

## 221-T CONTAINMENT SYSTEMS TEST FACILITY

## 1.0 INTRODUCTION

## 1.1 Purpose

The purpose of this synopsis is to support the request for withdrawal by the U.S. Department of Energy-Richland Operations Office (DOE-RL) and Westinghouse Hanford Company (WHC) of the Washington State Hazardous Waste Management Act (Chapter 70.105 RCW) Part A and Part B Permit Applications for the 221-T Containment Systems Test Facility. Information presented below will demonstrate that the 221-T Containment Systems Test Facility did not process dangerous or mixed waste and currently there are no plans to process dangerous or mixed waste.

## 1.2 Previous Application Submittal

Part A and Part B permit applications were previously submitted (Part A, Revision 2, November 16, 1987, and Part B, Revision 0, November 7, 1985) by DOE-RL and WHC to the Washington State Department of Ecology for the 221-T Containment Systems Test Facility. These documents were submitted anticipating the use of the 221-T Containment Systems Test Facility for thermally treating dangerous waste (alkali metals). The use of this facility is no longer considered a necessary option in the long range plans at Hanford for alkali metal waste processing. Reuse of bulk alkali metals (sodium and lithium) has significantly reduced the quantity of potential waste. Operation as a research facility will continue, but current plans do not include operating as an alkali metal waste treatment facility.

## 2.0 FACILITY DESCRIPTION

The 221-T Containment Systems Test Facility is a research laboratory located in the 221-T Building in the 200 West Area of the Hanford Site. The primary feature of the facility is a large reaction vessel (20.4 meters high and 7.62 meters in diameter) in which experiments simulating aerosol generation in reactor containment systems are conducted. Past testing activities include aerosol generation resulting from both molten alkali metal pool and spray fires within this reaction vessel. The schematic for this operation is shown in Figure C-1. The original waste treatment method intended to make use of this existing equipment. A smaller reaction vessel, the intermediate containment vessel (3.8 meters high and 2.1 meters in diameter), was used to conduct lithium and lithium-lead alloy reaction tests.

## 3.0 PROCESS INFORMATION

## 3.1 Operating History

Experiments were performed at the facility using alkali metal compounds. The compounds were reacted to form aerosols, and the physical and chemical properties of the aerosols were measured. Since 1980, the facility used alkali metal compounds to develop and test air cleaning equipment and provide

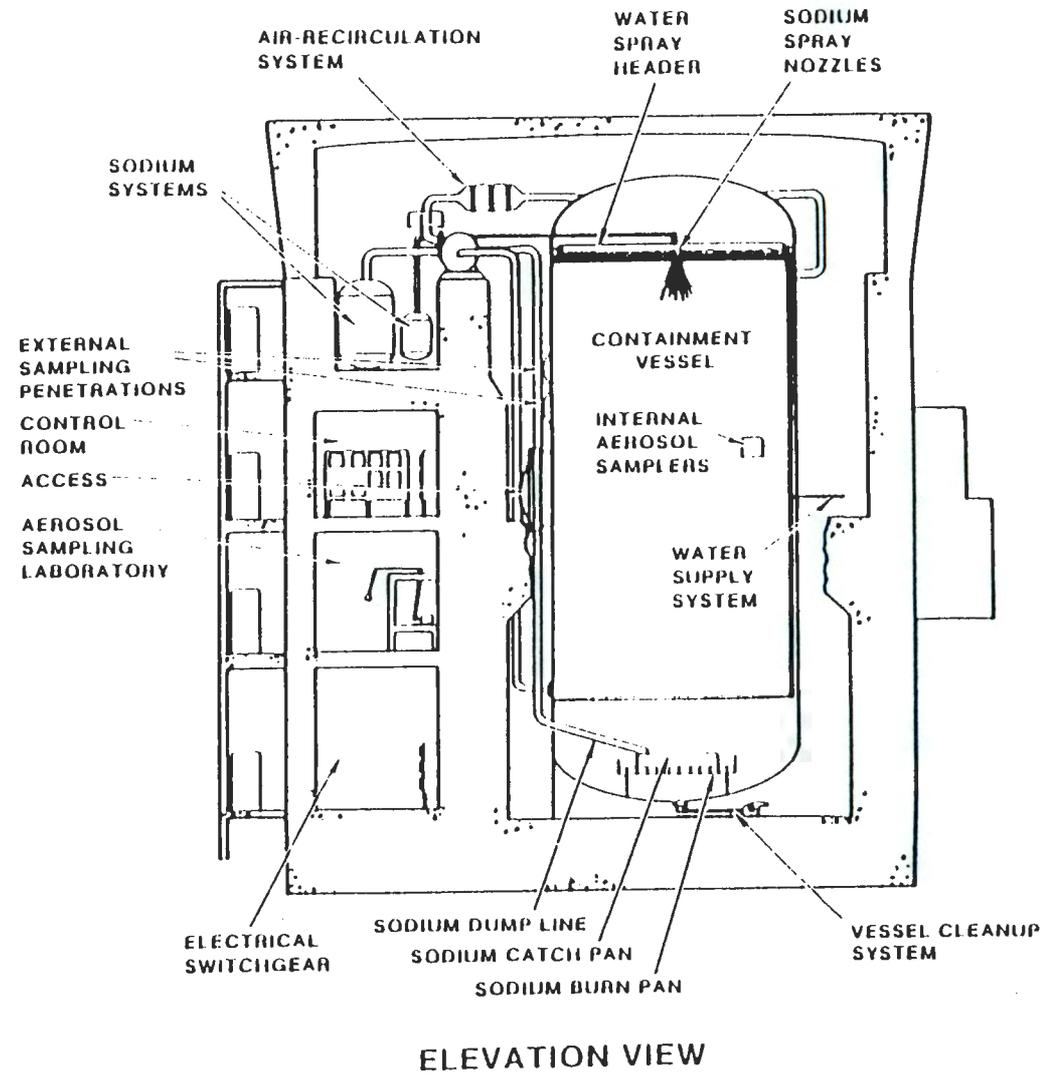


Figure C-1. 221-T Containment Systems Test Facility Design

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aerosol behavior data to support development of computer codes. Since 1984, light water reactor work has been sponsored by the Electric Power Research Institute in support of commercial nuclear power. The lithium related work is performed in support of the fusion power program. No alkali metal waste has been treated in the 221-T Containment Systems Test Facility.

### 3.2 Waste Generation and Treatment

Waste generated at the 221-T Containment System Test Facility included alkali metal waste and dilute aqueous solutions of related hydroxides, oxides and carbonate from the clean up system. Alkali metal waste (e.g., drum heels) generated in the past at 221-T was transferred to the 105-DR facility for treatment. Currently, the testing program does not generate any alkali metal waste. The dilute aqueous solution from the clean up system is collected in a drain tank and sampled before disposal. Elementary neutralization is performed on the waste water before discharge, when required. Elementary neutralization qualifies for a permit by rule described in Washington Administrative Code (WAC) 173-303-802. Lead contaminated waste from the lithium lead alloy tests are segregated for offsite disposal.

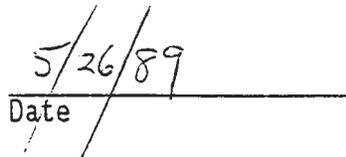
### 4.0 SUMMARY

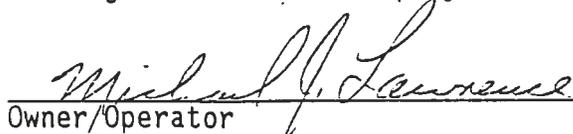
Information supplied above supports the request by DOE-RL and WHC to withdraw the Part A and Part B permit applications for the 221-T Containment Systems Test Facility. The permit applications were submitted anticipating the use of the 221-T Facility to treat dangerous waste. However, the current plans do not include operating the 221-T Facility as a waste treatment system. The waste generated by the tests and experiments is shipped off the premises for disposal. The solution neutralization at the facility is considered elementary neutralization and qualifies for permit by rule described in WAC 173-303-802.

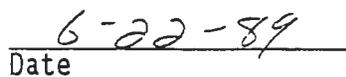
### 5.0 CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

  
 Co-operator  
 John E. Nolan, President  
 Westinghouse Hanford Company

  
 Date

  
 Owner/Operator  
 Michael J. Lawrence, Manager  
 U.S. Department of Energy  
 Richland Operations Office

  
 Date