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		Design Authority							
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2	1	Cog. Eng. Kim Wehner 9/13/96							
2	1	Cog. Mgr. Kim Wehner 9/13/96							
		QA							
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Test Plan For The Evaluation Of A Preparation Method For Evaporator Samples

Kim Wehner

Westinghouse Hanford Company, Richland, WA 99352
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Abstract: This "Test Plan" will be used to evaluate the use of existing laboratory equipment for the determination of the organic material carried over from the feed to the condensate during evaporator waste processing. It will use existing procedures to simulate the distillation of organic compounds during the evaporator operation and to determine the organic compounds carried over and their concentrations. Although the amounts of organics in the synthetic waste may not reflect any particular waste tank, the goal is to track the pathway of the various organics.

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Release Approval

7/13/96
Date

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Test Plan For The Evaluation Of A Preparation Method For Evaporator Samples

A method is needed to approximate the amount of organic compounds in candidate feed tank that would be carried over during evaporator waste processing.

1.0 INTRODUCTION

This "Test Plan" will be used to evaluate the use of existing laboratory equipment for the determination of the organic material carried over from the feed to the condensate during evaporator waste processing. It will use existing procedures to simulate the distillation of organic compounds during the evaporator operation and to determine the organic compounds carry over and their concentrations. Although the amounts of organics in the synthetic waste may not reflect any particular waste tank, the goal is to track the pathway of the various organics.

2.0 RESPONSIBILITIES

- 2.1 Analysis - The 222-S Standards Laboratory will prepare the "Synthetic Waste" and 222-S Organic Chemistry will spike the "Synthetic Waste" and perform analysis of the boildown samples.
- 2.2 The cognizant scientist will be responsible for modifications to the test plan that may be required.
- 2.3 Data Review and Results - Upon completion of the analysis a report will be written which will include data and a narrative.

3.0 DESCRIPTION OF TESTING

- 3.1 A portion of the "Synthetic Waste" (see Table 1) will be spiked with "Target Compounds" (see Table 2). Approximately 100 ml of the spiked solution will be needed for each boildown. The unspiked portion will be left to serve as a blank.
- 3.2 Boildowns (LT-519-183) will be performed at a pressure of 60 torr and completed when the temperature reaches 135 deg F or at a waste volume reduction of 80%, whichever comes first.

- 3.3 The spiked stock solution, boildown condensate, and bottoms will be analyzed for VOA and SVOA using LA-523-131, LA-523-437, LA-523-405, LA-523-132, and LA-523-406. Samples will be refrigerated until analysis or extraction is performed.
- 3.4 Two 1 ml samples of stock solution, condensate, and bottoms will be taken and submitted for TIC and TC analysis.

TABLE 1. Synthetic Waste Composition

	g/l	Molar
NaOH	22.8	0.569
NaAlO ₂	5.3	0.064
NaNO ₃	64.8	0.762
NaNO ₂	22.9	0.332
Na ₂ CO ₃	29.1	0.274
Na ₃ PO ₄	1.6	0.0095
Na ₂ SO ₄	4.8	0.0337
NaF	6.6	0.158

Specific gravity of approximately 1.1

Table 2. Spiking Concentrations

Feed Constituent	Spike Level (mg/L)
Acetone	25
1-Butanol	2500
2-Butoxyethanol	50
2-Butanone	25
Tri-Butyl Phosphate	200
2-Hexanone	25
2-Pentanone	25
Methyl Isobutyl Ketone	25
Tetrahydrofuran	50

4.0 PROCEDURES

4.1 Appropriate QC will be determined by the cognizant scientist.

4.2 LA-523-131, LA-523-132, LA-523-406, LA-523-405, LA-523-437, and LA-519-183

5.0 SAFETY

5.1 Observe general organic laboratory safety rules

APPROVAL:

 Responsible Chemist

9/9/96
 Date

 Manager, Organic Chemistry

9/9/96
 Date

 Evaporator Project Engineering

9/4/96
 Date