1	3,3',4,5 - TeCB	78		U		0.223	
Г	3,3',4,5' - TeCB	79		U		0.178	
7	3,3',5,5' - TeCB	80		U		0.204	
T	3,4,4',5 - TeCB	81		U		0.229	
-	2,2',3,3',4 - PeCB	82		U		0.238	
1	2,2',3,3',5 - PeCB	83	83 + 99	7.8 CJB	1.56	0.223	1.64
Ļ	2,2',3,3',6 - PeCB	84		1225 JB	0.245	0.239	1.55
	2,2',3,4,4' - PeCB	85	85 + 116 + 117	1.405C JB	0.281	0.188	1.58
T	2,2',3,4,5 - PeCB	86	86 + 87 + 97 + 108 + 119 +	1255.65C JB	1.13	0.190	1.52
1	2,2',3,4,5' - PeCB	87	86 + 87 + 97 + 108 + 119 +				
	2,2',3,4,6 - PeCB	88	88 + 91	<u>,</u> З7скјв	0.274	0.210	1.29
-	2,2',3,4,6' - PeCB	89		11.25 CJB		0.240	
1	2,2',3,4',5 - PeCB	90	90 + 101 + 113	(.∽∽ C JB	2.25	0.195	1.78
4	2,2',3,4',6 - PeCB	91	88 + 91	C88 2.55 JB			
	2,2',3,5,5' - PeCB	92			0.510	0.228	1.61
T	2,2',3,5,6 - PeCB	93	93 + 95 + 98 + 100 + 102	2 5.95 C JB	1.19	0.208	1.54
1	2,2',3,5,6' - PeCB	94		U		0.222	
	2,2',3,5',6 - PeCB	95	93 + 95 + 98 + 100 + 102				
The state of the s	2 2' 3 6 6' - PeCB	96		U		0.119	

COMPOUND	IUPAC NO.	CO-FI UTIONS	5 X LAB FLAG	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,3,4',6 - TeCB	64		215 JB	0.430	0.0849	0.88	1.350
2.3.5.6 - TeCB	65	44 + 47 + 65	C44				
2,3',4,4' - TeCB	66		6.75 JB	1.35	0.210	0.67	0.885
2,3',4,5 - TeCB	67		U		0.184		0,000
2,3',4,5' - TeCB	68		U		0.196		
2,3',4,6 - TeCB	69	49 + 69	C49				
2,3',4',5 - TeCB	70	61 + 70 + 74 + 76	C61				
2,3',4',6 - TeCB	71	40 + 41 + 71	C40				
2,3',5,5' - TeCB	72		U		0.198		
2,3',5',6 - TeCB	73		U		0.0935		
2,4,4',5 - TeCB	74	61 + 70 + 74 + 76	C61				
2,4,4',6 - TeCB	75	59 + 62 + 75	C59				
2',3,4,5 - TeCB	76	61 + 70 + 74 + 76	C61				
3,3',4,4' - TeCB	77		U		0.244		
3,3',4,5 - TeCB	78		U		0.223		
3,3',4,5' - TeCB	79		U		0.178		
3,3',5,5' - TeCB	80		U		0.204		
3,4,4',5 - TeCB	81		U		0.229		
2,2',3,3',4 - PeCB	82		U		0.238		
2,2',3,3',5 - PeCB	83	83 + 99	7.8 с јв	1.56	0.223	1.64	0.886
2,2',3,3',6 - PeCB	84		1225 JB	0.245	0.239	1.55	1.163
2,2',3,4,4' - PeCB	85	85 + 116 + 117	1.405C JB	0.281	0.188	1.58	0.919
2,2',3,4,5 - PeCB	86	86 + 87 + 97 + 108 + 119 +		1.13	0.190	1.52	0.901
2,2',3,4,5' - PeCB	87	86 + 87 + 97 + 108 + 119 +					
2,2',3,4,6 - PeCB	88	88 + 91	<u> </u> .З7скјв	0.274	0.210	1.29	1.155
2,2',3,4,6' - PeCB	89		J-U		0.240		
2,2',3,4',5 - PeCB	90	90 + 101 + 113	11.25 CJB	2.25	0.195	1.78	0.870
2,2',3,4',6 - PeCB	91	88 + 91	C88				
2,2',3,5,5' - PeCB	92		2.55 JB	0.510	0.228	1.61	0.853
2,2',3,5,6 - PeCB	93	93 + 95 + 98 + 100 + 102	2 5.95 C JB	1.19	0.208	1.54	1.120
2,2',3,5,6' - PeCB	94		U		0.222		
2,2',3,5',6 - PeCB	95	93 + 95 + 98 + 100 + 102					
2,2',3,6,6' - PeCB	96		U		0.119		
2,2',3',4,5 - PeCB	97	86 + 87 + 97 + 108 + 119 +					
2,2',3',4,6 - PeCB	98	93 + 95 + 98 + 100 + 102					
2,2',4,4',5 - PeCB	99	83 + 99	C83				
2,2',4,4',6 - PeCB	100	93 + 95 + 98 + 100 + 102					
2,2',4,5,5' - PeCB	101	90 : 101 : 113	C90				
2,2',4,5,6' - PeCB	102	93 + 95 + 98 + 100 + 102					
2,2',4,5',6 - PeCB	103		U		0.197		
2,2',4,6,6' - PeCB	104		- 75 -		0.122		
2,3,3',4,4' - PeCB	105		S (> JB	1.15	0.306	1.//	1.000
2,3,3',4,5 - PeCB	106		U		0.276		

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MAXYS ANALYTICAL SERVICES LTD P.O. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., (ANADA V8L 3S8 TEL (250) 655-5800 FAX (250) 655-5811

AXYS METHOD MLA-010 Rev 05	CLIENT ID:	LAB BLANK
Form 1A Page 4 of 6 Lab Sample ID: WG15204-101	Project No.: Sample Data Filename:	N/A PB5C_135 S:7

COMPOUND	IUPAC NO.	CO ELUTIONS	LAB FLAG ¹	CONC		ION ABUND. RATIO	RRT
2,3,3',4',5 - PeCB	107	107 + 124	CU		0.290		
2,3,3',4,5' - PeCB	108	86 + 87 + 97 + 108 + 119 +	125 C86				
2,3,3',4,6 - PeCB	109		U		0.277		
2,3,3',4',6 - PeCB	110	110 + 115	7.45 C JB	1.49	0.161	1.58	0.925
2,3,3',5,5' - PeCB	111		Ú		0.170		
2,3,3',5,6 - PeCB	112		U		0.164		
2,3,3',5',6 - PeCB	113	90 + 101 + 113	C90				
2,3,4,4',5 - PeCB	114		U		0.287		
2,3,4,4',6 - PeCB	115	110 + 115	C110				
2,3,4,5,6 - PeCB	116	85 + 116 + 117	C85				
2,3,4',5,6 - PeCB	117	85 + 116 + 117	, / C ⁸⁵				
2,3',4,4',5 - PeCB	118		16.95JB	3.39	0.286	1.56	1.000
2,3',4,4',6 - PeCB	119	86 + 87 + 97 + 108 + 119 +					
2,3',4,5,5' - PeCB	120		U		0.165		
2,3',4,5',6 - PeCB	121		U		0.166		
2',3,3',4,5 - PeCB	122		U		0.303		
2',3,4,4',5 - PeCB	123	407 + 404	U		0.305		
2',3,4,5,5' - PeCB	124	107 + 124	C107				
2',3,4,5,6' - PeCB	125 126	86 + 87 + 97 + 108 + 119 +	125 C86 X				
3,3',4,4',5 - PeCB 3,3',4,5,5' - PeCB	126		U		0.304		
	127	128 + 166	2,69 скјв	0.538		4 70	0.050
2,2',3,3',4,4' - HxCB 2,2',3,3',4,5 - HxCB	120	129 + 138 + 160 + 163		3.67	0.296 0.297	1.78 1.20	0.958
2,2',3,3',4,5' - HxCB	130	129 + 150 + 100 + 105	U	3.07	0.391	1.20	0.928
2,2',3,3',4,6 - HxCB	131		, U		0.344		
2,2',3,3',4,6' - HxCB	132		234 K.IB	0.468	0.355	0.97	1.174
2,2',3,3',5,5' - HxCB	133		U	01700	0.340	0.07	1.174
2,2',3,3',5,6 - HxCB	134	134 + 143	CU		0.347		
2,2',3,3',5,6' - HxCB	135	135 + 151 + 154	4.745 CJB	0.949	0.157	1.18	1,104
2,2',3,3',6,6' - HxCB	136		0.9 JB	0.180	0.125	1.18	1.024
2,2',3,4,4',5 - HxCB	137		U		0.366		
2,2',3,4,4',5' - HxCB	138	129 + 138 + 160 + 163	C129				
2,2',3,4,4',6 - HxCB	139	139 + 140	сu		0.317		
2,2',3,4,4',6' - HxCB	140	139 + 140	_C139				
2,2',3,4,5,5' - HxCB	141		2,455 кјв	0.491	0.342	0.95	0.903
2,2',3,4,5,6 - HxCB	142		U		0.346		
2,2',3,4,5,6' - HxCB	143	134 + 143	C134				
2,2',3,4,5',6 - HxCB	144		U		0.163		
2,2',3,4,6,6' - HxCB	145		U		0.126		
2,2',3,4',5,5' - HxCB	146		3.07 JB	0.618	0.306	1.11	0.884
2.2'.3.4'.5.6 - HxCB	147	147 + 149	6.6 CJB	1.32	0.312	1.13	1.133
2,2',3,4',5,6' - HxCB	148	447.440	U		0.166		
2,2',3,4',5',6 - HxCB	149	147 + 149	C147				

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Approved by:_

25-04-2005 dd-mm-yyyy

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C. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., CANADA VOL 358 TEL (250) 655-5800 FAX (250) 655-5801 FAX (250) FAX (250) 655-5801 FAX (250) FAX (2

QA/QC Chemist

	LAB CONC FLAG ¹ FOUN U C135 U C JB 3.30 C135 U C JB 0.883 C156 KJB 0.389 U C129 U U C129 U U C129 U U C128 KJB 0.282 C153 X KJB 0.282 C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.186 U C171 KJB 0.186 U C171 KJB 0.186 U C171 KJB 0.186 U C171 KJB 0.377 JB 0.202 JB 0.186 U U C183 U U C JB 0.855 U U	a Filename: DFTFCTION LIMIT 0.118 0.259 0.114 0.328 0.254 0.258 0.258 0.258 0.258 0.258	N/A PB5C_135 S:7 ION ABUND. RATIO 1.16 1.25 1.54	1 C
FLAG ¹ $FLAG^1$ 135 + 151 + 154 135 + 151 + 154 153 + 168 155 + 157 156 + 157 156 + 157 156 + 157 156 + 157 194 + 163 129 + 138 + 160 + 163 129 + 138 + 160 + 163 129 + 138 + 160 + 163 129 + 138 + 160 + 163 129 + 138 + 160 + 163 129 + 138 + 160 + 163 129 + 138 + 160 + 163 129 + 138 + 160 + 163 129 + 138 + 160 + 163 129 + 138 + 160 + 163 129 + 138 + 160 + 163 129 + 138 + 160 + 163 129 + 138 + 160 + 163 129 + 138 + 160 + 163 129 + 138 + 160 + 163 129 + 138 + 160 + 163 129 + 138 + 165 16 + 193 16 + 194 16 + 194 16 + 194 16 + 194 16 + 194 16 + 194 1	FLAG ¹ FOUN U C135 U C JB 3.30 C135 U C JB 0.883 C156 KJB 0.389 U C129 U C129 U C129 U C128 KJB 0.282 C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.186 U C171 KJB 0.377 JB 0.202 JB 0.186 U C JB 1.68 U C JB 0.478 U C JB 0.855 U	LIMIT 0.118 0.259 0.114 0.328 0.254 0.258 0.258 0.258 0.258 0.258	RATIO 1.16 1.25	C 1
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	C135 U C JB 3.30 C135 U C JB 0.883 C156 KJB 0.389 U C129 U C129 U C129 U C128 KJB 0.282 C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.174 U C171 KJB 0.377 JB 0.202 JB 0.186 U U C JB 0.476 U U C JB 0.855 U	0.118 0.259 0.114 0.328 0.254 0.258 0.258 0.258 0.258	1.25	1
$\begin{array}{c} 153+168 & [6]{}^{\circ} C \ JB \\ 135+151+154 & C135 \\ 135+151+154 & C135 \\ 156+157 & 4]{}^{\circ} + [5]{}^{\circ} C \ JB \\ 156+157 & [.945]{}^{\circ} K \ JB \\ 129+138+160+163 & C129 \\ U \\ 129+138+160+163 & C129 \\ U \\ 128+166 & [.4+1] & K \ JB \\ 153+168 & C153 \\ X \\ 767 \ G \ K \ JB \\ 171+173 & 0]{}^{\circ} . 377 \ C \ K \ JB \\ 171+173 & 0]{}^{\circ} . 377 \ C \ K \ JB \\ U \\ 171+173 & 0]{}^{\circ} . 377 \ C \ K \ JB \\ U \\ U \\ 171+173 & 0]{}^{\circ} . 377 \ C \ K \ JB \\ U \\ U \\ 171+173 & 0]{}^{\circ} . 377 \ C \ K \ JB \\ U \\ U \\ 183+185 & 2]{}^{\circ} . 97 \ C \ JB \\ U \\ U \\ 183+185 & C183 \end{array}$	U C JB C br>C 129 U U C 129 U U C 129 U U C 128 KJB C 128 C JB C 174 U C 171 KJB C 186 U C JB C JB	0.259 0.114 0.328 0.254 0.258 0.258 0.258 0.258	1.25	1
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	C JB 3.30 C135 U C JB 0.883 C156 KJB 0.389 U C129 U C129 U C129 U C129 U C128 KJB 0.282 C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.186 U C171 KJB 0.377 JB 0.202 JB 0.188 U C JB 1.68 U U C JB 0.478 U U C JB 0.855 U	0.259 0.114 0.328 0.254 0.258 0.258 0.258 0.258	1.25	1
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	C 135 U C JB 0.883 C156 KJB 0.389 U C129 U C129 U C129 U C128 KJB 0.282 C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.174 U C171 KJB 0.186 U U C171 KJB 0.377 JB 0.202 JB 0.188 U U C JB 0.478 U U C 183 U U C 183 U C 183 C 185 C 183 C 185 C 183 C 185 C 183 C 185 C	0.114 0.328 0.254 0.258 0.258 0.258 0.258	1.25	1
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	U C JB 0.883 C156 KJB 0.389 U C129 U C129 U C128 KJB 0.282 C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.174 U C171 KJB 0.174 U C171 KJB 0.174 U C171 KJB 0.377 JB 0.202 JB 0.186 U U C JB 1.68 U U C JB 0.476 U U C 183 U U C 185 C KJB 0.385 C KJB 0.202 C 153 C KJB 0.202 C 153 C KJB 0.174 U C 171 C 171 C 171 C 171 C 175 C KJB 0.377 C K K K K K K K K K K K K K K K K K K K	0.328 0.254 0.258 0.258 0.258 0.258		
$\begin{array}{c} 156 + 157 \\ 156 + 157 \\ 156 + 157 \\ 1.945 \\ 1.945 \\ KJB \\ U \\ U \\ 129 + 138 + 160 + 163 \\ U \\ U \\ 129 + 138 + 160 + 163 \\ U \\ U \\ 128 + 166 \\ 1.41 \\ KJB \\ 153 + 168 \\ C129 \\ U \\ U \\ 128 + 166 \\ 1.41 \\ KJB \\ C128 \\ KJB \\ 153 + 168 \\ C153 \\ X \\ 7675 \\ KJB \\ 171 + 173 \\ 0.93 \\ C171 \\ KJB \\ U \\ U \\ 171 + 173 \\ 0.93 \\ KJB \\ U \\ U \\ 171 + 173 \\ 0.93 \\ KJB \\ U \\ U \\ 183 + 185 \\ Z, 39 \\ CJB \\ U \\ U \\ 183 + 185 \\ C183 \\ \end{array}$	C JB 0.883 C156 KJB 0.389 U C129 U C129 U C129 U C128 KJB 0.282 C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.174 U C171 KJB 0.186 U U C171 KJB 0.377 JB 0.202 JB 0.188 U U C JB 1.68 U U C JB 0.478 U U C JB 0.478 U U C JB 0.478 U U C JB 0.855 U	0.328 0.254 0.258 0.258 0.258 0.258		
$\begin{array}{c} 156 + 157 \\ \begin{array}{c} .945 \\ .845 \\ KJB \\ U \\ U \\ 129 + 138 + 160 + 163 \\ U \\ U \\ 129 + 138 + 160 + 163 \\ U \\ U \\ 128 + 166 \\ \begin{array}{c} .41 \\ .41 \\ KJB \\ 153 + 168 \\ C153 \\ X \\ 767 \\ KJB \\ 171 + 173 \\ 0.87 \\ CKJB \\ U \\ 171 + 173 \\ 0.93 \\ KJB \\ U \\ U \\ 171 + 173 \\ 0.93 \\ KJB \\ U \\ U \\ 171 + 173 \\ 0.93 \\ KJB \\ U \\ U \\ 183 + 185 \\ 2.39 \\ CJB \\ U \\ U \\ 183 + 185 \\ C183 \\ \end{array}$	C156 KJB 0.389 U C129 U C129 U C128 KJB 0.282 C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.174 U C171 KJB 0.176 U C171 KJB 0.377 JB 0.202 JB 0.186 U U C JB 1.68 U U C 183 U U C 183 U C 183 C 185 C 183 C 185 C 183 C 185 C 1	0.254 0.258 0.258 0.258 0.258		
$\begin{bmatrix}$	KJB 0.389 U C129 U U C129 U U C129 U C128 KJB 0.282 C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.186 U U C JB 0.188 U U C JB 0.478 U C183 U U U 0.855 U U	0.258 0.258 0.258 0.263	1.54	ſ
$\begin{array}{c} & \\ & \\ 129 + 138 + 160 + 163 \\ & \\ & \\ 129 + 138 + 160 + 163 \\ & \\ 129 + 138 + 160 + 163 \\ & \\ & \\ 128 + 166 \\ & \\ 128 + 166 \\ & \\ & \\ 128 + 168 \\ & \\ & \\ & \\ 153 + 168 \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ $	U C129 U C129 U C129 U C128 KJB 0.282 C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.174 U C171 KJB 0.186 U U C171 KJB 0.202 JB 0.188 C JB 1.68 U U C JB 0.478 U U C 183 U U C 183 U C 183 C 185 C 183 C 185 C 183 C 185 C 183 C 185 C 183 C 185 C 183 C 185 C 185	0.258 0.258 0.258 0.263	1.04	
$129 + 138 + 160 + 163 C129 \\ U \\ U \\ 129 + 138 + 160 + 163 C129 \\ U \\ U \\ 128 + 166 \\ (.4 KJB \\ C128 \\ KJB \\ 153 + 168 C153 \\ X \\ 7675 \\ KJB \\ 171 + 173 0.577 \\ CKJB \\ U \\ 171 + 173 0.577 \\ CKJB \\ U \\ U \\ 171 + 173 0.973 \\ KJB \\ U \\ U \\ 171 + 173 0.973 \\ KJB \\ U \\ U \\ U \\ 183 + 185 2.39 \\ CJB \\ U \\ U \\ U \\ 183 + 185 C183 \\ U \\ U \\ U \\ U \\ U \\ U \\ I83 + 185 C183 \\ U \\ U \\ U \\ I83 + 185 C183 \\ U \\ U \\ U \\ U \\ U \\ U \\ U \\ U \\ U \\ $	C129 U U C129 U C128 KJB 0.282 C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.186 U C171 KJB 0.377 JB 0.202 JB 0.188 C JB 1.68 U U C JB 0.478 U C 183 U C 183 U U C 183 U U C 183 U C 183 C 183 C 185 C 18	0.258 0.258 0.263		C
$\begin{array}{c} & & \\ & & \\ & & \\ 129 + 138 + 160 + 163 & \\ & & \\ 128 + 166 & \\ & & \\ & & \\ 128 + 166 & \\ & & \\ & & \\ 128 + 166 & \\ & & \\ & & \\ & & \\ 153 + 168 & \\ & & \\ & & \\ 153 + 168 & \\ & & \\ & & \\ & & \\ 153 + 168 & \\ & &$	U U U C129 U C128 KJB 0.282 C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.186 U U C171 KJB 0.186 U U C171 KJB 0.202 JB 0.188 C JB 1.68 U U C JB 0.478 U U C 183 U U C183 U U C183 U U C183 U U C183 U U C183 U U C183 U U C183 U U C183 U U C183 U C183 U C183 U C C C C C C C C C C C C C C C C C C	0.258 0.263		
$\begin{array}{c} U\\ 129+138+160+163 \\ U\\ 128+166 \\ (.41) \\ KJB\\ 153+168 \\ 153+168 \\ C153 \\ X\\ 767 \\ KJB\\ 171+173 \\ 0.877 \\ CKJB\\ U\\ 171+173 \\ 0.93 \\ KJB\\ U\\ U\\ 171+173 \\ 0.93 \\ KJB\\ U\\ U\\ 171+173 \\ 0.93 \\ KJB\\ U\\ U\\ 183+185 \\ 2.39 \\ CJB\\ U\\ U\\ 183+185 \\ C183 \\ U \\ U\\ CJB\\ U\\ CJB\\ U\\ U\\ CJB\\ U\\ CJB\\ U\\ CJB\\ U\\ U\\ CJB\\ U\\ CJB\\ U\\ U\\ CJB\\ U\\ U\\ CJB\\ U\\ CJB\\ U\\ U\\ CJB\\ U\\ CJB\\ U\\ U\\ CJB\\ U\\ U\\ CJB\\ U\\ CJB\\ U\\ U\\ CJB\\ U\\ U\\ CJB\\ U\\ CJB\\ U\\ U\\ CJB\\ U\\ CJB\\ U\\ U\\ CJB\\ U\\ CJB\\ U\\ CJB\\ U\\ U\\ CJB\\ U\\ CJB\\ U\\ CJB\\ U\\ U\\ CJB\\ U\\ C$	U C129 U C128 KJB 0.282 C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.186 U C171 KJB 0.377 JB 0.202 JB 0.188 C JB 1.68 U U C JB 0.478 U C 183 U C 183 C 185 C 183 C 185 C 183 C 185 C	0.258 0.263		
129 + 138 + 160 + 163 C129 U U U U U U U U U U U U U U U U U U U	C129 U C128 KJB 0.282 C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.186 U C171 KJB 0.377 JB 0.202 JB 0.188 C JB 1.68 U U C JB 0.478 U C 183 U C 183 C 183	0.263		
$\begin{array}{c} & & \\ & & \\ 128 + 166 \\ & & \\ 153 + 168 \\ 153 + 168 \\ 153 + 168 \\ 153 + 168 \\ 153 + 168 \\ 153 + 171 + 173 \\ 181 + 181 + 181 \\ 181 + 181 \\ 181 +$	U U C128 KJB 0.282 C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.186 U C171 KJB 0.377 JB 0.202 JB 0.188 C JB 1.68 U U C JB 0.478 U C 183 U C 183 C 1			
$\begin{array}{c} & & & \\ 128 + 166 \\ 1.41 \\ KJB \\ 153 + 168 \\ 153 + 168 \\ 153 + 168 \\ 153 + 168 \\ 153 + 171 + 173 \\ 171 + 17$	U C128 KJB 0.282 C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.186 U U KJB 0.377 JB 0.202 JB 0.188 C JB 1.68 U U C JB 0.478 U C 183 U C 183 C 183			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	C128 KJB 0.282 C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.186 U U KJB 0.377 JB 0.202 JB 0.188 C JB 1.68 U U C JB 0.478 U C183 U C183 U U C183 U U C183 U U C183 U U C185 U C185 U C185 U C185 U C185 C JB 0.478 U C JB 0.855 U	0.278		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.186 U U KJB 0.377 JB 0.202 JB 0.188 C JB 1.68 U U C JB 0.478 U C JB 0.478 U U C183 U U C183 U U C183 U			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	C153 X KJB 0.735 C KJB 0.174 U C171 KJB 0.186 U U KJB 0.377 JB 0.202 JB 0.188 C JB 1.68 U U C JB 0.478 U C JB 0.478 U U C183 U U C183 U U C183 U	0.247	1.73	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	KJB 0.735 C KJB 0.174 U C171 KJB 0.186 U U KJB 0.377 JB 0.202 JB 0.188 C JB 1.68 U U C JB 0.478 U C 183 U U C183 U U C183 U U C183 U U C183 U			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	C KJB 0.174 U C171 KJB 0.186 U V KJB 0.377 JB 0.202 JB 0.188 C JB 1.68 U U C JB 0.478 U C 183 U C 183 U U C 183 U U C 183 U U C 183 U U C 183 U U C 183 U U C 183 U U C 185 U C 195 C			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	C KJB 0.174 U C171 KJB 0.186 U V KJB 0.377 JB 0.202 JB 0.188 C JB 1.68 U U C JB 0.478 U C 183 U C 183 U U C 183 U U C 183 U U C 183 U U C 183 U U C 183 U U C 183 U U C 185 U C 195 C	0.103	0.81	C
$\begin{array}{c} 171 + 173 \\ 0.93 \\ KJB \\ U \\ 1.085 \\ KJB \\ 1.01 \\ JB \\ 0.94 \\ JB \\ 180 + 193 \\ 8.4 \\ CJB \\ U \\ 183 + 185 \\ 2.39 \\ CJB \\ U \\ 183 + 185 \\ C183 \\ \end{array}$	C171 KJB 0.186 U V KJB 0.377 JB 0.202 JB 0.188 C JB 1.68 U U C JB 0.478 U C183 U C183 U C183 U U C183 U U C183 U U C183 U U C183 U U C183 C183	0.100	0.72	1
0.93 KJB U 1.085 KJB 1.01 JB 0.94 JB 180 + 193 8.4 C JB U 183 + 185 2.39 C JB U 183 + 185 C183	KJB 0.186 U VKJB 0.377 JB 0.202 JB 0.188 CJB 1.68 U U CJB 0.478 U C183 U C183 U U C183 U C183 U U C183 U U C183	0.102		
$\begin{array}{c} U \\ 1.885 \\ KJB \\ 1.91 \\ JB \\ 0.94 \\ JB \\ 0.94 \\ JB \\ 0.94 \\ JB \\ 0.94 \\ JB \\ 0.94 \\ JB \\ U \\ 0 \\ U \\ 183 + 185 \\ U \\ 183 + 185 \\ U \\ 0 \\ 183 + 185 \\ U \\ 0 \\ 183 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ $	U U V V V U U U C JB U C JB U C JB U C 183 U C 183 U U C 183 U U C 183 U U C 183 U U U C 183 U U U C 183 U U U C 183 U U C 183 U U C 183 U U C 183 U C 183 C 1			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	U KJB 0.377 JB 0.202 JB 0.188 C JB 1.68 U U C JB 0.478 U C183 U C183 U C183 U C183 U C183 U U C183 U U C183 U U C183 U U C183 U	0.0906	2.20	1
.885 KJB .01 JB 0.94 JB 180 + 193 8.4 C JB U 183 + 185 2.39 C JB U 183 + 185 C183	 KJB 0.377 JB 0.202 JB 0.188 C JB 1.68 U U C JB 0.478 U C183 U JB 0.853 U U 	0.0894		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	JB 0.202 JB 0.188 C JB 1.68 U U C JB 0.478 U C183 U C183 U D D D 0.855 U U	0.0691	0.97	1
6,94 JB 180 + 193 8,4 C JB U 183 + 185 2,39 C JB U 183 + 185 C183	JB 0.188 C JB 1.68 U U C JB 0.478 U C183 U JB 0.855 U U U U U	0.0985 0.0936	0.87 0.91	1
180 + 193 8.4 C JB U 183 + 185 2,39 C JB U 183 + 185 C183	C JB 1.68 U U C JB 0.478 U C183 U JB 0.855 U U U	0.0936	1.16	
U 183 + 185 2,39 C JB U 183 + 185 C183	U U C JB 0.478 U C183 U JB 0.855 U U U	0.0673	0.97	(
183 + 185 2,39 C JB U 183 + 185 C183	U C JB 0.478 U C183 U JB 0.855 U U	0.0916	0.01	,
183 + 185 2,34 C JB U 183 + 185 C183	C JB 0.478 U C183 U JB 0.855 U U U	0.0882		
U 183 + 185 C183	U C183 U JB 0.855 U U	0.0890	0.93	
183 + 185 C183	С183 U JB 0.855 U U	0.0645		
	U 5 JB 0.853 U _ U			
4.295 јв U	⊂j⊟ 0.853 U _ U	0.0695		
U u	U U	0.0811	0.98	
U	U	0.0651		
	3 10 0.010	0.118		
1.065 JB	⁷ JB 0.213	0.0815	1.08	(
U				
U	U	0.0822		
Ŭ	U		0.0780 0.0822	

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MO AXYS ANALYTICAL SERVICES LTD P.O. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., CANADA V8L 358 TEL (250) 655-5800 FAX (250) 655-5811

AXYS METHOD MLA-010 Rev 05 Form 1A				CLIENT ID:		LAB BLANK	
page 6 of 6				Project No.:		N/A	
Lab Sample ID:	WG15204-101			Sample Data F	ilename:	PB5C_135 S:7	
COMPOUND	IUPAC NO.	CO-ELUTIONS		CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRI
2,3,3',4',5,5',6 - HpCB	193	180 + 193	C180				
2,2',3,3',4,4',5,5' - OcCB	194		1.31 кјв	0.274	0.0115	0.68	0.992
2,2',3,3',4,4',5,6 - OcCB	195		0.36 KJB	0.072	0.0125	2.19	0.946
2,2',3,3',4,4',5,6' - OcCB	196		0.705 JB	0.141	0.0116	0.98	0.916
2,2',3,3',4,4',6,6' - OcCB	197	197 + 200	0.415CKJB	0.083	0.0083	0.52	1.046
2,2',3,3',4,5,5',6 - OcCB	198	198 + 199	1.525 CJB	0.305	0.0116	1.01	1.11:
2,2',3,3',4,5,5',6' - OcCB	199	198 + 199	C198				
2,2',3,3',4,5,6,6' - OcCB	200	197 + 200	C197				
2,2',3,3',4,5',6,6' - OcCB	201		0.28 KJB	0.056	0.0084	0.73	1.023
2,2',3,3',5,5',6,6' - OcCB	202		0.445 KJB	0.089	0.0500	1.27	1.000
2,2',3,4,4',5,5',6 - OcCB	203		0.925 KJB	0.185	0.0105	0.60	0.920
2,2',3,4,4',5,6,6' - OcCB	204		0.075 KJB	0.015	0.0085	0.73	1.039
2,3,3',4,4',5,5',6 - OcCB	205		0.345 JB	0.009	0.0500	0.96	1.000
2,2',3,3',4,4',5,5',6 - NoCB	206		.⊇ KJB	0.240	0.155	0.45	1.000
2,2',3,3',4,4',5,6,6' - NoCB	207		υ		0.116		
2,2',3,3',4,5,5',6,6' - NoCB	208		U		0.124		
2,2',3,3',4,4',5,5',6,6' - DeCB	209		0.63/5 KJB	0.127	0.0500	0.43	1.001

(1) C = co-eluting congener; U = not detected; K = peak detected, but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; E = exceeds calibrated linear range, see dilution data; D = dilution data; Z = compound not requested; J = concentration less than LMCL; B = analyte found in sample and the associated blank; X = results reported separately

These pages are part of a larger report that may contain information necessary for full data evaluation.

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QA/QC Chemist Approved by:

25-04-2005 dd-mm-yyyy

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AXYS ANALYTICAL SERVICES LTD P.O. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., CANADA V8L 3S8 TEL (250) 655-5800 FAX (250) 655-5811

AXYS METHOD MLA-010 Rev 05 PCB-TOTAL_209 Page 1 of 1

CLIENT ID: LAB BLANK

Form 1A HOMOLOGUE TOTAL POLYCHLORINATED BIPHENYLS (PCB) ANALYSIS REPORT

			Samp	ole Collection:		N/A	
Lab Name: AXY3 ANALYTICAL SI	ERVICES		Proje	ct No.:		N/A	
Contract No.:	4033		Lab S	Sample ID:		WG15204-101	
Matrix:	TISSUE		Samp	ole Size:		10.0	g
Sample Receipt Date:	N/A		Initial	Calibration Date	:	01-Mar-2005	
Extraction Date:	02-Mar-2005		Instru	iment ID:		HR GC/MS	
Analysis Date:	14-Mar-2005	Time: 13:51:07	GC C	olumn ID:		SPB-OCTYL	
Extract Volume (µL):	50		Blank	Data Filename:		PB5C_135 S:7	
Injection Volume (µL):	1.0		Cal. V	/er. Data Filenam	ie:	PB5C_135 S:1	
Dilution Factor:	N/A		Samp	le Datafile(s):		PB5C_135 S:7 DT53_096 S: 5	
Concentration Units :	ng/kg					D135_030 3, 5	
		LAB FLAG ¹		CONC. FOUND	DETECTION LIMIT		
Total Monochloro Biphenyls		0	79	0.158	0.131		
Total Dichloro Biphenyls		-	7	1.40	0.315		
Total Trichloro Biphenyls			3.75	4.75	0.133		
Total Tetrachloro Biphenyls		3	9.2	7.84	0.244		
Total Pentachloro Biphenyls		6	6	13.2	0.358		
Total Hexachloro Biphenyls		5	4.5	10.9	0.391		
Total Heptachloro Biphenyls			8.	3.62	0.118		
Total Octachloro Biphenyls		2	,575	0.515	0.0500		
Total Nonachloro Biphenyls		U			0.155		
Decachloro Biphenyl		U			0.0500		
TOTAL PCBs		2	2	42.4			

(1) U = Not detected

(2) All header information pertains to the initial instrumental analysis of the cample extract.

Additional sample datafiles listed refer to secondary analysis of the sample extract.

These pages are part of a larger report that may contain information necessary for full data evaluation.

15204PCBTOTAL_1.xls, S3

Approved by:

QA/QC Chemist

26-04-2005 dd-mm-yyyy

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AXYS ANALYTICAL SERVICES LTD P.O. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., CANADA V8L 358 TEL (250) 655-5800 FAX (250) 655-5811

:#: 135(TA2	17251-50Mda:# 5	
LDC	SDG	

VALIDATION FINDINGS WORKSHEET Initial Calibration Calculation

Zot Z ¢ Page: 2nd Reviewer: Reviewer:

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = (A_x)(C_s)/(A_s)(C_x) average RRF = sum of the RRFs/number of standards %RSD = 100 * (S/X)

 $\begin{array}{l} A_{\mathbf{x}} = Area \ of \ compound, \qquad A_{\mathbf{x}} \\ C_{\mathbf{x}} = Concentration \ of \ compound, \qquad C_{\mathbf{x}} \\ S = Standard \ deviation \ of \ the \ RFs, \qquad X^{-} \end{array}$

 $A_{\rm tr} = {\rm Area~of~associated~irternal~standard} \\ mpound, \qquad C_{\rm tr} = {\rm Concentration~of~internal~standard} \\ f the RRFs, \qquad X = {\rm Mean~of~the~RRFs} \\ \end{cases}$

					Reported	Recalculated	Reported	Recalculated	Reported	Recalculated
$\frac{1CAL}{2} = \frac{3}{\sqrt{6}} \frac{1}{6} \frac{100}{6} $	*	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Average RRF (initial)	RRF (CS 3 std)	RRF (CS3std)	%RSD	%RSD
$\frac{1}{1000} = \frac{1}{1000} \frac{1}{1000} \frac{1}{10000} \frac{1}{10000000000000000000000000000000000$		1044	21.100	PCB-77 (¹³ C-PCB-77)	0.97	56.0	00.1	20.1	5.93	5.65
$\frac{1}{1000} \xrightarrow{1000} 1000 100$			solile	PCB-105 (¹³ C-PCB-105)	092	26.0	0.96	0.96	4.95	18.4
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			1		76.0	76.0	0.99	999	4.98	5.0
$\frac{(cAL}{A/A/6} \frac{1}{PCBAR} \frac{(acpearty)}{(acpearty)} \frac{1}{b(acpearty)} \frac{1}{b(acpe$				PCB-189 (13C-PCB-189)	68.0	68.0			4.59	4.4.4
			1			/			1	-
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$		ICAL	14/6		0.99	9.99	00.1	00.1	2.04	96:1
PCB-156 ("C-PCB-156) ("					1.1.1		60.1	1.09	3.12	5.07
				PCB-156 (¹³ C-PCB-156)				/		
				PCB-180 (¹³ C-PCB-180)						
	Ш									
PCB-105 (¹ C-PCB-105) PCB-155 (¹ C-PCB-156) PCB-156 (¹ C-PCB-156) PCB-180 (¹ C-PCB-150) PCB-180 (¹ C-PCB-160)	6			PCB-77 (¹³ C-PDB-77)						
PCB156 (¹³ C-PCB156) PCB166 PCB130 (¹³ C-PCB180) PCB130 (¹³ C-PCB180)				PCB-105 (¹³ C-PCB-105)						
PCB-180 (¹³ C-PCB-180)				PCB-156 (¹³ C-PCB-156)						
				PCB-180 (13C-PCB-180)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

rhod: Hrgc/H	IRMS Polych	METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)		-	-		
percent differe	ed below usi	The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:	ponse Factors (F	RFs) and the co	ontinuing calibrati	on RRFs were red	calculated fo
% Difference == 100 * (ave. RRF - RRF)/ave. RRF RRF = (A_)(C_s)/(A_s)(C_)	we. RRF - RRF)/	ave. RRF and calibration average RRF are initial calibration average RRF RRF = continuing calibration RRF A_x = Area of compound, A_x = A_x = Concentration of compound, C_x	on average RRF ion RRF A _a = Ar mpound, C _k = C	ମ୍ <mark>ଟ</mark> A _b = Area of associated internal standard C _k = Concentration of interna standard	nal standard a standard		
				Reported	Recalculated	Reported	Recalculated
# Standard ID	Calibratio n Date	Compound (Reference Internal Standard)	Average RRF (initial)	TRAFANT (CC)	-RRF-∞+ (CC)	0%	0%
175309751		PCB-H26("C-PCB-774 (-26)	0.99	49.5	49.5		
	50/6/4	PCB-1	1.1.1	4 . 7	to an to		
		PCB-156 (¹³ C-PCB-156)		/			
	1	PCB-180 (¹³ C-PCB-180)				0	
						74	
2 1355-15351	210	PCB-77 (¹³ C-PCB-77)	0.97	sl./	51.5	4	
Sanda Share the successor exercises and a success of the success o	50/52/6	PCB-105 (¹³ C-PCB-105)	0.92	49.5	49.5	22	
		PCB-156 (¹³ C-PCB-156)	0.97	103	501	20	
		PCB-18q (*3C-PCB-18q)	0.89	SI S	S.A	10	
						/2/	
3 [7850-1375:]	2//	PCB-77 (13C-PCB-77)	76.0	s2.3	7'05		
	50/51/	PCB-105 (¹³ C-PCB-105)	0.92	51.4	51.00		And and a first second s
		PCB-156 (¹³ C-PCB-156)	0.97	201	0	4	di wa kata ma dan mana mana mana mana mana mana m
NYOU WANTER AND A STATEMENT OF THE OWNER		PCB-180 (¹³ C-PCB-180)	0.89	52.8	5	<i>.p</i> /	
	and the second se					V	

C:\WPDOCS\WRK\PCB\CONCLC.166

SDG #: DPWFIS LDC #: 135174

Routine Calibration Results Verification VALIDATION FINDINGS WORKSHEET

Page: / of d C Reviewer: 2nd Reviewer:

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Diffsrence = 100 * (ave. RRF - RRF)/ave. RRF RRF = (A_,)(C_s)/(A_1,)(C_,)

Where: ave. RRF = initial calibration average RRF RRF = continuing calibration RRF $A_x = Area of compound, C_x = Concentration of compound,$

 $A_{\rm is}$ = Area of associated internal standard $C_{\rm s}$ = Concentration of internal standard

					Reported	Recalculated	Reported	Recalculated
		Calibratio		Average RRF	-RRFANT	TRF AWT		
*	Standard ID	n Date	Compound (Reference Internal Standard)	(initial)	(cc)	(cc)	%D	Qd%
	15960-551A	4	PCB-X ("C-PCB-X7)-1-26)	0.99	49.2	49.3		4
		4/9/05	4/9/05 PCB-1661 (13C-PCB-105+169)	1.1/	46.6	46.6		VOV
		_	PCB-156 (¹³ C-PCB-156)					X
			PCB-180 (¹³ C-PCB-180)					$\sum_{i=1}^{n}$
							C	
2	152512594	2/20/0	PBSC-152 Still 2/2 (1 CB-77 (1 C-PCB-77)	0.97	52,2	52.5		
		50 K-K	PCB-105 (¹³ C-PCB-105)	0.92	52.1	23,4	3	-
		~	PCB-156 (¹³ C-PCB-156)	0.97	102	101	2	
			PCB-18ŋ (¹³ C-PCB-18q)	68.0	7:25	5.5		1
c	PBSC- 136 S-1	4	PCB-77 (¹³ C-PCB-77)	79.0	5.4	SI.N	X	
		3/4/05	₹4/05 PCB-105 (13C-PCB-105)	20.02	54.0	5-125	5	
			PCB-153 (¹³ C-PCB-156)	76.0	103	5 01	2/1	
			PCB-183 (¹³ C-PCE-180)	68.0	52.4	52, 3	/	
Com	ments: Refer to	o Routine C	Comments: Refer to Routine Calibration findings worksheet for list of qualifi	ications and assoc	iated samples w	hen reported res	or list of qualifications and associated samples when reported results do not agree within 10.0% of the	within 10.0% of t

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recalculated results.

SDG #: DPW FISTA LDC #: 3517A3

Routine Calibration Results Verification VALIDATION FINDINGS WORKSHEET

đ Page: 2nd Reviewer: Reviewer:

METHOD: HRGC/HRMS Polychlorinated Bipnenyls (EPA Method 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF RRF = $\langle A_{\rm JJ}^{*}(C_{\rm s})/(A_{\rm s})(C_{\rm J})$

ave. RR² = initial calibration average RRF RRF = continuing calibration RRF Where:

 $A_x = Area of compound, C_x = Concentration of compound,$

 $A_{\rm ts}$ = Area of associated internal standard $C_{\rm ts}$ = Concentration of internal standard

# Calibratio Compound (Reference In Date 1 $\overrightarrow{D22}$ lo $\overrightarrow{0}$ \overrightarrow			нерогеа	Recalculated	Heported	Hecalculated
Standard IU nuase DTS210855 PCB PCB PCB		Average RRF	RRF-ANT	RRF AWT		
D[53108855]	Compound (Reference Internal Standard)	(initial)	(22)	(22)	7017	/0 /0/
59/4/2 BBSC-BSS	°C.PCB-7771(26)	9.99	47.5	47.6		NOV
59/4/2 13/4/2	*C-PCB- 105) (69)	1 - 1	44.8	44.6		X
59/4/2 	¹³ C-PCB-156)					27.
79/2/2 19/2/2 19/2/2	³ C-PCB-180)				Z	2
29/4/2 59/4/2					. v.	
214702	^a CPCB-77)	0.97	52.2	5-2.	2	/
	¹³ C-PCB-105)	26.0	52.6	52.7		
	¹³ C-PCB-156)	7 6.0	101	101	\mathcal{A}	
	¹³ C-PCB-180)	0.89	52 1	52 2	P	
PCB-105 (¹³ C-PCB-10 PCB-156 (¹³ C-PCB-15 PCB-180 (¹³ C-PCB-18	¹³ C-PCB-77)					
PCB-156 (¹³ C-PCB-15 PCB-180 (¹³ C-PCB-18	¹³ C-PCB-105)					
PCB-180 (¹³ C-PCB-18	¹³ C-PCB-156)					
	¹³ C-PCB-180)					

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

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Laboratory Control Sample Results Verification VALIDATION FINDINGS WORKSHEET

ġQ Page:__ Reviewer:

METHOD:/HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668) The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA

SSC = Spiked sample concentration SA = Spike added Where:

RPD = 1LCS - LCSD 1 * 2/(LCS + LCSD)

LCS = Laboraotry control sample percent recovery

LCSD = Laboratory control sample duplicate percent recovery

LCS 1D: NG15204-102

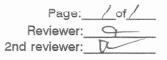
	sp	ike	Spiked Sample	ample	rcs	S	LCSD	SD	LCS/I	LCS/LCSD
Compound	Ad (M	Added M 5/w/)	Concentration $(M \leq u_{u_{J}})$	tration	Percent Recovery	ecovery	Percent Recovery	ecovery	R	RPD
	LCS /	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reportec	Recalculated
PCB-77	50	44 V	51.8	NX	104	104				
PCB-81	*		5.4		(03	103				
PCB-105			55. l		011	110				****
PCB-114			 1. 1. 2.		901	901				
PCB-118			46.6		113	113				
PCB-123			53.8		108	108				
PCB-126	~		52.7		105	105				
PCB-156 / 15T	100		104		104	104				
PGB4157			-							
PCB-167	R		51.8		104	104				
PCB-169	V		2.15		< 0 >	102				
PCB-170-										
PCB-180-										
PCB-189	22		52,6		105	105				
										WARDON (100 W

of the recalculated results.

	lons Mor	lons Monitored for HRGC/HRMS Analysis of Polychlorinated Biphenyls	of Polychlorinated Biphenyls	
Descriptor	Accurate mass ^(a)	lon ID	Analyte	Substance
	989 9224	Z	C12 H635Cl4	TCR
	291.9194	M+2	C12 H6 35Cl3 37Cl4	TCB
	301.9626	M	13C12 H6 35Cl4	PeCB
	303.9597	M+2	13C12 H6 35CI3 37CI	PeCB
	325.8804	M+2	C12 H5 35Cl4 37Cl	PeCB
	227.0775 [292.9825]	MT4 Lock	C7 F11	PFK
2	325.8804	M+2	C12 H5 35Cl4 37C	PeCR
	327.8775	M+4	C12 H5 35Cl3 37Cl2	PeCB
	337.9207	M+2	13C12 H5 35Cl4 37Cl	PeCB
	339.9178	M+4	13C12 H5 35Cl3 37Cl2	PeCB
	359.8415	M+2	C12 H4 35CI5 37C	HxCB
	361.8385	M+4	C12 H4 35Cl4 37Cl2	HXCB
	371.8817	M+2	13C12 H4 35Cl5 37Cl	HXCB
	3/3.0/60	M+4		HXCB
	333.8023	N+2		HpCB
	405 8428	M+4 M+2		
	407.8398	M+4	13C12 H3 35C15 37C12	HUCE
	[354.9892]	Lock	C9F13	PFK A
3	509.7229	M+4	13C12 35Cl10 37Cl2	DCR
	511.7199	M+6	13C12 35Cl9 37Cl3	2
	513.7170	M+8	13C12 35Cl8 37Cl4	
	[442.9728]	Lock	C10 F17	PFK
S = internal/recovery standard	tandard			
:				
T	H = 1.00/825 $CI = 34.968853$	168853		
0		65903		
<u>у</u> ш	$^{1}C = 13.003355$ F = 18.9984			
-				
	C.I.WEDOCSWEK/PCB/TCI 164			
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				

LDC #:13517 A3 SDG #: OPWEIS 74

VALIDATION FINDINGS WORKSHEET Sample Calculation Verification



YN		Were all rep	blychlorinated Biphenyls (EPA orted results recalculated an alculated results for detected	d verified for	all level IV samples		orted results?
Conce	ntratio	$m = (A_{\bullet})(I_{\bullet})(DF)$ $(A_{\bullet})(RRF)(V_{\bullet})(V_{\bullet})(A_{\bullet})(RFF)(V_{\bullet})$	(%S)	Example			
A _x	-		teristic ion (EICP) for the	Sample	.D, 1	CBTT:	
A _{is}	==	Area of the charac internal standard	teristic ion (EICP) for the specific				/
ls	=	Amount of internal (ng)	standard added in nanograms	Conc. =	(1.55e+08) (a	2000 11)
		Diliti			(3.00(0) (0.7	/)(/0,03)	(,)
RRF V。	=		factor of the calibration standard. of sample pruged in millilitere (ml)	=	<u>(1.55e+08) (0.9</u> (5:609+07) (0.9 567.85 n	8/	
Df	=	Dilution factor.			/	FX S	
%S	_	Percent solids, app matrices only.	blicable to soils and solid	1	, 	0	
#		Sample ID	Compound		Reported Concentration ()	Calculated Concentration ()	Qualification
				-			
-+	-						
					1		

LDC #: 13576A3

VALIDATION COMPLETENESS WORKSHEET

Level IV

Date:<u>6/8/05</u> Page: _/of _ Reviewer:_____ 2nd Reviewer:_____

SDG #: <u>DPWG15924</u> Laboratory: <u>AXYS Analytical Services, Ltd.</u>

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/3 - 31/04
11.	GC/MS Instrument performance check	A	1
111.	Initial calibration	A	70 RSB 5 20.
IV.	Routine calibration	4	7.0 S 25/35.
V.	Blanks	Tan	
VI.	Matrix spike/Matrix spike duplicates DUP	NA	
VII.	Laboratory control samples	A	Les. CRU
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	-W	
X .	Target compound identifications	A	
XI.	Compound quantitation and CRQLs	A	
XII.	System performance	A	
XIII.	Overall assessment of data	\checkmark	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note:

A = Acceptable N = Not provided/applicable SW = See worksheet ND = No compounds detected R = Rinsate

FB = Field blank

D = Duplicate TB = Trip blank EB = Equipment blank

Validated Samples:

M	122116 >						
1	LDW-T2-E-SS-WB-comp-1	11	LDW-T4-M-DC-HP-comp-1	21	WE15449-1012	31	
2	LDW-T3-E-SS-WB-comp-1	12	LDW-T3-D-PS-WB-comp-1DUP	22	NE 15429-101	32	
3	LDW-T3-F-SS-WB-comp-1	13		23	(33	
4	LDW-T3-D-PS-WB-comp-1	14		24		34	
5	LDW-T1-M-ES-WB-comp-2	15		25		35	
6	LDW-T1-M-ES-WB-comp-4	16		26		36	
7	LDW-T2-M-ES-WB-comp-3	17		27		37	
8	LDW-T2-M-ES-WB-comp-5	18		28		38	
9	LDW-T3-M-ES-WB-comp-3	19		29		39	
10	LDW-T3-M-DC-HP-comp-1	20		30		40	

AB LDC #:<u>/3ら</u> SDG #:<u>フ</u>ク

VALIDATION FINDINGS CHECKLIST

Method: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Validation Area	Yes	No	NA	Findings/Comments
1. Technical holding times			,	
All technical holding times were met.			ļ	
Cooler temperature criteria was met.				
II GC/MS Instrument performance check	1	1		I
Was PFK exact mass 380.9760 verified?	(ļ	
Were the retention time windows established for all homologues?	<u> </u>			
Is the static resolving power at least 10,000 (10% valley definition)?	(<u> </u>	
Was the mass resolution adequately check with PFK?				
III. Initial calibration		 	I	
Was the initial calibration performed at 5 concentration levels?	<u> </u>			
Were all percent relative standard deviations (%RSD) < 25% for unlabeled standards and < 30% for labeled standards?				
Did all calibration standards meet the Ion Abundance Ratio criteria?				
Was the signal to noise ratio for each target compound \geq 2.5 and for each recovery and internal standard \geq 10?				
IV. Continuing calibration				1
Was a routine calibration performed at the beginning of each 12 hour period?				
Were all percent differences (%D) < 40% for unlabeled and labeled standards?				
Did all routine calibration standards meet the Ion Abundance Ratio criteria?		/		
V. Blanks	1 1			
Was a method blank associated with every sample in this SDG?				
Was a method blank performed for each matrix and concentration?		-		
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	/ 1	_		
VI. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		/		DUP
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			/	
VII. Laboratory control samples				
Was an LCS analyzed for this SDG?	/-			
Was an LCS analyzed per extraction batch?				
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the OC limits?				

LDC #: 13576 A 3 SDG #: DPWG 15 724

Validation Area	Yes	No	NA	Findings/Comments
VIII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		/	Ĺ	
Were the performance evaluation (PE) samples within the acceptance limits?			/	
IX. Internal standards				
Were internal standard recoveries within the 25-150% criteria?				
Was the minimum S/N ratio of all internal standard peaks > 10?	(1		
X Target compound identification				-
For polychlorinated biphenyl congeners with associated labeled standards, were the retention times of the two quantitation peaks within -1 to 3 sec. of the RT of the labeled standard?	/			
For polychlorinated biphenyl congeners without associated labeled standards, were the relative retention times of the two quantitation peaks within 0.005 time units of the RRT measured in the routine calibration?		-		
For other polychlorinated biphenyl congeners, were the retention times of the two quantitation peaks within RT established in the performance check solution?	1			
Did compound spectra contain all characteristic ions listed in the table attached?	1			
Was the Ion Abundance Ratio for the two quantitation ions within criteria?	1			
Was the signal to noise ratio for each target compound and labeled standard > 2.5?				
Does the maximum intensity of each specified characteristic ion coincide within <u>+</u> 2 seconds (includes labeled standards)?		/		
Was an acceptable lock mass recorded and monitored?				
XI. Compound quantitation/CRQLs	/			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
XII. System performance				
System performance was found to be acceptable.	\langle			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.				
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		/		-
Target compounds were detected in the field duplicates.				
XV. Field blanks			. 1	
Field blanks were identified in this SDG.			/	
Target compounds were detected in the field blanks.				

#:13576A3 1	#: APWG15924
*	Ű
Ĕ	SDG

VALIDATION FINDINGS WORKSHEET Blanks

of 9 Page: 2nd Reviewer: Reviewer:

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were all samples associated with a method blank? K N N/A Y N N/A

Was a method blank performed for each matrix and whenever a sample extraction was performed? Was method blank contamination less < CRQL for all target compounds? in date: 4/6/05 Blank analysis date: 4/18/05 Y/N N/Y

Blank extraction date: 4/6 Conc. units: 1245

Associated samples: <u>MU</u>

	Sample Identification	3456789	8 M 7:55 1 3.90 W 12:5 M 22:5 M 15:5 M 23. M 9.65 M	1. 1. 1.	N 127 4 7.434 12.54 22.54 15.54 29.14 13.4 M	2 U S. 15/1 3.53/ 3.13/1 3.64/1 3.73/1	U 14.9. U 28° W 14.0 W	25:7M						
	ö		M 6.58 M 7.55 M	M 8.27 W	1 12.8 M 12.5 W	Ń	12.4M	~~						
A MAAA A A A MAA MAA MAA MAA MAA MAA MA	Blank ID	that guilol	543 23.	6.8-2 31.7	8,04 23.	8.04	6.41	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~						
Conc. umis. Jor 2	Compound	N15/1	PCB	P28	NOCHINO BIPHENYIS	PCB 3	RB 12-	POB IS-						

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: All contaminants within five times the method blank consentration were qualified as not detected, "U".

LDC #: 1357643 SDG #: 044 159 24			VALIDAT	ION FINDING Blanks	VALIDATION FINDINGS WORKSHEET <u>Blanks</u>	KSHEET			Page:	20th
METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)	lychlorinated	Biphenyls (EF	A Method 16	(89)						
 Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A". V N/A Were all samples associated with a method blank? V N N/A Was a method blank performed for each matrix and whenever a sample extraction was perform to a number of blank performed for each matrix and whenever a sample extraction was performed for each	nples association of blank per	lifications below for all questions answered "N". Not applicable questions are identified as "N/A". Were all samples associated with a method blank? Was a method blank performed for each matrix and whenever a sample extraction was performed?	red "N". Not thod blank? ch matrix and	applicable qu	sample extra	lentified as "h ction was pe	4/A". formed?			
actio	PIRINK CONTR	was metriod plank contamination less < しけし ro n date:チャック Blank analysis date: チ たろ	< ଧମଧ୍ୟ Tor all target compounds? s date: କୁ// ୪/୦ ମ	all target con	/spunds	Associate	Associated samples:_	M		
Compound	Blank ID				Sa	Sample Identification	tion			
WE	101-6425	01	()							
PCB IN	5.43	844 M	N. 12-8							
PCB 11	6.82	N.0.25								
Total Monechlore Biphrwyls	8.04	14:9/4	23.1M							
PCB 3	8.04	6:51 W	10.5 M							
2	64	-								
15	52.3									
2	na denis forma en la casa de la compañía de la comp									
CIRCLED RESULTS WERE NOT OLIVELED ALL RESULTS NOT			CIRCI EN MERE OLIVITEIEN						n de la constante de la constante de la constante de la constante de la constante de la constante de la constan La constante de la constante de	Contract & generative with the second state of

UNGLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: All contaminants within five times the method blank concentration were qualified as not detected, "U".

AXYS METHOD MLA-010 Rev 05 1668A-S1_209 Form 1A Page 1 of 6 PCB CONGENER ANALYSIS REPORT

CLIENT ID: LAB BLANK

Sample Collection: N/A Lab Name: AXYS ANALYTICAL SERVICES Project No.: N/A Contract No.: 4033 Lab Sample ID: WG15449-101 i2 CORN OIL Matrix: Sample Size: 2.00 g Initial Calibration Date: Sample Receipt Date: N/A 19-Apr-2005 Extraction Date: 06-AµI-2005 Instrument ID: HR GC/MS Analysis Date: 18-May-2005 Time: 23:54:23 GC Column ID: SPB-OCTYL 400 Extract Volume (µL): Sample Data Filename: PB5C_256 S:5 Injection Volume (µL): 1.0 Blank Data Filename: PB5C_256 S:5 **Dilution Factor:** 20 Cal. Ver. Data Filename: PB5C_256 S:1

Concentration Units :

ng/kg

COMPOUND	IUPAC NO.	5X	CO-ELUTIONS	LAB FLAG ¹	CONC. FOUND		ION ABUND. RATIO	RRT
2 - MoCB	1	27.15		KD JB	5.43	2.32	2.18	1.000
3 - MoCB	2	-		UD		2.61		
4 - MoCB	3	40.2		D JB	8.04	2.73	3.53	1.001
2,2' - DiCB	4	5T		D JB	11.4	8.28	1.34	1.000
2,3 - DICB	5			UD		5.64		
2,3' - DiCB	6			UD		5.30		
2,4 - DiCB	7	,		UD		5.27		
2,4' - DiCB	8	54		D JB	10.8	4.89	1.71	1.206
2,5 - DiCB	9			UD		5.20		
2,6 - DiCB	10			UD		5.53		
3,3' - DICB	11	34.1		KD JB	6.82	5.57	0.97	0.969
3,4 - DiCB	12 -	32.05	12 + 13	C D JB	6.41	5.47	1.69	0.984
3,4' - DiCB	13		12 + 13	C12				
3,5 - DiCB	14			UD		5.40		
4,4' - DICB	15	11.5		D JB	22.3	6.25	1.42	1.001
2,2',3 - TriCB	16			UD		3.11		
2,2',4 - TriCB	17 2	21.55		KD JB	4.31	2.56	0.70	1.138
2,2',5 - TriCB	18 🚍	2 .	18 + 30	C D JB	4.22	2.11	1.18	1.112
2,2',6 - TriCB	19	- 0		UD		2.78		
2,3,3' - TriCB	20 🗦	32.8	20 + 28	C KD JB	6.56	4.03	0.88	0.849

15449AD8_1.xls, S2

Approved by: Man Man QA/QC Chemist

26-05-2005 dd-mm-yyyy

0294

AXYS	METHOD	MLA-010	Rev 05

Form 1A

Page 2 of 6 Lab Sample CLIENT ID:

LAB BLANK

A of 6 mple ID:	W	/G15449-10	11 i2			Project No.: Sample Data F	ilename:	N/A PB5C_256 \$:5	
	COMPOUND	IUPAC NO.	5X	CO-ELUTIONS	LAB FLAG ¹	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
	2.3.4 - TriCB	21		21 + 33	CUD		3.99		
	2,3,4' - TriCB	22			UD		4.27		
	2,3,5 - TriCB	23			UD		4.25		
	2,3,6 - TriCB	24			UD		1.85		
	2,3',4 - TriCB	25	1		UD		3.55		
	2,3',5 - TriCB		8.45	26 + 29	C KD JB	7.69	4.14	0.88	1.300
	2,3',6 - TriCB	27 (1.3		KD JB	2.26	1.75	2.01	1.151
	2,4,4' - TriCB	28		20 + 28	C20				
	2,4,5 - TriCB	29		26 + 29	C26				
	2,4,6 - TriCB	30	. –	18 + 30	C18	(0.0	0.05	4.40	0.020
	2,4',5 - TriCB	31 😽			D JB	16.9	3.85	1.19	0.838
	2,4',6 - TriCB		0.35		D JB	4.07	3.91	0.97	1.196
	2',3,4 - TriCB	33		21 + 33	C21				
	2',3,5 - TriCB	34			UD		4 10 4.49		
	3,3',4 - TriCB	35			UD				
	3,3',5 - TriCB	36	-45		UD	5.09	4.05 4.51	1.15	1.002
	3,4,4' - TriCB		5.45		D JB UD	5.09	4.51	1.15	1.002
	3,4,5 - TriCB	38 39			UD		3.90		
	3,4',5 - TriCB		241	40 + 41 + 71	CDJB	4.82	3.00	0.75	1.336
	2,2',3,3' - TeCB			40 + 41 + 71	C40	4.02	0.00	0.70	
	2,2',3,4 - TeCB	41 42		40 + 41 + 71	UD		3.18		
	2,2',3,4' - TeCB	42			UD		3.57		
	2,2',3,5 - TeCB		6	44 + 47 + 65	C D JB	13.2	2.73	0.77	1.285
	2,2',3,5' - TeCB	44 Ø 45	6	45 + 51	CUD	10.2	2.93		
	2,2',3,6 - TeCB	45		40 . 01	UD		3.51		
	2,2',3,6' - TeCB 2,2',4,4' - TeCB	40		44 + 47 + 65	C44				
	2,2',4,5 - TeCB	48			UD		2.95		
	2,2',4,5' - TeCB	49 6	7.5	49 + 69	C KD JB	13.5	2.58	0.57	1.258
	2,2',4,6 - TeCB	50	F.85	50 + 53	CDJB	2.97	2.82	0.73	1,111
	2,2',4,6' - TeCB	51	F	45 + 51	C45				
	2,2',5,5' - TeCB		13.5		D JB	16.7	2.83	0.68	1.233
	2,2',5,6' - TeCB	53	/ 2 -	50 + 53	C50				
	2,2',6,6' - TeCB	54			UD		2.16		
	2,3,3',4 - TeCB	55			UD		4.83		
	2,3,3',4' - TeCB	56			UD		4.78		
	2,3,3',5 - TeCB	57			UD		4.70		
	2,3,3',5' - TeCB	58			UD		4.61		
	2,3,3',6 - TeCB	59		59 + 62 + 75	C UD		2.28		
	2,3,4,4' - TeCB	60			UD		4.78		
	2,3,4,5 - TeCB	61 7	0.5	61 + 70 + 74 + 76	C D JB	14.1	4.56	0.66	0.876
	2,3,4,6 - TeCB	62		59 + 62 + 75	C59				
	2,3,4',5 - TeCB	63			UD		4.57		

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AXYS ANALYTICAL SERVICES LTD P.O. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., CANADA V8L 3S8 TEL (250) 655-5800 FAX (250) 655-5811

XYS METHOD MLA-010 Rev 05 Form 1A				CLIENT ID:		LAB BLANK	
Page 3 of 6				Project No.:		N/A	
-	NG15449-101 i2			Sample Data F	ilename:	PB5C_256 S:5	
						-	
COMPOUND	NO.	CO-ELUTIONS	LAB FLAG	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,3,4',6 - TeCB	64 14.25		KD JB	2.85	2.24	0.26	1.348
2,3,5,6 - TeCB	65	44 + 47 + 65	C44				
2,3',4,4' - TeCB	66 53.5		KD JB	10.7	4.60	0.37	0.885
2,3',4,5 - TeCB	67		UD		4.36		
2,3',4,5' - TeCB	68		UD		4.36		
2,3',4,6 - TeCB	69	49 + 69	C49				
2,3',4',5 - TeCB	70	61 + 70 + 74 + 76	C61				
2,3',4',6 - TeCB	71	40 + 41 + 71	C40				
2,3',5,5' - TeCB	72		UD		4.44		
2,3',5',6 - TeCB	73		UD		2.17		
2,4,4',5 - TeCB	74	61 + 70 + 74 + 76	C61				
2,4,4',6 - TeCB	75	59 + 62 + 75	C59				
2',3,4,5 - ToCB	76	61 + 70 + 74 + 76	C61				
3,3',4,4' - TeCB	77		x				
3,3',4,5 - TeCB	78		UD		4.97		
3,3',4,5' - TeCB	79		UD		4.21		
3,3',5,5' - TeCB	80		UD		4.43		
3,4,4',5 - TeCB	81		X		4.50		
2,2',3,3',4 - PeCB	82		UD		4.50		
2,2',3,3',5 - PeCB	83 54.>	83 + 99	C D JB	10.9	3.95	1.62	0.886
2,2',3,3',6 - PeCB	84		UD		4.43		
2,2',3,4,4' - PeCB	85	85 + 116 + 117	CUD		3.36		
2,2',3,4,5 - PeCB	- [•	7 + 97 + 108 + 119 + 125	C D JB	5.44	3.43	1.71	0.900
2,2',3,4,5' - PeCB		7 + 97 + 108 + 119 + 125	C86		2.04		
2,2',3,4,6 - PeCB	88	88 + 91	CUD		3.81		
2,2',3,4,6' - PeCB	89 90 79.5	00 . 101 . 110	UD	45.0	4.11		
2,2',3,4',5 - PeCB		90 + 101 + 113	C D JB	15.9	3.48	1.35	0.870
2,2',3,4',6 - PeCB	91	88 + 91	C88	4.00	2.00	4.00	
2,2',3,5,5' - PeCB	92 24.4	· 05 · 08 · 400 · 400	DJB	4.88	3.99	1.33	0.854
2,2',3,5,6 - PeCB	93 4 8 95 93 94	+ 95 + 98 + 100 + 102	CDJB	9.79	3.70	1.56	1.119
2,2',3,5,6' - PeCB 2,2',3,5',6 - PeCB		+ 95 + 98 + 100 + 102	UD C93		4.00		
2,2',3,6,6' - PeCB	95 93 96	+ 95 + 98 + 100 + 102	UD		2.74		
2,2',3',4,5 - PeCB		7 + 97 + 108 + 119 + 125	C86		2.14		
2,2',3',4,6 - PeCB		+ 95 + 98 + 100 + 102	C93				
2,2',4,4',5 - PeCB	99	83 + 99	C83				
, , , , ,		+ 95 + 98 + 100 + 102	C93				
2,2',4,4',6 - PeCB 2,2',4,5,5' - PeCB	100 93	90 + 101 + 113	C93				
2,2',4,5,5' - PeCB 2,2',4,5,6' - PeCB		90 + 101 + 113 + 95 + 98 + 100 + 102	C90 C93				
2,2',4,5',6 - PeCB	102 95	00 100 100 102	UD		3.44		
2,2',4,6,6' - PeCB	104		UD		2.68		
2,3,3',4,4' - PeCB	105 28,05		KD JB	5.61	4.65	2.05	1.001
2,3,3',4,5 - PeCB	106		UD	5.67	4.56	2.05	1.001

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AXYS METHOD M Form 1A	ILA-010 Rev 05				CLIENT ID:		LAB BLANK	
Page 4 of 6					Project No.:		N/A	
Lab Sample ID:		WG15449-10	11 12		Sample Data Fil	00000		
Lab Gample ID.		1010440-10			Sample Data Fi	channe.	PB5C_256 S:5	
	COMPOUND	IUPAC NO.	CO-ELUTIONS	LAB FLAG ¹	CONC. FOUND	DETECTION LIMIT	ION ABUND RATIO	RRT
		-						
	2,3,3',4',5 - PeCB	107	107 + 124	C UD		4.53		
	,3,3',4,5' - PeCB	108	86 + 87 + 97 + 108 + 119 + 125	C86				
	2,3,3',4,6 - PeCB	109		UD		4.17		
	,3,3',4',6 - PeCB	-	5 110 + 115	C D JB	12.2	2.96	1.67	0.926
	,3,3',5,5' - PeCB	111		UD		2.97		
	2,3,3',5,6 - PeCB	112	00 + 404 + 440	UD		3.07		
	,3,3',5',6 - PeCB	113	90 + 101 + 113	C90				
	2,3,4,4',5 - PeCB	114	440 - 445	UD		4.52		
	2,3,4,4',6 - PeCB	115 116	110 + 115	C110				
	2,3,4,5,6 - PeCB 2,3,4',5,6 - PeCB	117	85 + 116 + 117 85 + 116 + 117	C85				
	,3',4,4',5 - PeCB		4	C85 D JB	16.0	4.05	1.00	
	,3 ,4,4 ,5 - FeCB ,3',4,4',6 - PeCB	119	86 + 87 + 97 + 108 + 119 + 125	C86	16.8	4.35	1.60	1.001
	,3',4,5,5' - PeCB	120	00.01.01.00.000.000.000	UD		2.90		
	3',4,5',6 - PeCB	121		UD		2.89		
	,3,3',4,5 - PeCB	122		UD		4.79		
	,3,4,4',5 - PeCB	123		UD		4.67		
	,3,4,5,5' - PeCB	124	107 + 124	C107				
2'	,3,4,5,6' - PeCB	125	86 + 87 + 97 + 108 + 119 + 125	C86				
3,	3',4,4',5 - PeCB	126		х				
3,	3',4,5,5' - PeCB	127		UD		4.57		
2,2',	3,3',4,4' - HxCB	128	128 + 166	C UD		4.52		
2,2'	,3,3',4,5 - HxCB	129 TC	9.5 129 + 138 + 160 + 163	C KD JB	15.9	4.39	0.95	0.929
2,2',	3,3',4,5' - HxCB	130		UD		5.57		
2,2',	3,3',4,6 - HxCB	131		UD		5.11		
2,2',	3,3',4,6' - HxCB	132		UD		5.25		
2,2',:	3,3',5,5' - HxCB	133		UD		4.98		
2,2',	3,3',5,6 - HxCB	134	134 + 143	C UD		5.08		
2,2',:	3,3',5,6' - HxCB	135	135 + 151 + 154	CUD		1.75		
2,2',:	3,3',6,6' - HxCB	136 (5	5,55	KD JB	3.11	1.35	0.98	1.024
	3,4,4',5 - HxCB	137		UD		5.15		
	3,4,4',5' - HxCB	138	129 + 138 + 160 + 163	C129				
	3,4,4',6 - HxCB	139	139 + 140	CUD		4.60		
	3,4,4',6' - HxCB	140	139 + 140	C139				
	3,4,5,5' - HxCB	141		UD		4.91		
	,3,4,5,6 - HxCB	142	101 . 110	UD		5.20		
	3,4,5,6' - HxCB	143	134 + 143	C134		1.00		
	3,4,5',6 - HxCB	144				1.82		
	3,4,6,6' - HxCB	145		UD		1.37		
	4',5,5' - HxCB	146 147 4 (147 + 149		0.52	4.63	4 74	4 400
	3,4',5,6 - HxCB ,4',5,6' - HxCB	147 <i>z</i> + (148	14/ 7 149	C KD JB UD	9.53	4.55 1.82	1.71	1.132
	,4',5',6 - HxCB	149	147 + 149	C147		1.02		
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AXYS METHOD MLA-010 Rev 05			(CLIENT ID:		LAB BLANK	
form 1A			c	Project No		N/A	
Page 5 of 6				Sample Data F	lename	PB5C_256 S:5	
ab Sample ID:	WG15449-101 i2		,	panihie nara i	nonanne.	1 000_200 0.0	
COMPOUND	IUPAC 5X	CO-ELUTIONS	LAB	CONC.	DETECTION	ION ABUND.	RRT
Som Sons	NO. 27		FLAG ¹	FOUND	LIMIT	RATIO	
a al a Al a di UvCR	150		UD		1.30		
2,2',3,4',6,6' - HxCB 2,2',3,5,5',6 - HxCB	151	135 + 151 + 154	C135				
2,2',3,5,6,6' - HxCB	152		UD		1.28		
2,2',4,4',5,5' - HxCB	153 10	153 + 168	C KD JB	20.2	3.91	0.94	0.899
2,2',4,4',5,6' - HxCB	154	135 + 151 + 154	C135				
2,2',4,4',6,6' - HxCB	155		UD		1.19		
2,3,3',4,4',5 - HxCB	156 26.75	156 + 157	C KD JB	5.35	4.97	0.98	1.000
2,3,3',4,4',5' - HxCB	157	156 + 157	C156				
2,3,3',4,4',6 - HxCB	158		UD		3.62		
2,3,3',4,5,5' - HxCB	159		UD		3.80		
2,3,3',4,5,6 - HxCB	160	129 + 138 + 160 + 163	C129				
2,3,3',4,5',6 - HxCB	161		UD		3.63		
2,3,3',4',5,5' - HxCB	162		UD		3.79		
2,3,3',4',5,6 - HxCB	163	129 + 138 + 160 + 163	C129				
2,3,3',4',5',6 - HxCB	164		UD		3.81		
2,3,3',5,5',6 - HxCB	165		UD		4.02		
2,3,4,4',5,6 - HxCB	166	128 + 166	C128				
2,3',4,4',5,5' - HxCB	167		UD		3.67		
2,3',4,4',5',6 - HxCB	168	153 + 168	C153				
3,3',4,4',5,5' - HxCB	169		Х		0.407	0.74	0.000
2,2',3,3',4,4',5 - HpCB	170 32.3		KD JB	6.46	0.187	0.71	0.936
2,2',3,3',4,4',6 - HpCB	171 3.35	171 + 173	C KD JB	2.67	0.177	0.47	1.162 0.897
2,2',3,3',4,5,5' - HpCB	172 .595		KD JB	0.319	0.179	2.64	0.697
2,2',3,3',4,5,6 - HpCB	173	171 + 173	C171	4.95	0.163	1.27	1.133
2,2',3,3',4,5,6' - HpCB	174 9.25		KD JB	1.85 0.748	0.165	1.59	1.101
2,2',3,3',4,5',6 - HpCB	175 3.74		KD JB	0.748	0.135	1.10	1.035
2,2',3,3',4,6,6' - HpCB	176 3.985		DJB	2.15	0.175	0.11	1.145
2,2',3,3',4',5,6 - HpCB	177 0.75		KD JB UD	2.15	0.162	0.17	1.140
2,2',3,3',5,5',6 - HpCB	178		D JB	1.00	0.102	1.00	1.010
2,2',3,3',5,6,6' - HpCB	179 5.00	180 + 193	C UD	1.00	0.147	1.00	
2,2',3,4,4',5,5' - HpCB	180 181 (- 89	100 + 195	KD JB	0.378	0.159	0.64	1.155
2,2',3,4,4',5,6 - HpCB	182 7.15		KD JB	1.43	0.160	4.92	1.115
2,2',3,4,4',5,6' - HpCB	182 (.99	183 + 185	C KD JB	3.98	0.156	0.88	1.126
2,2',3,4,4',5',6 - HpCB	184 3.445	105 + 105	KD JB	0.689	0.109	0.65	1.025
2,2',3,4,4',6,6' - HpCB	185	183 + 185	C183				
2,2',3,4,5,5',6 - HpCB	186 1.435	100 - 100	KD JB	0.287	0.119	37.73	1.047
2,2',3,4,5,6,6' - HpCB	187 50.5		KD JB	10.1	0.148	0.78	1.110
2,2',3,4',5,5',6 - HpCB	188 1.98		KD JB	0.396	0.117	0.38	1.000
2,2',3,4',5,6,6' - HpCB	189 1.82		KD JB	0.364	0.169	3.86	1.001
2,3,3',4,4',5,5' - HpCB 2,3,3',4,4',5,6 - HpCB	190 6 15		KD JB	1.23	0.142	9.68	0.947
2,3,3',4,4',5',6 - HpCB	191 7.4		KD JB	1.48	0.136	0.72	0.918
2,3,3',4,5,5',6 - HpCB	192 2.5		KD JB	0.500	0.141	0.51	0.904

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AXYS METHOD MLA-010 Rev 05 Form 1A				CLIENT ID:		LAB BLANK	
Page 6 of 6				Project No.,		N/A	
-	VG15449-101 i2			Sample Data F	ilename:	PB5C 256 S:5	
				,		-	
COMPOUND	NO. 5X	CO-ELUTIONS	LAB FLAG ¹	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,3,3',4',5,5',6 - HpCB	193	180 + 193	C180				
2,2',3,3',4,4',5,5' - OcCB	194 13.95		KD JB	2.79	0.200	0.75	0.992
2,2',3,3',4,4',5,6 - OcCB	195 9.75		KD JB	1.95	0.223	1.41	0.946
2,2',3,3',4,4',5,6' - OcCB	196		UD		0.258		
2,2',3,3',4,4',6,6' - OcCB	197	197 + 200	C UD		0.172		
2,2',3,3',4,5,5',6 - OcCB	198 3.59	198 + 199	C KD JB	0.718	0.253	1.86	1.112
2,2',3,3',4,5,5',6' - OcCB	199	198 + 199	C198				
2,2',3,3',4,5,6,6' - OcCB	200	197 + 200	C197				
2,2',3,3',4,5',6,6' - OcCB	201 2,155		KD JB	0.431	0.171	2.19	1.023
2,2',3,3',5,5',6,6' - OcCB	202		UD		0.190		
2,2',3,4,4',5,5',6 - OcCB	203 11.4		D JB	2.28	0.233	0.99	0.920
2,2',3,4,4',5,6,6' - OCCB	204 0.985		KD JB	0.197	0.175	2.92	1.038
2,3,3',4,4',5,5',6 - OcCB	205 2.84		KD JB	0.568	0.159	3.73	1.001
2,2',3,3',4,4',5,5',6 - NoCB	206		UD		10.5		
2,2',3,3',4,4',5,6,6' - NoCB	207		UD		9.05		
2,2',3,3',4,5,5',6,6' - NoCB	208		UD		9.62		
2,2',3,3',4,4',5,5',6,6' - DeCB	209 3.195		KD JB	0.639	0.137	1.09	0.999

(1) C = co-eluting congener; U = not detected; K = peak detected, but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; E = exceeds calibrated linear range, see dilution data; D = dilution data; Z = compound not requested; J = concentration less than LMCL; B = analyte found in sample and the associated blank; X = results reported separately

These pages are part of a larger report that may contain information necessary for full data evaluation.

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AXYS METHOD MLA-010 Rev 05 PCB-TOTAL_209 Page 1 of 1

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CLIENT ID: LAB BLANK

	Form 1A	
HOMOLOGUE TOTAL POLYCI	HLORINATED BIPHENYI	LS (PCB) ANALYSIS REPORT

r								
				Samp	le Collection:		N/A	
	Lab Name: AXYS ANALYTICAL S	ERVICES		Proje	ct No.:		N/A	
,	Contract No.:	4033		Lab S	ample ID:		WG15449-101 i2	2
	Matrix:	CORN OIL		Samp	le Size:		2.00	g
	Sample Receipt Date:	N/A		Initial	Calibration Date	e:	19-Apr-2005	
	Extraction Date:	06-Apr-2005		Instru	iment ID:		HR GC/MS	
	Analysis Date:	18-May-2005	Time: 23:54:23	GC Co	olumn ID:		SPB-OCTYL	
	Extract Volume (µL):	400		Blank	Data Filename:		PB5C_256 S:5	
	Injection Volume (µL):	1.0		Cal. V	er. Data Filenam	ie:	PB5C_256 S:1	
	Dilution Factor:	20		Samp	le Datafile(s):		PB5C_256 S:5 DT53_107A S: 4	
	Concentration Units :	ng/kg						
	PCB HOMOLOGUE GROUP		LAB	X	CONC. FOUND	DETECTION LIMIT		
	Total Monochloro Biphenyls		4	0.2	8.04	2.73		
	Total Dichloro Biphenyls		24	55	51.0	8.28		
	Total Trichloro Biphenyls		15	1.5	30.3	4.51		
	Total Tetrachloro Biphenyls		25	8.5	51.7	0.469		
	Total Pentachloro Biphenyls		37	9.5	75.9	0.697		
	Total Hexachloro Biphenyls		U			0.904		
	Total Heptachloro Biphenyls		9	,	1.80	0.187		
	Total Octachloro Biphenyls		11.	4	2.28	0.258		
	Total Nonachloro Biphenyls		U			10.5		
	Decachloro Biphenyl		U			0.137		
	TOTAL PCBs		1105	5	221			

(1) U = Not detected

(2) All header information pertains to the initial instrumental analysis of the sample extract. Additional sample datafiles listed refer to secondary analysis of the sample extract.

These pages are part of a larger report that may contain information necessary for full data evaluation.

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Approved by: Man Shorm QA/QC Chemist

26-05-2005 dd-mm-yyyy

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SDG

VALIDATION FINDINGS WORKSHEET

Page: of A Reviewer: A 2nd Reviewer: A

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

LDC #: 1357643

VALIDATION FINDINGS WORKSHEET Initial Calibration Calculation Verification

/of / ł Reviewer: 2nd Reviewer: Page:

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

 $\label{eq:RFF} \begin{array}{l} \mathsf{RFF}=(\mathsf{A}_{s})(\mathsf{C}_{s})(\mathsf{A}_{s})(\mathsf{C}_{s})\\ \text{everage} \ \mathsf{RRF}=\ \mathsf{sum} \ \mathsf{of} \ \mathsf{the} \ \mathsf{RRFs}/\mathsf{number} \ \mathsf{of} \ \mathsf{standards}\\ \ \%\mathsf{RSD}\ =\ 100\ *\ (\mathsf{S}/\mathsf{N}) \end{array}$

 $\begin{array}{l} A_{\mathbf{x}} = \mbox{Area } \sigma \mbox{ compound}, & A_{\mathbf{s}} \\ C_{\mathbf{x}} = \mbox{ Concentration of compound} & C_{\mathbf{s}} \\ S = \mbox{ Standard deviation of the RRFs}, & X = \end{array}$

dene occurrent					Reported	Recalculated	Reported	Recalculated	Reported	Recalculated
#	Standard ID	Calibration Date	Сопро	Compound (Reference Internal Standard)	Average RRF (initial)	Average RRF (initial)	RRF (<>> std)	RRF (%RSD	%RSD
+	1CA2			PCB-77 (¹³ C-PCB-77)	0.94	46.0	6.92	0.92	7.45	N N
+	and the second se	50/61/4		PCB-105 (¹³ C-PCB-105)	0.88	1.88	0.90	0.90	2.64	2.91
1	www.wearenewser.en.en.en.en.en.en.en.en.en.en.en.en.en.		PCB-156	PCB-156 (¹³ C-PCB-156)	0.94	0.94	0.97.	0.97	4.31	4.11
	nan managemen operative som men at management at an ander som en state of a defension of the source operative source of the sour	1	PCB-180	PCB-180 (¹³ C-PCB-180)	0.87	0.87	0.88	0.88	3.4/	N.4 /
	N DE LA DESERVACIÓN DE LA DESERVACIÓN DE LA DESERVACIÓN DE LA DESERVACIÓN DE LA DESERVACIÓN DE LA DESERVACIÓN D	1								
0	ICA C	1010	PCB-77	PCB-77 (¹³ C-PCB-77)	160	16.0	0.88	0.88	12.6	4°.24
	THE REAL PROPERTY AND A REAL PROPERTY A	<0/2/4		PCB-105 (¹³ C-PCB-105)	6.89	0.89	0.87	0.87	8,00	0.0 0
		I	PCB-156	PCB-156 (¹³ C-PCB-156)	0.94	0.94	0.95	0.95.	4.76	A. 86
	NOUTRIN NAMES AND AND AND AND AND AND AND AND AND AND		PCB-130	PCB-13q (¹³ C-PCB-18q)	0.85	0.85	0.84	0.84	8,88	9.06
			-			\$			A SA SA SA SA SA SA SA SA SA SA SA SA SA	
m	10Å 2	1/27/0	<u> </u>	PCB-77 (¹³ C-PC3-77)	1.03	1.03	1.06	1.06	3.14	X X X
		14/1		PCB-135 (¹³ C-PC3-105)						
			PCB-156	PCB-156 (¹³ C-PC3-156)						
			PCB-190	PCB-199 (¹³ C-PC3-189)						
			•							

Comments: Refer to Initial Calibration findings worksheet for lis: of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #:13576 83 SDG #

Routine Calibration Results Verification VALIDATION FINDINGS WORKSHEET

∠of A ð Æ Page: Reviewer: 2nd Reviewer:

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

'Where: % Difference = 100 * (ave. RRF - RRF)/ave. RRF RRF = (A_x)(C_{\rm b})/(A_{\rm b})(C_x)

ave. RRF = initial calibration average RRF RRF = continuing calibration RRF A_x = Area of compound, A_a C_a

 $A_{\rm s}$ = Area of associated internal standard $C_{\rm s}$ = Concentration of internal standard

					Reported	Recalculated	Reported	Recalculated
*	Ctandard ID	Calibratio n Date	Compound (Reference Internal Standard)	Average RRF (initial)	TRF W	RRF AWT (CC)	۵%	۵%
	4		PCB-77 (¹³ C-PCE-77)	2.94	125	49.7		
	6/2	5/8/	5-/8/PCB-105 ("3C-PCE-105)	88.0	50.4	595		
		50/	PCB-156 (¹³ C-PCE-156)	26.0	102	100		~
			PCB-180 (¹³ C-PCE-180)	0.87	50.9	S. 9	C	N v
					1			\ Y
~	PBSC-1945:1		PCB-77 (¹³ C-PCB-77)	16.0	47.5	47.5		X
	4/9	4/1/05	/ PCB-105 (¹³ C-PCB-105)	68.0	46.8	46.5		2
			PCB-156 (¹³ C-PCB-156)	194	99.7	201	°C	
			PCB-1E0 (¹³ C-PCB-180)	0.85	47.3	47.5	X	
					,			
က	\$B5C.226 521	21. 1.5	PCB-77 (¹³ C-PCB-77)	0 94	51.8	51.5	2	2
		2/4/02		88.0	52.5	50.6	λ	
			PCB-156 (¹³ C-PCB-156)	0.94	164	105		
			PCB-180 (¹³ C-PCB-180)	0.87	50.7	5.2	2	

C:\WPDOCS\WRK\PCB\CONCLC.163

recalculated results.

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the

SDG #: DAWE 1513 LDC #: 1357643

Routine Calibration Results Verification VALIDATION FINDINGS WORKSHEET

- of A 9 X Page: Reviewer: 2nd Reviewer:

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RFF $RR^{F} = (A_{w})(C_{i_{k}})/(A_{i_{k}})(C_{w})$

ave. RRF = initial calibration average RRF RRF = continuing calibration RRF A_s = Area of compound, A_s C_s = Concentration of compound, C_s Where:

 $A_{\rm s}$ = Area of associated internal standard $C_{\rm s}$ = Concentration of internal standard

Recalculated **0%** Reported ۵% RRF Awit (CC) Recalculated 6 N N A 8. 00 A 00 0 40 R B. R 0 RRF &wt+ (cc) W Reported M 29 01 R 48. 29 2 40 4 01 Average RRF (initial) 8 Get. 0.9% 0.89 24 0.85 M 0.0 Q 0 . 6 Compound (Reference Internal Standard) PCB-156 (13C-PCB-156) PCB-156 (13C-FCB-156) PCB-189 (13C-PCB-180) PCB-180 (13C-PCB-180) PCB-105 (13C-PCB-105) PCB-156 (13C-PCB-156) PCB-189 (13C-PCB-180) PCB-105 (13C-PCB-105) PCB-105 (13C-PCB-105) PCB-77 (13C-PCB-77) PCB-77 (13C-PCB-77) PCB-77 (13C-PCB-77) 120/21 18/24 7/15/12 Calibratio n Date 4 2753 107451 13561-2584 Standard ID PSC 255 2/21/05 (4/9) * -q=== 2 က

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

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Routine Calibration Results Verification VALIDATION FINDINGS WORKSHEET



METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RFF)/ave. RRF RRF = (A_x)(C_{\rm s})/(A_{\rm s})(C_x)

ave. RFF = initial calibration average RFF RFF = continuing calibration RFF A_x = Area of compound, A_x C_x = Concentration of compound, C_x Where:

 A_{is} = Area of associated internal standard C_{is} = Concentration of internal standard

					Reported	Recalculated	Reported	Recalculated
4	Standard ID	Calibratio n Date	Compound (Reference Internal Standard)	Average RRF (initial)	RRFAWT	-RRF-AW	Q%	Q%
L.	Janaan			(1111)				
4	PBS-202 S=1	1-1-	PCB-77 (¹³ C-PCB-77)	0.94	51.3	51.0	X	
	(614)	4/2/15	A/2/65 PCB-:05 (¹³ C-PCB-105)	0.88	ED . There	50.3	10	
			PCB-156 (¹³ C-PCB-156)	10.94	$\sum a$	103	7-	
1			PCB-180 (¹³ C-PCB-180)	0.87	49.6	26496	23	
				/			Z	
~	252-2584	in the second se	PCB-77 (¹³ C-PCB-77)	44.0	1.05	<i>S</i> . <i>S</i>	ts.	
	(4/13)	- 18/2 -	PCB-105 (¹³ C-PCB-105)	0.88	51.7	57./	2	
			PCB-156 (¹³ C-PCB-156)	0.94	101	102-	7	
			PCB-180 (¹³ C-PCB-180)	1-8.0	50.0	50.1	7	
							A	
S	DT53108135		PCB-77 (¹³ C-PCB-77)	C 0.1	4-1-6	47.9	N	
		4/6/05	PCB-105 (¹³ C-PCB-105)			1		
			PCB-156 (¹³ C-P2B-156)					
			PCB-18q (¹³ C-PCB-180)					

C:\WPDOCS\WRK\PCB\CONCLC.166

recalculated results

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the

•	A.
CP	2
5764	NA.
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Routine Calibration Results Verification VALIDATION FINDINGS WORKSHEET

Page: 4 of 4 Ū X 2nd Reviewer: Reviewer:

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Cifference = 100 * (ave. RRF - RFF)/ave. RR² RRF = $(A_x)(C_x)/(A_x)(C_x)$

ave. RRF = initial calibration average RRF RRF = continuing calibration RRF A_x = Area of compound, A_x C_x = Concentration of compound, C_z Where:

 $A_{\rm s}$ = Area of associated internal standard $C_{\rm s}$ = Concentration of internal standard

Recalculated 0% Reported **Q%** -RRF Aut (CC) Recalculated 0 00 52.0 's' 5 29 RRF∱W (CC) Reported 4.a.2 52.5 0 29 Average RRF (initial) 6.94 44 P. 8 8 8 6 Compound (Reference Internal Standard) PCB-156 (13C-PCB-156) PCB-105 (13C-PCB-105) PCB-156 (13C-PCB-156) PCB-105 (13C-PCB-105) PCB-180 (13C-PCB-180) PCB-105 (13C-PCB-105) PCB-156 (13C-PCB-156) PCB-189 (13C-PCB-180) PCB-180 (13C-PCB-180) PCB-77 (13C-PCB-77) (¹³C-PCB-77) PCB-77 (13C-PCB-77) PCB-77 4/45 Calibratio n Date 5 2851 24S: PBSC 222A Standard ID のフカ 3 2 က *

Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results. Comments:

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57643	Mig 1592
#: 13	A #
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VALIDATION FINDINGS WORKSHEET Laboratory Control Sample Results Verification

Page: / of / Reviewer: 7

METHOD: HR&C/HRMS Polychlorinated Biphenyls (EPA Method 1668) The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA

Where: SSC = Spiked sample concentration SA = Spike added

RPD = ILCS - LCSD I * 2/(LCS + LCSD)

_CS = Laboraotry control sample percent recovery

LCSD = Laboratory control sample dublicate percent recovery

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e	
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	ц.	Spike	Spiked Sample	ample	SOT	S.	rcsD	0	rcs/rcsD	CSD
Compound	Added (U C MI	ded M())	Concentration (^い らん))	ration ん/)	Percent Recovery	lecovery	Percent Recovery	ecovery	ВРD	a
	rcs	LCSD	SOT	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
PCB-77	001	N.A	102	YY	102	201				
PCB-81	7	~>>	102	1	0 >	102				
PCB-105	0.01	NA	104		104	104				
PCB-114	-		106		106	106				
PCB-118			50)		105	501				
PCB-123	Ý		104		104	104				
PCB-126	100		90.5		90.5	2002				
PCB-156/15T	200	~>	20 2		101	01				
PCB-167										
PCB-167	0.01	NĂ	6 01		501	60			n e de la companya e de la companya de la companya de la companya de la companya de la companya de la companya	
PCB-169	001	NĂ	98.0		98.0	0.26			A DA A DA A DA A DA A DA A DA A DA A D	
RCB-1Z0										
PCB-180				-						
PCB-189	001	NA	102		102	102			no na ka na ka na ka na ka na ka na ka na ka na ka na ka na ka na ka na ka na ka na ka na ka na ka na ka na ka	
						_				
									a service and the service of the ser	
									AND IN THE OWNER AND IN THE REAL PROPERTY AND AND AND AND AND AND AND AND AND AND	
Comments: Refer to Laboratory Control Sample findings worksheet for list of guidifications and consisted comments.	orv Control S	Sample findin	ds workshaat	for list of au	alificatione on	d accordiate	du colomoo k			
of the recalculated results.					aiiicauolis a	iu associated	a samples whe	n reported r	esuits do nct agr	ee within 10.0%

LCSCLC.16A

	lons Mo	lons Monitored for HRGC/HRMS Analysis of Polychlorinated Biphenyls	of Polychlorinated Biphenyls	
Descriptor	Accurate mass ^(a)	lon ID	Analyte	Substance
		×	C12 H6 35CM	ach A
	291.9194	M+2	C12 H6 35Cl3 37Cl4	TCB
	301.9626	×	13C12 H6 35Cl4	PeCB
	303.9597	M+2	13C12 H6 35Cl3 37Cl	PeCB
	325.8804	M+2	C12 H5 35Cl4 37Cl	PeCB
	327.8775 1292 98251	M+4 Dock	C12 H5 35Cl3 3/Cl2 C7 F11	PeCB
		5))]		
5	325,8804	M+2	C12 H5 35Cl4 37Cl	PeCB
	327.8775	M+4	C12 H5 35Cl3 37Cl2	PeCB
	337.9201	N+Z	13C12 H5 35C14 3/C1	Pect
	359.8415	M+2	1 C12 H4 35CI5 37CI	HXCB
	361.8385	M+4	C12 H4 35Cl4 37Cl2	HXCB
	371.8817	M+2	13C12 H4 35CI5 37CI	HxCB
	373.8788	M+4	13C12 H4 35Cl4 37Cl2	HxCB
	393.8025	M+2	C12 H3 35CI6 37CI	HpCB
	395.7996	M+4	C12 H3 35CI5 37CI2	HpCB
	405.8428	M+2	13C12 H3 35Cl6 37Cl	HpCB
	407.8398	M+4	13C12 H3 35CI5 37CI2	HpCB
	2005,000	LUCA	Carlo	ATA
ę	509.7229	M+4	13C12 35C110 37C2	DCB
	511.7199	M+6	13C12 35Cl9 37Cl5	
	513.7170	Ni+8	13C12 35CI8 37CI4	of 1 and 100
	[442.9728]	LOCK	C10 F1/	YLL
S = internal/recovery stardard	tandard			
IC	H = 1.007825 °Cl = 34.968853	68853		
D D CE	C = 12.00000	00900		
L	= 18.9984			
UNAVPUUC	C:\WPDOCS\WRK\PCB\TCI.16A			

LDC #:<u>13576A3</u> SDG #:<u>DPW315</u>

VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:	
Reviewer:	9
2nd reviewer:	<u>لم /</u>

Y N Y N Conce		Were all rec	orted results recalculated an alculated results for detected		ounds agree within		orted results?
A _x	-	(A _b)(RRF)(V _o)(Area of the charact compound to be m	teristic ion (EICP) for the	Sample		POBIOS-	
A_{is}	-	Area of the charact internal standard	teristic ion (EICP) for the specific			-	,
l _s	=	Amount of internal (ng)	standard added in nanograms	Conc. =	<u>3.60 2+0 8, (</u> 7.02 2+48 (0.8	8000)1 / 8 1(2.39))(.)
RRF		Relative response f	actor of the calibration standard.		•		
V.	=	Volume or weight o or grams (g).	of sample pruged in milliliters (mi)	= /	95062.9	ns/Fa	
Df	=	Dilution factor.				0	
%S	=	Percent solids, app matrices only.	licable to soils and solid				
#		Sample ID	Compound		Reported Concentration ()	Calculated Concentration ()	Qualification

			Concentration	Concentration	
#	Sample ID	Compound	()	()	Qualification
					1
		······································			

LDC #: 13576B3

SDG #: DPWG15926

VALIDATION COMPLETENESS WORKSHEET

Level IV

Date:<u>6/8/05</u> Page: <u>/of /</u> Reviewer: <u>9</u> 2nd Reviewer: <u>pt</u>

Laboratory: AXYS Analytical Services, Ltd.

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668A)

I he samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: $\frac{8}{2} - \frac{31}{05}$
11.	HRECHER S Schub Instrument performance check	Ă	
	Initial calibration	A	70 RSD == 20
IV.	Routine calibration	A	70 RSD = 20 70 D = 25 / 35
V.	Blanks	w	
VI.	Matrix spike/Matrix spike duplicates / D U-P	N/A	
VII.	Laboratory control samples	A	LCS, CRM
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	w	
X .	Target compound identifications	ASW	5, PCB-1 not reported
XI.	Compound quantitation and CRQLs	A	
XII.	System performance	\Rightarrow	
XIII.	Overall assessment of data	Å	
XIV.	Field duplicates	2	
XV.	Field blanks	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	

Note: A

A = Acceptable N = Not provided/applicable SW = See worksheet ND = No compounds detected R = Rinsate FB = Field blank D = Duplicate TB = Trip blank EB = Equipment blank

Validated Samples:

IVVI							
1	LDW-T1-F-SS-WB-comp-1	11	LDW-T4-M-ES-WB-comp-1	21	WG154540-101	31	
2	LDW-T2-B-SS-WB-comp-1	12	LDW-T1-M-SC-HP-comp-1	22		32	
з	LDW-T3-C-SS-WB-comp-1	13	LDW-T2-M-SC HP comp 2	23		33	
4	LDW-T3-E-PS-WB-comp-1	14	LDW-T1-M-ES-FL-comp-2DUP	24		34	
5	LDW-T1-M-ES-FL-comp-1	15		25		35	
6	LDW-T1-M-ES-FL-comp-2	16		26		36	
7	LDW-T2-M-ES-FL-comp-1	17		27		37	
8	LDW-T2-M-ES-FL-comp-2	18		28		38	
9	LDW-T3-M-ES-FL-comp-2	19		29		39	
10	LDW-T3-M-ES-WB-comp-2	20		30		40	

LDC #: 1357683 SDG #: DPWG15 926

VALIDATION FINDINGS CHECKLIST

Page: /of-? Reviewer: 9 2nd Reviewer: 1/2

Method: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.				
Cooler temperature criteria was met.				
II GC/MS Instrument performance check				
Was PFK exact mass 380.9760 verified?				
Were the retention time windows established for all homologues?	1			
Is the static resolving power at least 10,000 (10% valley definition)?	/			
Was the mass resolution adequately check with PFK?				
III. Initial calibration		1	r	
Was the initial calibration performed at 5 concentration levels?	_			
Were all percent relative standard deviations (%RSD) < 25% for unlabeled standards and < 30% for labeled standards?				
Did all calibration standards meet the Ion Abundance Ratio criteria?				
Was the signal to noise ratio for each target compound \geq 2.5 and for each recovery and internal standard \geq 10?				
IV. Continuing calibration	1			
Was a routine calibration performed at the beginning of each 12 hour period?	<			
Were all percent differences (%D) \leq 40% for unlabeled and labeled standards?				
Did all routine calibration standards meet the Ion Abundance Ratio criteria?				
V. Blanks	· · · · ·			
Was a method blank associated with every sample in this SDG?	<			
Was a method blank performed for each matrix and concentration?				
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.				
VI. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.				DUP
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			<	
VII. Laboratory control samples				
Was an LCS analyzed for this SDG?	-			
Was an LCS analyzed per extraction batch?	1			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the OC limits?	/			

LDC#:<u>/357683</u> SDG#:<u>DPWG15</u> 926

VALIDATION FINDINGS CHECKLIST

Validation Area	Yes	No	NA	Findings/Comments
VIII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		<		
Were the performance evaluation (PE) samples within the acceptance limits?				
IX. Internal standards				
Were internal standard recoveries within the 25-150% criteria?		1	ļ	
Was the minimum S/N ratio of all internal standard peaks > 10?				
X Target compound identification	1			1
For polychlorinated biphenyl congeners with associated labeled standards, were the retention times of the two quantitation peaks within -1 to 3 sec. of the RT of the labeled standard?	/			
For polychlorinated biphenyl congeners without associated labeled standards, were the relative retention times of the two quantitation peaks within 0.005 time units of the RRT measured in the routine calibration?				
For other polychlorinated biphenyl congeners, were the retention times of the two quantitation peaks within RT established in the performance check solution?				
Did compound spectra contain all characteristic ions listed in the table attached?				
Was the Ion Abundance Ratio for the two quantitation ions within criteria?	/			
Was the signal to noise ratio for each target compound and labeled standard > 2.5?	/			
Does the maximum intensity of each specified characteristic ion coincide within <u>+</u> 2 seconds (includes labeled standards)?	/			
Was an acceptable lock mass recorded and monitored?				
XI. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	t	~	/	
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?		-		
XII. System performance				
System performance was found to be acceptable.				
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.				
XIV. Field duplicates		·		
Field duplicate pairs were identified in this SDG				
Target compounds were detected in the field duplicates.				
XV. Field blanks				
Field blanks were identified in this SDG.				'
Target compounds were detected in the field blanks.			1	

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VALIDATION FINDINGS WORKSHEET Blanks

Page: /of / Reviewer: </

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

V N N/A Were all samples associated with a method blank?

Was a method blank performed for each matrix and whenever a sample extraction was performed? Was method blank contamination less < CRQL for all target compounds? Y /N N/A V/N N/A

Blank extraction date: $4/4/e \leq$ Blank analysis date: $4/24/e \leq$

Associated samples: _____

POB 1 2.57 POB 1 2.57 2.75 3 2.75		1							
	('n	4	5	2	1	ġ.	0
	<	- 34 /.		738/		× 80/1	038/11		V 1/5 70
	2,		4		1	0.1	10/.1		4. 1.01
	2,62,4	4.04 M	132 11	3.35 0	8.43 W	2.76M	2.74/4	3.70/1	2.46/1
	5:21/0	5.88 M		T.31/0	20.5/1	5:034	4.07/U	6.73/4	4.53/11
	2	N/25.8			10.7.01	10.1/W	9.58/11	venerof personal second personal second personal second persons and the second person of the	6.84/11
_	 7.83 1	17.3 4		18.0 21		16.56	16:20	24.00	16.4/11
í		4.66 W		k					
								No exe destaurant de transmission aux de la constant de la constant de la constant de la constant de la consta	
									na na mana na mangana n
							A RATE I A LAN LOG ON MARKING ROLE (A RANN POLICIA CONTRACTOR AND A RANN POLICIA CONTRACTOR AND A RANN POLICIA		
								NOT IN LINE IN COLUMN AND AND AND AND AND AND AND AND AND AN	
								n data seren og og og og og og og og og og og og og	

GROLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT; At contaminants within five times the method blank concentration were qualified as not detected, "U".

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LDC #: 13576B3 SDG #: DPWE1596			VALIDAT	ION FINDING Blanks	VALIDATION FINDINGS WORKSHEET <u>Blanks</u>	(SHEET			ZOTZ
METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)	ychlorinated	Biphenyls (EF	A Method 16	368)				Zna reviewer.	E E
e qual	ow for all qu nples associa od blank per	ifications below for all questions answered "N". Not Were all samples associated with a method blank? Was a method blank performed for each matrix an	rred "N". Not sthod blank? ch matrix and	applicable qu 1 whenever a	lestions are id sample extrac	ifications below for all questions answered "N". Not applicable questions are identified as "N/A". Were all samples associated with a method blank? Was a method blank performed for each matrix and whenever a sample extraction was performed?			
(<u>Y_N_N/A</u> Was method Blank extraction date: <u>4//4</u> Conc. units: <u>n5/<3</u>	od blank conta	Was method blank contamination less < CRQL f n date: <u>4/14/05</u> Blank analysis date: <u>4</u>	< CRQL for a s date: <u>///2</u> 4	< CRQL for all target compounds? s date: <u>+/2+/。</u> S	;spunodu	Associated samples:	M		
Compound	Blank ID				Sar	Sample Identification			
NG	0+25+5,	1 10	11	12	M				
PCB /	Ts.s.	10.5/W	m/zal	4584	5.76/N				
a	2,73	2.96/W	N/etie	3.24/1	4.59 W				
m	025	563/11	4.39/4	T.36/M	7.38 U				
Er /	2.45								
Total MenochlinoBipheny	15.30	19.04	Nº/W	15:2 M	17:4 JU				
pcB 104 1	1.00	-	/		3.880				
					\ \				
CIBCLED RESULTS WERE NOT OUR LETEN		ALL DECLILTS NOT 0	ימי זעווס אפטע עם וסמי					na de antes de contra en el la tra de faci a que presenta en contra de maña entre de contra en contra en contra	

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: All contaminants within five times the methoc blank concentration were qualified as not detected, "U".

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AXYS METHOD MLA-010 Rev 05 1668A-S1_209 Page 1 of 6		PCI		orm 1A ANALYSIS R	EPORT			CLIENT ID: LAB BLANK	
						Sample Collec	tion:	N/A	
Lab Name: AXYS ANALYTICAL	SERVICES					Project Numbe	er:	N/A	
Contract No.:	4033					Lab Sample ID	:	WG15450-101	
Matrix:	TISSUE					Sample Size:		2.00	g
Sample Receipt Date:	N/A					Initial Calibrati	on Date:	19-Apr-2005	
Extraction Date:	14-Apr-2005	5				Instrument ID:		HR GC/MS	
Analysis Date:	24-Apr-2005	5	Tim	e: 23:33:51		GC Column ID:		SPB-OCTYL	
Extract Volume (µL):	400					Sample Data Fi	lename:	PB5C_208 S:5	
Injection Volume (µL):	1.0					Blank Data File	name:	PB5C_208 S:5	
Dilution Factor:	20					Cai. Ver. Data F	ilename:	PB5C_208 S:1	
Concentration Units :	ng/kg								
COMPOUND	IUPAC NO.	<u>5X</u>	CO-ELUTIO	NS	LAB FLAG ¹	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2 - MoCB	1	12.85			D JB	2.57	1.43	2.78	1.001
3 - MoCB	2	1375			D JB	2.75	1.54	2.95	0.988
4 - MoCB	3	28.5			KD JB	5.70	1.72	5.58	1.000
2,2' - DiCB	4				UD		9.84		
2,3 - DiCB	5				UD		7.45		
2,3' - DiCB	6				UD		7.23		
2,4 - DICB	7				UD		7.14		
2,4' - DiCB	8				UD		6.71		
2,5 - DICB	9				UD		7.01		
2,6 - DICB	10				UD		7.21		
3,3' - DICB	11				UD		7.70		
3,4 - DICB	12		12 + 13		CUD		7.46		
3,4' - DiCB	13		12 + 13		C12				
3,5 - DICB	14				UD		7.17		

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4,4' - DICB

2,2',3 - TriCB

2,2',4 - TriCB

2,2',5 - TriCB

2,2',6 - TriCB

2,3,3' - TriCB

15

16

17

18

19

20

13.95

12.9

24.6

18 + 30

20 + 28

her QA/QC Chemist 15450AD1_1.xls, S2 Approved by: 0213

UD

UD

KD JB

C KD JB

UD

C D JB

2.79

2.58

4.92

8.63

1.52

1.33

1.13

1.48

0.781

2.02

1.94

0.89

1.138

1.114

0.848

MO AXYS ANALYTICAL SERVICES LTD R.O. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., CANADA VOL 358 TEL (250) 655-5800 FAX (250) 655-5811

AXYS	METHOD	MLA-010	Rev 05
------	--------	---------	--------

Form 1A

200

1200

13.23

382Ú

100

1000

1255

1056

10.00

Page 2 of 6

Project Number:

LAB BLANK

N/A

Page 2 of 6 Lab Sample ID:	v	VG15450-101			Sample Data F		PB5C_208 S:5	
Lab Sample iD.						10. 101 001 000 40.0003 40. h l		007
	COMPOUND	NO. 5X	CO-ELUTIONS	LAB FLAG ¹	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
	2,3,4 - TriCB	21 (0,0	21 + 33	C D JB	2.00	0.790	1.18	0.857
	2,3,4' - TriCB	22 8.1		D JB	1.62	0.824	1.06	0.872
	2,3,5 - TriCB	23 12,29		D JB	2.45	0.827	0.94	1.273
	2,3,6 - TriCB	24		UD		0.987		
	2,3',4 - TriCB	25		UD		0.736		
	2,3',5 - TriCB	26 6.45	26 + 29	C D JB	1.29	0.772	1.13	1.300
	2,3',6 - TriCB	27		UD		0.945		
	2,4,4' - TriCB	28	20 + 28	C20				
	2,4,5 - TriCB	29	26 + 29	C26				
	2,4,6 - TriCB	30	18 + 30	C18				
	2,4',5 - TriCB	31 14.35		D JB	2.87	0.780	1.15	0.837
	2,4',6 - TrICB	32 4.35		D JB	0.870	0.840	1.09	1.195
	2',3,4 - TriCB	33	21 + 33	C21				
	2',3,5 - TriCB	34		UD		0.836		
	3,3',4 - TriCB	35	-	UD		0.924		
	3,3',5 - TriCB	36 3.83	5	KD JB	0.767	0.735	0.48	0.930
	3,4,4' - TriCB	37 20.8	5	D JB	4.17	0.788	0.90	1.001
	3,4,5 - TriCB	38		UD		0.803		
	3,4',5 - TriCB	39		UD		0.808		
	2,2',3,3' - TeCB	40	40 + 41 + 71	C UD		2.28		
	2,2',3,4 - TeCB	41	40 + 41 + 71	C40				
	2,2',3,4' - TeCB	42		UD		2.36		
	2,2',3,5 - TeCB	43		UD		2.47	0.50	4 000
	2,2',3,5' - TeCB	44 37.5	44 + 47 + 65	C KD JB	7.50	2.05	0.53	1.286
	2,2',3,6 - TeCB	45	45 + 51	C UD		2.18		
	2,2',3,6' - TeCB	46		UD		2.58		
	2,2',4,4' - TeCB	47	44 + 47 + 65	C44		0.00		
	2,2',4,5 - TeCB	48		UD		2.20		
I	2,2',4,5' - TeCB	49	49 + 69	C UD C UD		1.90 2.11		
	2,2',4,6 - TeCB	50	50 + 53 45 + 51	C 0D C45		2.11		
	2,2',4,6' - TeCB	51	40 + 01		5.89	2.18	0.53	1.235
	2,2',5,5' - TeCB	52 29.45	50 . 52	KD JB C50	5.69	2.10	0.55	1.200
	2,2',5,6' - TeCB	53	50 + 53	UD		1.70		
	2,2',6,6' - TeCB	54		UD		4.87		
	2,3,3',4 - TeCB	55		UD		4.83		
	2,3,3',4' - TeCB	56		UD		4.75		
	2,3,3',5 - TeCB	57		UD		4.60		
	2,3,3',5' - TeCB	58 59	59 + 62 + 75	C UD		1.66		
	2,3,3',6 - TeCB	59 60	09 + 02 + 10	UD		4.75		
•	2,3,4,4' - TeCB 2,3,4,5 - TeCB	01 47.95	01 + 70 + 74 + 70	CDJD	9.59	4.57	0.72	0.876
		62	59 + 62 + 75	C59				
	2,3,4,6 - TeCB 2,3,4',5 - TeCB	63	00.02.10	UD		4.51		
	2,0,9,0 - 1000	00						

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AXYS METHOD MLA-010 Rev 05				CLIENT ID:		LAB BLANK	
Form 1A Page 3 of 6 Lab Sample ID:	WG15450-101			Project Numbe Sample Data F		N/A PB5C_208 S:5	
COMPOUND	NO.	CO-ELUTIONS	LAĐ FLAG ¹	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,3,4',6 - TeCB	64		UD		1.58		
2,3,5,6 - TeCB	65	44 + 47 + 65	C44				
2,3',4,4' - TeCB	66		UD		4.47		
2,3',4,5 - TeCB	67		UD		4.28		
2,3',4,5' - TeCB	68		UD		4.20		
2,3',4,6 - TeCB	69	49 + 69	C49				

2,3',4,5 - TeCB	67		UD		4.28		
2,3',4,5' - TeCB	68		UD		4.20		
2,3',4,6 - TeCB	69	49 + 69	C49				
2,3',4',5 - TeCB	70	61 + 70 + 74 + 76	C61				
2,3',4',6 - TeCB	71	40 + 41 + 71	C40				
2,3',5,5' - TeCB	72		UD		4.54		
2,3',5',6 - TeCB	73		UD		1.55		
2,4,4',5 - TeCB	74	61 + 70 + 74 + 76	C61				
2,4,4',6 - TeCB	75	59 + 62 + 75	C59				
2',3,4,5 - TeCB	76	61 + 70 + 74 + 76	C61				
3,3',4,4' - TeCB	77		Х				
3,3',4,5 - TeCB	78		UD		4.69		
3,3',4,5' - TeCB	79		UD		3.96		
3,3',5,5' - TeCB	80		UD		4.02		
3,4,4',5 - TeCB	81		X				
2,2',3,3',4 - PeCB	82		UD		1.89		
2,2',3,3',5 - PeCB		0.65 83+99	C D JB	6.13	1.58	1.44	0.887
2,2',3,3',6 - PeCB	84	8	UD		1.70		
2,2',3,4,4' - PeCB	85 3	85 + 116 + 117	C D JB	2.76	1.33	1.45	0.920
2,2',3,4,5 - PeCB		¹ ⁵ 86 + 87 + 97 + 108 + 119 + 125	C D JB	7.89	1.42	1.72	0.902
2,2',3,4,5' - PeCB	87	86 + 87 + 97 + 108 + 119 + 125	C86				
2,2',3,4,6 - PeCB	88	88 + 91	CUD		1.52		
2,2',3,4,6' - PeCB	89	1	UD		1.65		
2,2',3,4',5 - PeCB	90 5	90 + 101 + 113	C D JB	10.2	1.42	1.34	0.870
2,2',3,4',6 - PeCB	91	88 + 91	C88				
2,2',3,5,5' - PeCB		75	D JB	2.55	1.55	1.48	0.853
2,2',3,5,6 - PeCB	93	93 + 95 + 98 + 100 + 102	CUD		1.50		
2,2',3,5,6' - PeCB	94		UD		1.58		
2,2',3,5',6 - PeCB	95 96 .6	93 + 95 + 98 + 100 + 102	C93	0.000	0.060	0.70	4.040
2,2',3,6,6' - PeCB	1 .		KD JB	0.326	0.263	0.79	1.012
2,2',3',4,5 - PeCB	97	86 + 87 + 97 + 108 + 119 + 125	C86				
2,2',3',4,6 - PeCB	98	93 + 95 + 98 + 100 + 102	C93				
2,2',4,4',5 - PeCB	99	83 + 99	C83				
2,2',4,4',6 - PeCB	100	93 + 95 + 98 + 100 + 102	C93				
2,2',4,5,5' - PeCB	101	90 + 101 + 113	C90				
2,2',4,5,6' - PeCB	102	93 + 95 + 98 + 100 + 102	C93 UD		1.35		
2,2',4,5',6 - PeCB	103 104 <i>\$</i> ,4	20	KD JB	1.00	0.275	1.17	1.000
2,2',4,6,6' - PeCB							
2,3,3',4,4' - PeCB	105 27. 106	, > >	D JB UD	5.51	1.65 1.43	1.50	1.000
2,3,3',4,5 - PeCB	100		00		1.45		

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Approved by:_____

QA/QC Chemist

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MO AXYS ANALYTICAL SERVICES LTD P.O. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., CANADA VOL 358 TEL (250) 655-5800 FAX (250) 655-5811

AXYS METHOD MLA-010 Rev 05 Form 1A				CLIENT ID:		LAB BLANK	
Page 4 of 6				Project Number:		N/A	
Lab Sample ID:	WG15450-101			Sample Data Fil	ename:	PB5C_208 S:5	
COMPOJNE	NO. 5)		LAB FLAG ¹	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,3,3',4',5 - PeCE	107 17.9	5 107 + 124	C D JB	3.59	1.72	1.38	0.991
2,3,3',4,5' - PeCE	108	86 + 87 + 97 + 108 + 119 + 125	C86	0.00		1.00	0.001
2,3,3',4,6 - PeCE	109		UD		1.32		
2,3,3',4',6 - PeCB	110 39.4	110 + 115	C D JB	7.89	1.22	1.50	0.925
2,3,3',5,5' - PeCB			UD		1.24		
2,3,3',5,6 - PeCB	112		UD		1.21		
2,3,3',5',6 - PeCB		90 + 101 + 113	C90				
2,3,4,4',5 - PeCB	114 18,9	->	D JB	3.69	1.60	1.34	1.000
2,3,4,4',6 - PeCB	115	110 + 115	C110				
2,3,4,5,6 - PeCB	116	85 + 116 + 117	C85				
2,3,4',5,6 - PeCB	10 ⁻²	85 + 116 + 117	C85				
2,3',4,4',5 - PeCB			D JB	9.84	1.45	1.60	1.000
2,3',4,4',6 - PeCB		86 + 87 + 97 + 108 + 119 + 125	C86				
2,3',4,5,5' - PeCB			UD		1.21		
2,3',4,5',6 - PeCB			UD		1.18		
2',3,3',4,5 - PeCB			UD		1.73		
2',3,4,4',5 - PeCB		107 . 101	X				
2',3,4,5,5' - PeCB		107 + 124	C107				
2',3,4,5,6' - PeCB	125	86 + 87 + 97 + 108 + 119 + 125	C86				
3,3',4,4',5 - PeCB 3,3',4,5,5' - PeCB	126 127		X UD		1.60		
		2	C D JB	2.94		1.10	0.050
2,2',3,3',4,4' - HxCB 2.2',3.3',4.5 - HxCB	11	129 + 138 + 160 + 163	CDJB	3.84 12.6	2.08 2.03	1.12 1.13	0.959
2,2',3,3',4,5' - HxCB	129 63 130	129 + 130 + 100 + 103	UD	12.0	2.03	1.13	0 929
2,2',3,3',4,6 - HxCB	130		UD		2.25		
2,2',3,3',4,6' - HxCB	132		UD		2.29		
2,2',3,3',5,5' - HxCB	133		UD		2.18		
2,2',3,3',5,6 - HxCB	134	134 + 143	C UD		2.42		
2,2',3,3',5,6' - HxCB	135 (1, 59		C D JB	2.31	0.340	1.14	1.104
2,2',3,3',6,6' - HxCB	136		UD		0.260		
2,2',3,4,4',5 - HxCB	137		UD		2.30		
2,2',3,4,4',5' - HxCB	138	129 + 138 + 160 + 163	C129				
2,2',3,4,4',6 - HxCB	139	139 + 140	C UD		1.89		
2,2',3,4,4',6' - HxCB	140	139 + 140	C139				
2,2',3,4,5,5' - HxCB	141		UD		2.32		
2,2',3,4,5,6 - HxCB	142		UD		2.27		
2,2',3,4,5,6' - HxCB	143	134 + 143	C134				
2,2',3,4,5',6 - HxCB	144		UD		0.345		
2,2',3,4,6,6' - HxCB	145 1-78		D JB	0.356	0.278	1.41	1.037
2,2',3,4',5,5' - HxCB	146 11.2		KD JB	2.24	2.02	0.55	0.885
2,2',3,4',5,6 - HxCB	147 40.1	147 + 149	C D JB	8.02	2.14	1.37	1.132
2,2',3,4',5,6' - HxCB	148		UD		0.358		
2,2',3,4',5',6 - HxCB	149	147 + 149	C147				

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1 1 QA/QC Chemist Approved by:

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(250) 655-5800 FAX (250) 655-5800 FAX (250) 655-5800 FAX (250) 655-5801

AXYS METHOD MLA-010 Rev 05 Form 1A				CLIENT ID:		LAB BLANK	
Page 5 of 6				Project Number	r:	N/A	
*	WG15450-101			Sample Data Fi		PB5C_208 S:5	
COMPOUND	NO. 5×	CO-ELUTIONS	LAB FLAC ¹	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RR
2,2',3,4',6,6' - HxCB	150		UD		0.255		
2,2`,3,5,5',6 - HxCB	151	135 + 151 + 154	C135				
2,2',3,5,6,6' - HxCB	152		UD		0.254		
2,2',4,4',5,5' - H×CB	153 ST	153 + 168	C KD JB	11.4	1.74	1.03	0.8
2,2',4,4',5,6' - HxCB	154	135 + 151 + 154	C135				
2,2',4,4',6,6' - HxCB	155		UD		0 250		
2,3,3°,4,4°,5 - HxCB	156 41.5	156 + 157	C D JB	8.30	2.56	1.08	1.00
2,3,3',4,4',5' - HxCB	157	156 + 157	C156				
2,3,3',4,4',6 - HxCB	158 9		D JB	1.82	1.64	1.41	0.93
2,3,3',4,5,5' - HxCB	159		UD		1.85		
2,3,3',4,5,6 - HxCB	160	129 + 138 + 160 + 163	C129				
2,3,3',4,5',6 - HxCB	161		UD		1.74		
2,3,3',4',5,5' - HxCB	162		UD		1.81		
2,3,3',4',5,6 - HxCB	163	129 + 138 + 160 + 163	C129				
2,3,3',4',5',6 - HxCB	164		UD		1.83		
2,3,3',5,5',6 - HxCB	165		UD		1.80		
2,3,4,4',5,6 - H×CB	166	128 + 166	C128				
2,3',4,4',5,5' - HxCB	167 2 .		D JB	4.22	1.86	1.20	1.00
2,3',4,4',5',6 - HxCB	168	153 + 168	C153				
3,3',4,4',5,5' - HxCB	169	~	х				
2,2',3,3',4,4',5 - HpCB	170 19.40	7	D JB	3.89	0.436	0.90	0.93
2,2',3,3',4,4',6 - HpCB	171 5.2	171 + 173	C KD JB	1.06	0.412	2.31	1.16
2,2',3,3',4,5,5' - HpCB	172 (0.24	2	D JB	2.05	0.436	0.95	0.89
2,2',3,3',4,5,6 - HpCB	173	171 + 173	C171				
2,2',3,3',4,5,6' - HpCB	174		UD		0.380		
2,2',3,3',4,5',6 - HpCB	175		UD		0.354		
2,2',3,3',4,6,6' - HpCB	176		UD		0.266		
2,2',3,3',4',5,6 - HpCB	177 11.8		D JB	2.36	0.394	1.01	1.14
2,2',3,3',5,5',6 - HpCB	178 4.12		KD JB	0.824	0.357	2.36	1.08
2,2',3,3',5,6,6' - HpCB	179 6 65		KD JB	1.33	0.259	1.25	1.00
2,2',3,4,4',5,5' - HpCB	180 50.5	180 + 193	C D JB	10.1	0.354	0.98	0.91
2,2',3,4,4',5,6 - HpCB	181		UD		0.392		
2,2',3,4,4',5,6' - HpCB	182 9.0		D JB	1.80	0.378	1.06	1.11
2,2',3,4,4',5',6 - HpCB	183	183 + 185	C UD		0.370		
2,2',3,4,4',6,6' - HpCB	184 4.65		KD JB	0.930	0.250	3.58	1.02
2,2',3,4,5,5',6 - HpCB	185	183 + 185	C183				
2,2',3,4,5,6,6' - HpCB	186 2.455		D JB	0.491	0.277	1.08	1.04
2,2',3,4',5,5',6 - HpCB	187 29.4		D JB	5.88	0.338	1.13	1.10
2,2',3,4',5,6,6' - HpCB	188 10.2		D JB	2.04	0.268	0.93	1.00
2,3,3',4,4',5,5' - HpCB	189 22.2		D JB	4,44	0.267	1.15	1.00
2,3,3',4,4',5,6 - HpCB	190 (] .]		KD JB	2.22	0.325	4.45	0.94
2,3,3',4,4',5',6 - HpCB	191 7.3		KD JB	1.46	0.326	2.84	0.919
2,3,3',4,5,5',6 - HpCB	192 3 5 2		KD JB	0.704	0.344	0.38	0.903

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AXYS ANALYTICAL SERVICES LTD P.O. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., CANADA VOL 358 TEL (250) 655-5800 FAX (250) 655-5811

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Form 1A							
Page 6 of 6				Project Numbe	r:	N/A	
Lab Sample ID:	WG15450-101			Sample Data F		PB5C_208 S:5	
				,		_	
			1.45				
COMPOUND	NO. 5X	CO-ELUTIONS	LAB FLAG ¹	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
	2	<u></u>	a print and				
2,3,3',4',5,5',6 - HpCB	193	180 + 193	C180				
2,2',3,3',4,4',5,5' - OcCB	194		UD		0.366		
2,2',3,3',4,4',5,6 - OcCB			UD		0.430		
2,2',3,3',4,4',5,6' - OcCB	196 4.T		KD JB	0.940	0.589	2.15	0.917
2,2',3,3',4,4',6,6' - OcCB	197 2.815	197 + 200	C KD JB	0.563	0.456	1.85	1.046
2,2',3,3',4,5,5',6 - OcCB		198 + 199	C KD JB	0.979	0.599	12.31	1.112
2,2',3,3',4,5,5',6' - OcCB	199	198 + 199	C198				
2,2',3,3',4,5,6,6' - OcCB	200 201 5.4	197 + 200	C197			~	
2,2',3,3',4,5',6,6' - OcCB			KD JB	1.08	0.455	0.60	1.023
2,2',3,3',5,5',6,6' - OcCB	202 7.6		KD JB	1.52	0.480	1.11	1.001
2,2',3,4,4',5,5',6 - OcCB	203 204		UD UD		0.540 0.458		
2,2',3,4,4',5,6,6' - OcCB 2,3,3',4,4',5,5',6 - OcCB	204 205				0.458		
2,2',3,3',4,4',5,5',6 - NoCB	206		UD		16.1		
2,2',3,3',4,4',5,6,6' - NoCB	207		UD		14.0		
2,2',3,3',4,5,5',6,6' - NoCB	208		UD		15.8		
2,2',3,3',4,4',5,5',6,6' - DeCB	209 18		D JB	3.60	0.434	0.66	1.000
 C = co-eluting congener; U = not maximum possible concentration; E = less than LMCL; B = analyte found in These pages are part of a larger report 	 exceeds calibrated line sample and the associa 	ar range, see dilution data ted blank; X = results repo	; D = dilution data orted separately				
maximum possible concentration; E = less than LMCL; B = analyte found in	 exceeds calibrated line sample and the associa 	ar range, see dilution data ted blank; X = results repo	; D = dilution data orted separately				
maximum possible concentration; E = less than LMCL; B = analyte found in	 exceeds calibrated line sample and the associa 	ar range, see dilution data ted blank; X = results repo	; D = dilution data orted separately				
maximum possible concentration; E = less than LMCL; B = analyte found in	 exceeds calibrated line sample and the associa 	ar range, see dilution data ted blank; X = results repo	; D = dilution data orted separately				
maximum possible concentration; E = less than LMCL; B = analyte found in	 exceeds calibrated line sample and the associa 	ar range, see dilution data ted blank; X = results repo	; D = dilution data orted separately				
maximum possible concentration; E = less than LMCL; B = analyte found in	 exceeds calibrated line sample and the associa 	ar range, see dilution data ted blank; X = results repo	; D = dilution data orted separately				
maximum possible concentration; E = less than LMCL; B = analyte found in	 exceeds calibrated line sample and the associa 	ar range, see dilution data ted blank; X = results repo	; D = dilution data orted separately				
maximum possible concentration; E = less than LMCL; B = analyte found in	 exceeds calibrated line sample and the associa 	ar range, see dilution data ted blank; X = results repo	; D = dilution data orted separately				
maximum possible concentration; E = less than LMCL; B = analyte found in	 exceeds calibrated line sample and the associa 	ar range, see dilution data ted blank; X = results repo	; D = dilution data orted separately				
maximum possible concentration; E = less than LMCL; B = analyte found in	 exceeds calibrated line sample and the associa 	ar range, see dilution data ted blank; X = results repo	; D = dilution data orted separately				
maximum possible concentration; E = less than LMCL; B = analyte found in	 exceeds calibrated line sample and the associa 	ar range, see dilution data ted blank; X = results repo	; D = dilution data orted separately				
maximum possible concentration; E = less than LMCL; B = analyte found in	 exceeds calibrated line sample and the associa 	ar range, see dilution data ted blank; X = results repo	; D = dilution data orted separately				
maximum possible concentration; E = less than LMCL; B = analyte found in	 exceeds calibrated line sample and the associa 	ar range, see dilution data ted blank; X = results repo	; D = dilution data orted separately		d not requested; 、		24-05-2005 dd-mm-yyyy

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-	AXYS METHOD MLA-010 Rev 05 1668A-DB1-S2_D1 Page 1 of 1	PC	F B CONGENE	orm 1A IR ANALYS	SIS REF	PORT Sample Colle	tion	CLIENT ID: LAB BLANK N/A	
3	Lab Name: AXYS ANALYTICAL SE	RVICES				Project No.:		N/A	
	Contract No.:	4033				Lab Sample II	D:	WG15450-101	
8	Matrix:	TISSUE				Sample Size:		2.00 g	
-	Sample Receipt Date:	N/A				Initial Calibrat	ion Date:	04-Apr-2005	
n	Extraction Date:	14-Apr-2005				Instrument ID:	:	HR GC/MS	
	Analysis Date:	22-Apr-2005	1	Time: 1:14:	:02	GC Column ID):	DB-1	
W	Extract Volume (µL):	20				Sample Datafi	le:	DT53_113 S: 5	
-	Injection Volume (µL):	2.0				Blank Data Fil	ename:	DT53_113 S: 5	
2	Dilution Factor.	N/A				Cal. Ver. Data	Filename:	DT53_113 S: 1	
	Concentration Units :	ng/kg							
Ш.	COMPOUND	IUPAC NO.			AB .AGʻ	CONC. FOUND		ION ABUND. RATIO	RRT
	3,3',4,4' - TeCB 3,4,4',5 - TeCB	77 81	29		JB U	0.580	0.250 0.250	0.88	1.001
17	2,3,3',4,4' - PeCB 2,3,4,4',5 - PeCB 2,3',4,4',5 - PeCB 2',3,4,4',5 - PeCB 3,3',4,4',5 - PeCB	105 114 118 123 126	1.4T 1.38		IB IB	0.294 0.276	0.250 0.250	1.53 1.40	1.001 1.001
L.22	2,3,3',4,4',5 - HxCB 2,3,3',4,4',5' - HxCB 2,3',4,4',5,5' - HxCB 3,3',4,4',5,5' - HxCB	156 157 167 169		Ĩ	U		0.428		
C.99	2,2',3,3',4,4',5 - HpCB 2,2',3,4,4',5,5' - HpCB 2,3,3',4,4',5,5' - HpCB	170 180 189							
1.05									
1.799	 U = not detected; K = peak detecte possible concentration; E = exceeds ca concentration less than LMCL; B = ana These pages are part of a larger report 	librated linear lyte found in sa	range, see dil ample and the	ution data; associated	D = dilu d blank;	ition data; Z = c X = results repo	ompound not re orted separately	equested; J =	
如哪	more pages are part or a larger report	and may both		· · · · · · · · · · · · · · · · · · ·		Cata of aluadon			
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Approved by:_

24-05-2005 dd-mm-yyyy

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QA/QC Chemist

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MO AXYS ANALYTICAL SERVICES LTD P.O. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., CANADA VOL 358 TEL (250) 655-5800 FAX (250) 655-5811

w.	AXYS	ME.	THOD	MLA-010	Rev	05	
	PCB-TO	TAL	209				

Page 1 of 1

Form 1A

HOMOLOGUE TOTAL POLYCHLORINATED BIPHENYLS (PCB) ANALYSIS REPORT

					Sample Collection	1:	N/A	
-	Lab Name: AXYS ANALYTICAL	SERVICES			Project Number:		N/A	
1997	Contract No.:	4033			Lab Sample ID:		WG15450-101	
	Matrix:	TISSUE			Sample Size:		2.00	g
729	Sample Receipt Date:	N/A			Initial Calibration	Date:	19-Apr-2005	
-	Extraction Date:	14-Apr-200	5		Instrument ID:		HR GC/MS	
1	Analysis Date:	24-Apr-200	5 Tir	ne: 23:33:51	GC Column ID:		SPB-OCTYL	
	Extract Volume (µL):	400			Blank Data Filenar	ne:	DB-1 PB5C_208 S:5	
1980.	Injection Volume (µL):	1.0			Cal. Ver. Data File	name:	PB5C_208 S:1	
	Dilution Factor:	20			Sample Datafile(s)	:	PB5C_208 S:5	
(2 17)	Concentration Units :	ng/kg					DT53_113 S: 5	
-	PCB HOMOLOGUE GROUP		5X	LAB FLAG ¹	CONC. FOUND	DETECTION LIMIT		
192.J	Total Monochloro Biphenyls		26.55		5.31	1.72		
-	Total Dichloro Biphenyls			U		9.84		
2 22	Total Trichloro Biphenyls		101		20.2	1.52		
~	Total Tetrachloro Biphenyls		51		10.2	0.250		
	Total Pentachloro Biphenyls		303		60.6	0.250		
	Total Hexachloro Biphenyls		207		41.4	0.428		
	Total Heptachloro Biphenyls		165.5		33.1	0.436		
1	Total Octachloro Biphenyls			U		0.599		
	Total Nonachloro Biphenyls			U		16 1		
988	Decachloro Biphenyl		18		3,60	0.434		
÷	TOTAL PCBs				174			

(1) U = Not detected

255

33

(2) All header information pertains to the initial instrumental analysis of the sample extract.

Additional sample datafiles listed refer to secondary analysis of the sample extract.

These pages are part of a larger report that may contain information necessary for full data evaluation.

15450PCBTOTAL_1.xls. S3

Approved by:

fin QA/QC Chemist

25-05-2005 dd-mm-yyyy

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	Biphenvl
9	METHOD: HRGC/HRMS Polychlorinated Biphenvl
STEB"	HRGC/HRMS
LDC #: 1357 SDG #: DPW	METHOD:

VALIDATION FINDINGS WORKSHEET Internal Standards

Page: /of / Reviewer: ______ 2nd Reviewer: ______

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

X X Gas	Please see qualifications Y N/A Are all in Y N N/A Was the	Please see qualifications below for all questions answered "N". Not a $\frac{1}{7}$ N/A Are all internal standard recoveries were within the 2 Y M N/A Was the S/N ratio all internal standard peaks $> 10^{\circ}$	iffications below for all questions answered "N". Not applicable questions are identified as "N/A". Are all internal standard recoveries were within the 25-150% criteria? Was the S/N ratio all internal standard peaks \geq 10?	questions riteria?	are identified as "N/A"		
#	Date	Lab ID/Reference	Internal Standard		% Recovery (Limit: 25-150%)	(%0	Qualifications
		Ş	The second second second second second second second second second second second second second second second se	HZ	2 N-+ 2 Mant	Hable)	
			13 2033	2.01	-5=10	1 22	Star 1 F
			3 PCB4	9'E)	()	
			3 PCB 1 *	A.S	(25	(251-	THEY P.K.
)	(
					~) (PCB] -> (4)
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)	(
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			I POB-1 WAR No	A rep	weed ((
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)	(
)	(
					~	(
					~	(
					~	(
)	(
		Internal Standards	Check Standard Used		Internal	Internal Standards	Check Standard Used
A.	¹³ C-3,3',4,4'-TetraCB	etraCB		Y	¹³ C-2,4,4'-TriCB		
ம்	¹³ C-2,3',4,4',5-PentaCB	PentaCB		نــ			
Ċ	¹³ C-3,3',4,4',5-PentaCB	PentaCB		Ϋ́.			
сi	¹³ C-3,3',4,4',5,5'-HexaCB	5'-HexaCB		ź			
ш	¹³ C-2,2',3,4,4',5,5'-HeptaCB	5,5'-HeptaCB		o			
ш.	¹³ C-2,2',3,3',4,4',5,5'-OCB	4',5,5'-OCB		<u>a</u> :			
J	¹³ C-DCB			ö			
-	¹³ C-4-CB			œ			
	IL ¹³ C-4,4'-DCB			F			

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VALIDATION FINDINGS WORKSHEET Initial Calibration Calculation Verification

of f X 2nd Reviewer: Page: Reviewer:

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method '668)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

 $\label{eq:relation} \begin{array}{l} {\sf RRF}=(A_{\rm s})(C_{\rm s})/(A_{\rm s})(C_{\rm s})\\ {\rm average}\; {\sf RRF}=\mbox{sum}\; {\rm of}\; {\rm the}\; {\sf RRFs}/{\rm number}\; {\rm of}\; {\rm standards}\\ {\rm \%RSD}\; =\; 100\; *\; (S/X) \end{array}$

 $A_x = Area of compound,$ $C_x = Concentration of compound,$ $S = Standard deviation of the RRFs, <math>\Sigma$

					Reported	Recalculated	Reported	Recalculated	Reported	Recalculated
*	Standard ID	Calibration Date	Compo	Compound (Reference Internal Standard)	Average RRF (initial)	Average RRF (initial)	RFF (<i>C</i> S <i>3</i> std)	RRF (%RSD	%RSD
-	1042	161		PCB-77 (¹³ C-PCB-77)	0.94	0.94	0.92	0.92	745	7.30
		50/11/2		PCB-1(5 (¹³ C-PCB-105)	0.88	0.88	0.30	0.90	2.64	2.91
	And a second second second second second second second second second second second second second second second		PCB-156	PCB-156 (¹³ C-PCB-156)	0.94	0.94	0.97	0.77	4.3/	4.11
			PCB-180	PCB-180 (¹³ C-PCB-180)	0.87	0.87	0.88	0.88	3.41	3.41
	A SACARA A REAL AND A REAL AND A REAL AND A REAL AND A REAL AND A REAL AND A REAL AND A REAL AND A REAL AND A R	1			/					
N	1 cA c			PCB-77 (¹³ C-PCB-77)	1.03	1.03	1.06	1.06	3.14	3.32
	and the second	4/00	PCB-105	PCB-105 (¹³ C-PCB-105)						
				PCB-156 (¹³ C-PCB-156)						
			PCB-180	PCB-180 (¹³ C-PCB-180)						
e			PCB-77	PCB-77 (¹³ C-PCB-77)						
		-	PCB-105	PCB-105 (¹³ C-PCB-105)						
			PCB-156	PCB-156 (¹³ C-PCB-156)						
			PCB-180	PCB-180 (¹³ C-PCB-180)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

SDG #: DP WEIS926 LDC #: 3376.43

Routine Calibration Results Verification VALIDATION FINDINGS WORKSHEET

Page: / of / ď Ż Reviewer: 2nd Reviewer:

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

Where: % Difference = 100 * (ave. RRF - RRF)/ave. RRF RRF = (A_{\rm x})(C_{\rm s})/(A_{\rm s})(C_{\rm x})

ave. RRF = initial calibration average RRF RRF = continuing calibration RRF $A_x = Area \sigma compound, C_x = Concentration of compound,$

 $A_{\rm ts}$ = Area of associated infernal standard $C_{\rm s}$ = Concentration of internal standard

	Standard ID Standard ID V/19	n Date	Compound (Reference Internal Standard) PCB-77 (¹³ C-PCB-77)				In the second of	
	15802	4/25/02	PCB-77 (¹³ C-PCB-77)	Average RRF (initial)	RRF AW	RRFX UC	%D	Q%
		4/25/4		0.94	48.0	47.9.		
			25/05 PCB-105 (13C-PCB-105)	0.88	29.5	49.4	0	
			PCB-156 (¹³ C-PCB-156)	0.94	105	105	5	
	1.201		PCB-189 (¹³ C-PCB-189)	0.87	49.0	48.9	K	
	12001						2	
2 D 53	1 ->>>1	10/2014	PCB-77 (¹³ C-PCB-77)	1.03	53.5	53.6	DC,	
any particular for the second s		sal-la	PCB-105 (3C-PCB-105)				H3	
			PCB-156 (¹³ C-PCB-156)					1
			PCB-150 (¹³ C-PCB-180)					
3 PBCC	PBCC-20954	8 12 c-1.5	PCB-77 (¹³ C-PCB-77)	0.94	49.2	49.0	F	
		<0/2-/4>	PCB-165 (¹³ C-PCB-105)	0.88	78,2	48.2	-0-1	
			PCB-156 (¹³ C-PCB-156)	0.94	102	103	N	
			PCB-180 (¹³ C-PCB-180)	0.87	dt.3	47.3		
				_				

C:\WPDOCS\WRK\PCB\CONCLC.163

recalculated results.

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the

#: 1357683	#: *************	
LDC	SDG	

Routine Calibration Results Verification VALIDATION FINDINGS WORKSHEET

/of/ A Y Page: Reviewer: 2nd Reviewer:

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Methoc 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

Where: % Difference = 100 * (ave. RRF - RRF)/ave. RFF RR^= = (A_{\rm J})(C_{\rm sJ})/(A_{\rm s})(C_{\rm J})

ave. RRF = initial calibration average RRF RRF = continuing calibration RRF

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported 'esults do not agree within 10.0% of the Recalculated 0% Reported **0%** RRF Aut Recalculated d 0 Ь \otimes $A_{\rm s}$ = Area of associated internal standard $C_{\rm s}$ = Concentration of internal standard XØ. 00 54 48, M 9 RRFAW Reported 80 18.6 201 4 V Y. Å X X Average RRF (initial) 20 3 0.94 0.88 0.87 10:94 0 $A_x = Area of compound, C_x = Concentration of compound,$ Compound (Reference Internal Standard) PCB-180 (13C-PCB-180) PCB-156 (13C-PCB-156) PCB-180 (13C-PCB-180) PCB-105 (13C-PCB-105) PCB-156 (13C-PCB-156) PCB-180 (13C-PCB-180) PCB-105 (13C-PCB-105) PCB-156 (13C-PCB-156) PCB-105 (13C-PCB-105) PCB-77 (13C-PCB-77) PCB-77 (13C-FCB-77) (¹³C-PCB-77) PCB-77 50 12 Calibratio n Date Z 5 4 U PBSC-2/05 V recalculated results. 1145 Standard ID DT53.49 **JT53** တ -----2 *

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1C#: [357683	0G #: DPWG 15926	ETHOD: HRGC/HRMS Polychlori
LDC	SDG	METH

Laboratory Control Sample Results Verification VALIDATION FINDINGS WORKSHEET

of ð Page: Reviewer:

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were 2nd Reviewer: A recalculated for the compounds identified below using the following calculation: inated Biphenyls (EPA Method 1668)

% Recovery = 100 * SSC/SA

SSC = Spiked sample concentration SA = Spike added Where:

RPD = 1 LCS - LCSD 1 * 2/(LCS + LCSD)

LCSD = Laboratory control sample duolicate percent recovery LCS = Laboraotry control sample percent recovery

LCS ID: NG (5450-102

Percent HecoveryPercent RecoveryPercent RecoverySDReportedRecalc.FeportedReportedA $\Im S. \Im$ $\Im S. \Im$ $\Im S. \Im$ $\Im S. \Im$ $\Im S. \Im$ A $\Im S. \Im$ $\Im S. $		Spi	ex ex	Spiked Sample	ample	TCS	s	rcsD	Q	rcs/rcsD	csD
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Compound	Ado MS	ied ()	Concent	tration	Percent B	ecovery	Percent R	ecovery	RPD	D
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		LCS /	LCSD	SOL	LCSD	Reported	Recalc.	Feported	Recalc.	Reported	Recalculatec
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PCB-77	201	4.A	· ·	ΝĄ	96.8	96.8				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	PCB-81			•		980	98.0				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	PCB-105			1 1 1		95,8	95.8				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PCB-114					95.3	95.3				
Alst 1884 1884 1884 1884 1884 1884 1884 188	PCB-118			ľ,		96.3	96.3				
VIET 200 211 97.3 VIET 200 211 05 FOR 104 104 104 V 107 107 107 107 107 107	PCB-123					4.86	98.4				
AIST 200 211 05 105 105 105 105 105 105 105 105 10	PCB-126			1.			97.3				
tese tese 102 104 107 104 107 104 107 107 107 107 107 107 107 107 107 107 107 107 107 107 107 107 107 107 107 107 107 107	$ \rangle$	200		Ν		105	105				
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		(Pag)		the		44					
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PCB-167	10-01		104		104	104				
86 1 28 1 24	PCB-169	V		107		107	107				
· 26 1 28 1 2.4	PCB-170										
·26 1 6.86 1 2.4 38.	PcB-180										
	PCB-189	10-0	<u></u>	98.9	\rightarrow	· 、	· .				
			•			-					

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.3% of the recalculated results.

	lons Mo	lons Monitored for HRGC/HRMS Analysis of Polychlorinated Biphenyls	s of Polychlorinated Biphenyls		[
Descriptor	Accurate mass ^(a)	lon ID	Analyte	Substance	999 999 999 999 999 999 999 999 999 99
	289.9224	Σ	C12 H6 35Cl4	TCB	
	291.9194	M+2	C12 H6 35Cl3 37Cl4	TCB	
	301.9626	Σ	13C12 H6 35Cl4	PeCB	
	303.9597	M+2	13C12 H6 35Cl3 37Cl	PeCB	
	325.8804	M+2 M - 4		Pece	
	227.8775	NI+4 Lock	C7 F11	PFK	
5	325.8804	M+2	C12 H5 35Cl4 37Cl	PeCB	
	C/18/128	M+10		Leca Dot	
	331.3201	M+4	13012 H5 35013 37012	Pects	Crappin m and the
	359.8415	M+2	C12 H4 35Cl5 37Cl	HXCB	
	361.8385	M+4	C12 H4 35Cl4 37Cl2	HXCB	
	371.8817	M+2	13C12 H4 35Cl5 37Cl	HXCB	*****
	373.8788	M+4	13C12 H4 35Cl4 37Cl2	HxCB	
	393.8025	M+2	C12 H3 35CI6 37CI	HpCB	
	395.7996	M+4	C12 H3 35CI5 37CI2	HpCB	
	405.8428	M+2	13C12 H3 35CI6 37CI	HpCB	
	407.8398	M+4	13C12 H3 35CI5 37CI2	HpCB	
	[354.9892]	Lock	C9F13	PFK	
3	509.7229	M+4	13C12 35Cl10 37C/2	DCB	
	511.7199	M+6	13C12 35Cl9 37Cl5		
	513.7170	M+8	13C12 35CI8 37CI4		water water
	[442.9728]	Lock	C10 F17	PFK	- Wastaki
S = internal/recovery stardard	tardard				
					Decessory)
ΙO	H = 1.007825 $CI = 34.968853C = 12.000000$ $TCI = 36.965903$	968853 965903			
¹³ C					
<u>L</u>	= 18.9984				

					-
					Service on party

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					-

LDC #: <u>B576B3</u> SDG #: <u>DPWE</u>[5 26

VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:	
Reviewer:	9-
2nd reviewer:	V

			Reported	Calculated		
%S =	Percent solids, applicable to soils and solid matrices only.	t				
Df =	Dilution factor.			D		
V _o =	Volume or weight of sample pruged in milliliters (mi) or grams (g).	- 17-	#4.6 hs/k.	\checkmark		
RRF =	Relative response factor of the calibration standard.			1		
! _s =	Amount of internal standard added in nanograms (ng)		1.33e+08, (4.	3 1(2.19))()
A _{is} =	Area of the characteristic ion (EICP) for the specific internal standard	l l l l l l l l l l l l l l l l l l l		a		
A _x =	Area of the characteristic ion (EICP) for the compound to be measured	Sample I.D.	<u></u>	<u>2B()</u> :		
Concentratio	$n = \frac{(A_{\downarrow})(I_{\circ})(DF)}{(A_{\downarrow})(RRF)(V_{\circ})(\%S)}$	Example:				
METHOD: Y N N/A Y N N/A	HRGC/HRMS Polychlorinated Biphenyls (EPA Were all reported results recalculated an Were all recalculated results for detected	d verified for all			orted resu	ılts?

		Reported Concentration	Calculated Concentration	
ni)	- 1	7+4.6 hs	Y	
ł.			3 1(2.19)()
	Conc. =	A.=6 e+08, (4	000 11 1)

#	Sample ID	Compound	Reported Concentration ()	Calculated Concentration ()	Qualification
					and the state of the state of the state of the state of the state of the state of the state of the state of the