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ENGINEERING DATA TRANSMITTAL

Page 1 of 1

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Impact Level (F)	Reason for Transmittal (G)	Disposition (H) & (I)
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

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Reason	Disp.								
1	1	Cog.Eng.	J. M. Ayres	3/7/93	H6-02	EDMC (2)		H6-08	3
1	1	Cog. Mgr.	R. P. Hench	3/7/93	H6-02	Central Files (2)		L8-04	
1	1	QA	G. S. Carrigan	3-12-93	H6-16	ERC		H6-07	
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		Env.							

18. J. M. Ayres Signature of EDT Originator 3/7/93 Date	19. Authorized Representative for Receiving Organization Date	20. Cognizant/Project Engineer's Manager 3/7/93 Date	21. DOE APPROVAL (if required) Ltr. No. <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments
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SUPPORTING DOCUMENT

1. Total Pages 15

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Data Validation Report for the 100-HR-1 Operable Unit Electrical Facilities

3. Number

WHC-SD-EN-TI-079

4. Rev No.

0

5. Key Words

QA sampling, Chemical analysis, PCB/Pesticides

6. Author

Name: J. M. Ayres

Signature

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APPROVED FOR
PUBLIC RELEASE

7. Abstract

2/24/93 N. Solis

WHC, 1993, Data Validation Report for the 100-HR-1 Operable Unit Electrical Facilities, WHC-SD-EN-TI-079, Rev. 0, prepared by A.T. Kearney, Inc., for Westinghouse Hanford Company, Richland, Washington.

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10.

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9. Impact Level 3Q

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ACRONYMS

%D	Percent difference
AA	Atomic absorption
BFB	Bromofluorobenzene
BNA	Base/neutral and acid (equivalent to semi-volatiles)
CCV	Continuing calibration verification
CLP	Contract Laboratory Program
CRDL	Contract required detection limit
CRQL	Contract required quantitation limit
DBC	Dibutylchloride
DFTPP	Decafluorotriphenylphosphine
DQO	Data quality objectives
EPA	U.S. Environmental Protection Agency
GC/MS	Gas chromatography/mass spectrometry
GC	Gas chromatography
GFAA	Graphite furnace atomic absorption
GPC	Gel permeation chromatography
ICP	Inductively coupled plasma emission spectrometry
ICS	ICP interference check sample
ICV	Initial calibration verification
IDL	Instrument detection limit
MSA	Method of standard addition
MS/MSD	Matrix spike/matrix spike duplicate
PCB	Polychlorinated biphenyl
PEM	Performance evaluation mixture
QA	Quality assurance
QC	Quality control
RF	Response factor
RIC	Reconstructed ion chromatogram
RPD	Relative percent difference
RRF	Relative response factor
RRT	Relative retention time
RSD	Relative standard deviation
RT	Retention time
SDG	Sample delivery group
SOW	Statement of work
TAL	Target analyte list
TCL	Target compound list
TIC	Tentatively identified compounds
TOC	Total organic carbon
TOX	Total organic halides
VOC	Volatile organic compounds

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1.0 INTRODUCTION

Data from the chemical analysis of eight samples from the 100-HR-1 Operable Unit Electrical Facilities Remedial Investigation and their related quality assurance samples were reviewed and validated to verify that reported sample results were of sufficient quality to support decisions regarding remedial actions performed at this site. Seven samples were analyzed by DataChem Laboratories (DataChem) using U.S. Environmental Protection Agency (EPA) SW-846 protocols. One package containing one sample was analyzed by Maxwell Laboratories, S-Cubed Division (S-Cubed), also using SW-846 protocols. All samples were analyzed for the presence of polychlorinated biphenyls (PCBs) according to SW-846 method 8080.

Seven soil samples were analyzed for PCBs only in SDG No. B018S5. One soil sample was analyzed for PCBs only in SDG No. B018S8.

Data quality was reviewed and analytical results validated using Westinghouse Hanford Company (Westinghouse Hanford) procedures and related EPA CLP protocols and guidelines. Data were qualified based upon their quality and the guidance provided by these sources. In instances where the two protocols differed, the Westinghouse Hanford guidance was followed.

The data package completeness, holding time adherence, instrument calibration and tuning acceptability, blank results, accuracy, precision, system performance, as well as the compound identification and quantitation are addressed in Section 2.0 of this report. In addition, an overall assessment and summary for the data packages reviewed is also presented. Detailed backup information is provided to the reader by SDG and sample number. For each SDG, a matrix of chemical analysis per sample number is presented, as well as data qualification summaries.

Qualifiers have been added to the reported data by the laboratory and as a result of data validation. The data reporting qualifiers are summarized as follows:

- U - Indicates the analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for dilutions and moisture content. It should be noted that the sample quantitation limit may be higher or lower than the contract or method required detection limit, depending on instrumentation, matrix and concentration factors.

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- J - Indicates the analyte was analyzed for and detected. However the associated value is considered to be an estimate due to identified QC deficiencies. Data flagged with a "J" may be usable for decision making purposes, depending upon the Data Quality Objectives (DQOs) of the project. Laboratories qualify all reported organic detects below CRQL with a "J" per the CLP procedures.
 - UJ - Indicates the analyte was analyzed for and not detected. However, the associated detection limit is considered to be an estimate due to identified QC deficiencies. Detection limits flagged with a "UJ" may be usable for decision making purposes, depending upon the DQOs of the project.
 - JN - Indicates the analyte was analyzed for and that there is presumptive evidence of the presences of the compound. The concentration reported is considered an estimate which should be used for informational purposes only.
 - E - Indicates the analyte was analyzed for and detected at a concentration outside of the calibration range of the instrument. All reported concentrations flagged with an "E" are estimates which may contain significant error.
 - R - Indicates the analyte was analyzed for and due to a significant QC deficiency, the data is deemed unusable. Analytic results flagged "R" are invalid and provide no information whatsoever as to whether the analyte is present or not.

The results of the data validation performed for the 100-HR-1 Operable Unit Electrical Facilities Remedial Investigation are contained in the tables which follow the second chapter of this report.

The data presented in SDG No. B018S5 was incomplete. There was insufficient information available to confirm any calculations or to determine correct quantitation limits for any of the samples. As a result, this data should be considered gross estimations only and used with extreme care.

With the exception noted above, the protocol-specific data quality objectives in terms of precision, accuracy, completeness, representativeness, and comparability have been met.

2.0 PESTICIDES AND PCB DATA VALIDATION

2.1 DATA PACKAGE COMPLETENESS

The data package received from DataChem, SDG No. B018S5, was incomplete. The data contained no percent solids determination raw data or results. The calibration and sample raw data contained insufficient supporting information to verify calculations. All data associated with this SDG has been flagged as estimates only.

SDG No. B018S8, as received from S-Cubed, was found to be complete.

2.2 HOLDING TIMES

Analytical holding times were assessed to ascertain whether holding time requirements for PCB analyses were met by the laboratory. Westinghouse Hanford protocols require that samples be extracted within seven days of collection and analyzed within 40 days of extraction. All samples must be shipped on ice to the laboratory and stored at 4°C until extraction, and the extracts must be stored at 4°C until analysis.

The holding time for extraction was exceeded by seven days for all samples in SDG No. B018S5. Per Westinghouse Hanford protocols all results, both detects and non-detects, were qualified as estimates ("J").

2.3 INSTRUMENT PERFORMANCE AND CALIBRATIONS

Instrument performance was assessed to ensure that adequate chromatographic resolution and instrument sensitivity were achieved by the gas chromatographic system.

During the quality assurance review, all indicators for acceptable instrument performance were verified. The criteria established by SW-846 protocols were met and the results are acceptable.

Instrument calibration is performed to ensure that the chromatographic system is capable of producing acceptable and reliable analytical data. The initial and continuing calibrations are to be performed according to procedures established by SW-846 protocols. An initial calibration is

performed prior to sample analysis to establish the linear range of the system, including a demonstration that all target compounds can be detected. Continuing calibration checks are performed to verify that instrument performance is stable and reproducible on a day-to-day basis.

2.3.1 GC Instrument Performance

The GC Instrument Performance was acceptable for both SDGs.

2.3.2 Initial Calibrations

The laboratory performed initial multipoint calibrations for the one compound specified at the concentrations required by SW-846 protocols. The linearity of the initial calibration is established when the percent relative standard deviation (RSD) of the calibration factors is less than or equal to 10 percent.

The initial calibrations were acceptable for both SDGs.

2.3.3 Calibration Verification

The criteria for acceptable continuing calibrations requires that the calibration factors for all target compounds have a percent difference of less than or equal to 15 percent of the average calibration factor calculated for the associated initial calibration standard.

The calibration verifications were acceptable for all samples.

2.4 BLANKS

Method blank and field blank analyses are performed to determine the extent of laboratory or field contamination of samples. No contaminants should be present in the blanks. Analytical results for analytes present in any sample at less than 5 times the concentration of that analyte found in associated blanks should be qualified as non-detects.

There were no compounds of concern detected in the method, instrument or field blanks.

2.5 ACCURACY

Accuracy was assessed by evaluating the recoveries of the surrogate compounds and the matrix spike recoveries calculated

for the sample analyses. Both sets of results are presented below.

2.5.1 Matrix Spike Recovery

Matrix spike analyses are performed in duplicate using a representative PCB compound as determined during the initial screening.

The recoveries for the compound were within the acceptable quality control limits established by the method for SDG No. B018S8. No matrix spike/matrix spike duplicate analyses were performed for the samples in SDG No. B018S5. Therefore, all associated results for SDG No. B018S5 were qualified as estimates and flagged "J".

2.5.2 Surrogate Recovery

Tetrachloro-m-xylene (TCX) was used as surrogate for all analytes. The recovery for TCX must be within the QC limits of 60 to 150 percent.

All surrogate recoveries in SDG No. B018S8 were verified. The TCX percent recoveries were acceptable in this case.

The supporting raw data provided for SDG No. B018S5 was insufficient to verify the surrogate recoveries. The surrogate recovery for sample number B018S5 was below the QC minimum. All results associated with this sample have been flagged as estimates ("J").

2.6 PRECISION

Precision is expressed as the relative percent difference (RPD) between the recoveries of the matrix spike and the matrix spike duplicate analyses performed on a sample and between the reported concentrations in field duplicate samples.

2.6.1 Matrix Spike/Matrix Spike Duplicate Samples

The matrix spike/matrix spike duplicate RPDs for SDG No. B018S8 were acceptable. No matrix spike/matrix spike duplicate analyses were performed for the samples in SDG No. B018S5.

2.6.2 Field Duplicate Samples

Sample numbers B018T1 and B018T2 in SDG No. B018S5 are field duplicates. There were no PCBs detected in either sample.

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Sample number B018S8 in SDG No. B018S8 and sample number B018S9 in SDG No. B018S5 are split samples. Aroclor-1254 was detected at 350 ug/Kg in SDG No. B018S8 but listed as not detected in SDG No. B018S5. Therefore, the associated results in sample number B018S9 in SDG No. B018S5 were qualified as estimates and flagged "J".

2.7 COMPOUND IDENTIFICATION AND QUANTITATION

2.7.1 Compound Identification

The data were evaluated to confirm the positive concentrations and to investigate the possibility of false negatives in all other data. Confirmation of possible false negatives is addressed by reviewing other factors relating to analytical sensitivity (e.g., detection limits, instrument linearity, analytical recovery). These factors were found to be in control.

2.7.2 Compound Quantitation and Reported Quantitation Limits

Compound quantitations and reported detection limits were recalculated and verified for the samples to ensure that they were accurate and are consistent with method requirements for SDG No. B018S8. The compound quantitations and the CRQLs reported for this case were calculated correctly and were acceptable.

Insufficient information was provided to verify compound quantitation in SDG No. B018S5. Dilution factors and percent solids were not provided nor were the detection limits modified to account for these factors.

2.8 OVERALL ASSESSMENT AND SUMMARY

All analyses requested under this project were performed. Due to the absence of supporting data and other QC deficiencies, the detection limits and reported concentrations for all analytes in SDG No. B018S5 are considered to be gross estimations at best. Furthermore, the detects are "JN," supported by presumptive evidence only. The quality of data available for seven of the eight samples reported is highly suspect. The quantitations reported for SDG No. B018S5 should be used with extreme care only.

9 3 1 2 9 6 9 2 1 5 1

PESTICIDE/PCB ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Page_1__ of _1__

Project: WESTINGHOUSE-HANFORD																			
Laboratory: DataChem																			
Case:	SDG: B018S5																		
Sample Number	B018S5	B018S6	B018S7	B018S9	B018T0	B018T1	B018T2												
Location	105-H	151-H	151-H	151-H	151-H	151-H	151-H												
Remarks	152-JIH	SE MAIN	SOUTH	SW CORNE	WEST	NE MAIN	NE MAIN												
Sample Date	12/09/91	12/09/91	12/09/91	12/09/91	12/09/91	12/09/91	12/09/91												
Extraction Date	12/23/91	12/23/91	12/23/91	12/23/91	12/23/91	12/23/91	12/23/91												
Analysis Date	01/04/92	01/04/92	01/04/92	01/04/92	01/04/92	01/04/92	01/04/92												
Pesticide/PCB	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
alpha-BHC	1.7	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
beta-BHC	1.7	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
delta-BHC	1.7	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
gamma-BHC (Lindane)	1.7	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
Heptachlor	1.7	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
Aldrin	1.7	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
Heptachlor epoxide	1.7	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
Endosulfan I	1.7	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
Dieldrin	3.3	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
4,4'-DDE	3.3	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
Endrin	3.3	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
Endosulfan II	3.3	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
4,4'-DDD	3.3	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
Endosulfan sulfate	3.3	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
4,4'-DDT	3.3	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
Methoxychlor	17.0	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
Endrin Ketone	3.3	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
alpha-Chlordane	1.7	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
gamma-Chlordane	1.7	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
Toxaphene	170.0	N/A		N/A		N/A		N/A		N/A		N/A		N/A					
Arochlor-1016	33.0	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ				
Arochlor-1221	33.0	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ				
Arochlor-1232	67.0	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ				
Arochlor-1242	33.0	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ				
Arochlor-1248	33.0	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ				
Arochlor-1254	33.0	7	UJ	7	UJ	7	JN	7	UJ	32	JN	7	UJ	7	UJ				
Arochlor-1260	33.0	1200	JN	770	JN	630	JN	7	UJ	E	JN	7	UJ	7	UJ				

2-5

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9 3 1 2 9 6 9 2 1 5 2

HOLDING TIME SUMMARY

[illegible]

9 3 1 2 9 6 9 2 1 5 3

ACCURACY DATA SUMMARY

SDG: B018S5	REVIEWER: SC	DATE:9/28/92	PAGE <u>1</u> OF <u>1</u>	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B018S5 surrogate	2,4,5,6-Tetrachloro-m xylene	40%	B018S5	J

WHC-SD-EN-TI-079, Rev. 0

[illegible]

9 3 1 2 9 6 9 2 1 5 5

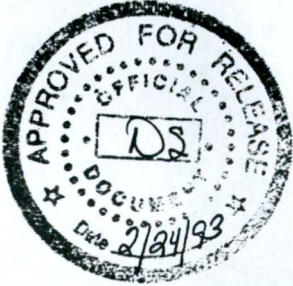
PESTICIDE/PCB ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

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Project: WESTINGHOUSE-HANFORD																					
Laboratory: S-CUBED																					
Case:		SDG: B018S8																			
Sample Number		B018S8																			
Location		151-H																			
Remarks		SW CORNER																			
Sample Date		12/09/91																			
Extraction Date		12/13/91																			
Analysis Date		01/03/92																			
Pesticide/PCB	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
alpha-BHC	1.7	N/A																			
beta-BHC	1.7	N/A																			
delta-BHC	1.7	N/A																			
gamma-BHC (Lindane)	1.7	N/A																			
Heptachlor	1.7	N/A																			
Aldrin	1.7	N/A																			
Heptachlor epoxide	1.7	N/A																			
Endosulfan I	1.7	N/A																			
Dieldrin	3.3	N/A																			
4,4'-DDE	3.3	N/A																			
Endrin	3.3	N/A																			
Endosulfan II	3.3	N/A																			
4,4'-DDD	3.3	N/A																			
Endosulfan sulfate	3.3	N/A																			
4,4'-DDT	3.3	N/A																			
Methoxychlor	17.0	N/A																			
Endrin Ketone	3.3	N/A																			
alpha-Chlordane	1.7	N/A																			
gamma-Chlordane	1.7	N/A																			
Toxaphene	170.0	N/A																			
Arochlor-1016	33.0	20	U																		
Arochlor-1221	33.0	39	U																		
Arochlor-1232	67.0	20	U																		
Arochlor-1242	33.0	20	U																		
Arochlor-1248	33.0	20	U																		
Arochlor-1254	33.0	350																			
Arochlor-1260	33.0	20	U																		

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			ID Number (include revision, volume, etc.) WHC-SD-EN-TI-079, Rev. 0																																										
			List attachments.																																										
			Date Release Required <div style="text-align: center;">February 24, 1993</div>																																										
Title: Data Validation Report for the 100-HR-1 Operable Unit Electrical Facilities				Unclassified Category UC- N/A																																									
New or novel (patentable) subject matter? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If "Yes", has disclosure been submitted by WHC or other company? <input type="checkbox"/> No <input type="checkbox"/> Yes Disclosure No(s).				Information received from others in confidence, such as proprietary data, trade secrets, and/or inventions? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (Identify)																																									
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