

DLR 25062 DS

# ENERGY TECHNOLOGY ENGINEERING CENTER

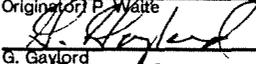
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## 1.0 INTRODUCTION

This report summarizes the activities performed during the decontamination and decommissioning (D&D) of Building 023. This DOE owned facility is located in Area IV of the Santa Susana Field Laboratory and has been used in support of DOE sponsored activities. The first Radiological User Permit for B/023, #105, was issued in November of 1976. This permit authorized the use of a small section (or sections) of activated stainless steel EBR fuel cladding to be used in a small sodium test loop. The purpose of this test was to gather data on the transportation of radiological contamination in sodium loops. The sodium loop tests were halted in 1982 and the loop was dismantled in 1986. In 1982 an Alnor Dew-point Meter containing a  $6.25\mu\text{Ci Ra}^{226}$  source was brought to the facility to be disassembled. The disassembly of this meter was never authorized or attempted and the meter was removed intact from B/023 in 1986. A  $10\mu\text{Ci}$  source of  $\text{Mn}^{54}$  used to calibrate a Canberra multichannel analyzer was stored at the facility from 1983 until 1986.

Building 023 had its own radioactive liquid waste holdup system consisting of above and below grade drain lines and a below grade storage tank located in an uncovered concrete vault outside the building. This system serviced two sinks and a fume hood. The fume hood was also connected to a HEPA filtered exhaust system consisting of ducting, a plenum, blower and stack.

To allow the release of B/023 for use without radiological restrictions all radioactive materials/contamination were removed from the facility. This decontamination and decommissioning (D&D) was performed in three phases, starting in 1986 with the removal of the sodium loop and ending in 1993 after removal of the remainder of the radioactive liquid waste holdup system.

## 2.0 FACILITY D&D

### 2.1 Phase I & II

During removal of the sodium test loop in 1986 the two sinks were disconnected, their respective connections to the liquid waste holdup system were sealed and the sinks removed and dispositioned. In 1990 the HEPA filtered gas exhaust system was removed.

The fume hood was disconnected from the liquid waste holdup system and the HEPA exhaust system, and was relocated for storage within the facility. The ducting from the fume hood to the filter plenum was removed and disposed of as low level R/A waste. The remaining components of the HEPA filtered gas exhaust system, filter plenum, blower and exhaust stack were removed and shipped to the University of Missouri for use on the TRUMP-S project (ref. 6 & 7).

## 2.2 Phase III

The third phase of the D&D of the facility involved the decontamination of the fume hood, removal and disposal of the liquid waste holdup system, including the drain and vent lines, the liquid waste storage tank and the floor area where the sodium loop had been located.

A radiological survey of the fume hood revealed that contamination was present only in the drain basin. The basin was cut out, inspected and found to be free of hazardous material, and disposed of as low level radioactive waste. After removal of the basin an equipment release radiological survey was performed on the fume hood. No detectable activity (NDA) above natural background was found and the fume hood was released for use without radiological restrictions.

The liquid waste holdup system consisted of approximately 80 feet of three inch cast iron drain line, 40 feet of two and one half inch galvanized pipe vent lines and a 250 gal. stainless steel holdup tank. The holdup tank was located in a seven and one half foot wide by 10 foot long by six foot deep open top concrete vault outside the east end of the building. All of the drain lines ran along the outside of the building to a double fixture fitting near the holdup tank vault. The drain line then ran underground approximately six feet, through the vault wall and into the tank. The two sinks shared a common drain vent which attached to the outside of the building. The fume hood drain had an individual vent attached to the outside of the building.

The above ground drain and vent lines were disassembled at joints or connections then cut into wastebbox lengths (fig 1). After the installation of the liquid waste system a concrete pad had been poured to accommodate an air conditioning unit. Therefore, a portion of the pad had to be cut and removed to gain access to the buried section of drain line (fig. 2). Once all of the drain and vent lines had been removed (fig 3). the tank was removed from the vault and transported to the RMDF for size reduction.

Prior to size reduction and disposal the tank was inspected for hazardous or potentially hazardous materials. This inspection, which was witnessed by a representative of the Rocketdyne Environmental Protection department, revealed only rust from the cast iron drain lines and slight moisture in the form of condensation on the inner tank walls. The tank was cut/size reduced into wastebox size segments using a plasma torch and packaged for disposal.

During the final survey of the facility fixed contamination was found on the concrete floor in the old control room where the sodium loop had been installed. Attempts to remove the contamination with aggressive wiping techniques were unsuccessful. Therefore, the area was decontaminated by scabbling of the concrete surface and vacuuming (Fig. 4). In accordance with the facility final survey procedure (ref. 11) the areas immediately surrounding the decontaminated area were thoroughly surveyed and the boundaries of the final survey were expanded. The survey of these areas found no surface contamination above release limits.

### 3.0 KNOWN OR POTENTIALLY HAZARDOUS WASTES

Because of the potential of discovering removable contamination during the D&D effort, Radioactive Materials Management Areas (RMMA's) were established for the areas of the facility undergoing D&D (ref. 10). An established procedure for defining and positioning hazardous wastes from a Radioactive Materials Management Area (RMMA) was implemented. This procedure, ER-SP-0001 "Management and Disposition of Known or Potentially Hazardous Wastes Originating in a RMMA," in accordance with the DOE Performance Objectives, provides step by step direction for determining if a material is; 1) a hazardous material, and 2) if so does it contain any DOE added radioactivity. All items removed during performance of the D&D of B/023 were inspected for hazardous or potentially hazardous materials, and none were found. Additionally, soil from around the below grade portion of the drain line was analyzed for radioactivity and hazardous materials (ref. 9). The results of these analyses verified "no DOE-added activity" and "non-detectable" for all hazardous constituents analyzed.

#### 4.0 CURRENT FACILITY STATUS

Currently B/023 is being used as a laboratory to support DOE programs. All radioactively contaminated components have been removed from the facility and no radioactive material is being used in on going work. All R/A waste generated during the D&D of the facility has been packaged to disposal site requirements (ref. 8) and shipped to an approved disposal facility. The final stage of the D&D was the final radiological survey of the facility (ref. 11). Upon review and acceptance of the final survey by DOE, the facility will be released for use without radiological restrictions.

## 5.0 REFERENCES

1. 023-AT-0001, "Radiological Assessment of Building 023"
2. 023-DP-0001, "Building 023 Decontamination"
3. ER-SP-0001, "Management and Disposition of Known or Potentially Hazardous Wastes Originating in an RMMA"
4. 572-Z Rocketdyne Environmental Control Manual
5. ETEC Log Book, Building 023 Operations Log
6. N001DWP00014, procedure for removal of filter plenum and related components
7. Form(s) 732-A, Dated 2-10-90, 2-12-90, 2-13-90 on file with Radiation Protection and Health Physics Services (RP&HPS)
8. N00OP000002, R/A Material Packaging, Shipping and Transportation Plan
9. IL no. 93EP466, dated 13 October 1993, from A. Lenox to T. Venable, subject Building 023 Soil Sample Results, with attachments
10. N001TI000339, Definitions and Designations of Radioactive Materials Management Areas (RMMA's)
11. 023-SP-0001, "Building 023 Final Survey Procedure"

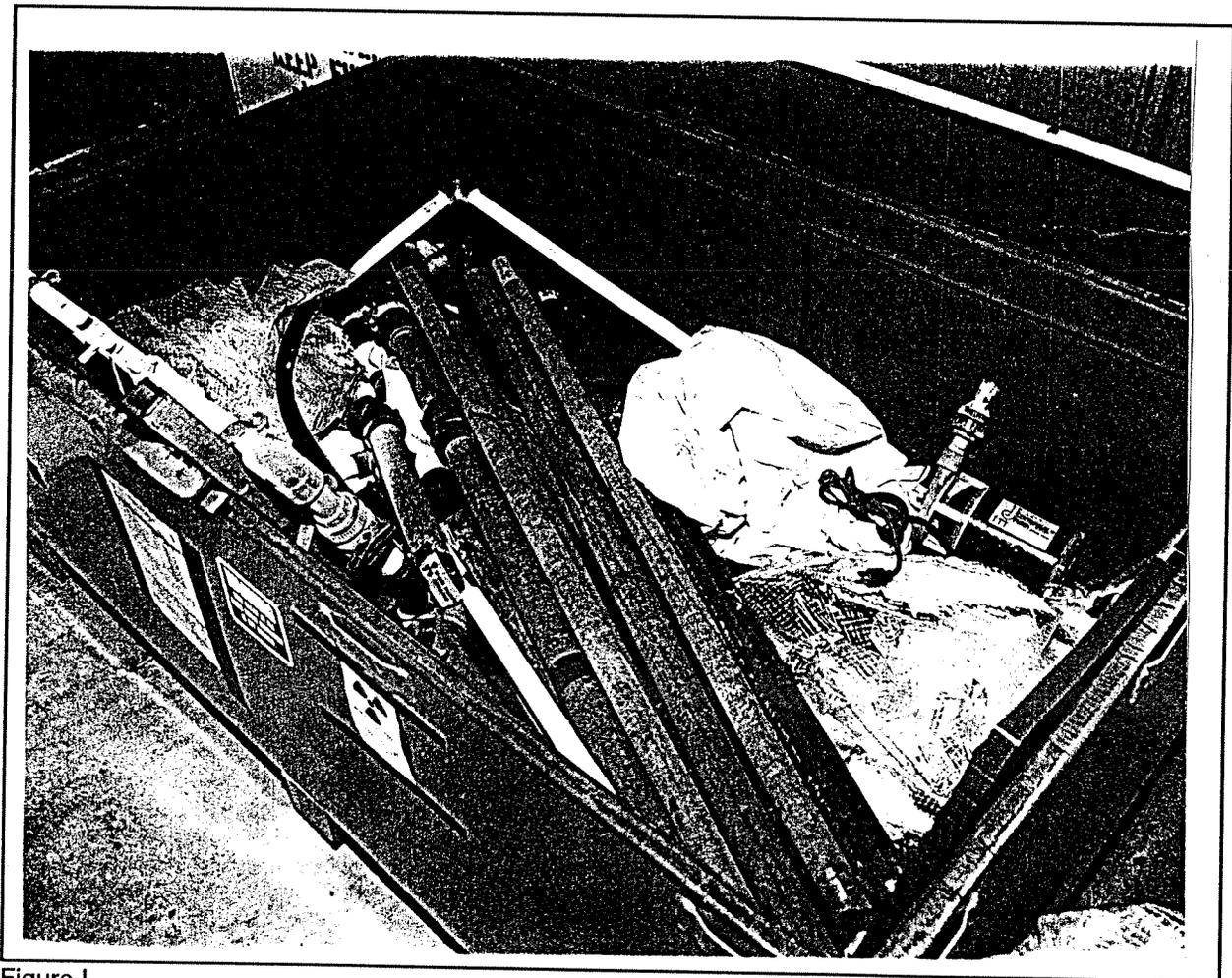


Figure 1  
Drain & Vent Lines, Packaged for Disposal  
(ETEC P233542, 7/13/93)



Figure II  
Excavation of Below Grade Drain Line  
(ETEC P233541, 7/13/93)

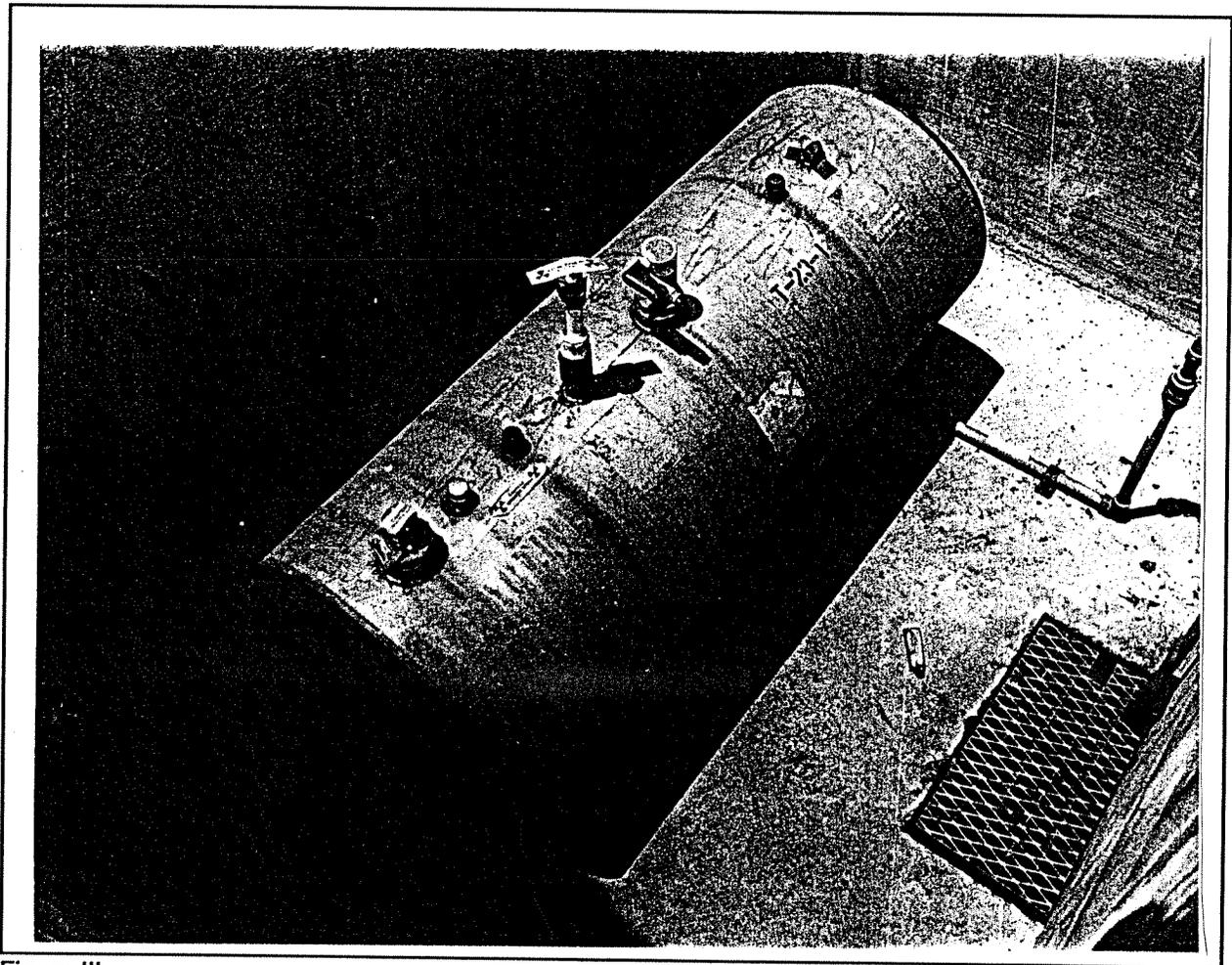


Figure III  
All Lines Removed, Tank Ready to Pull  
(ETEC P233543, 7/13/93)

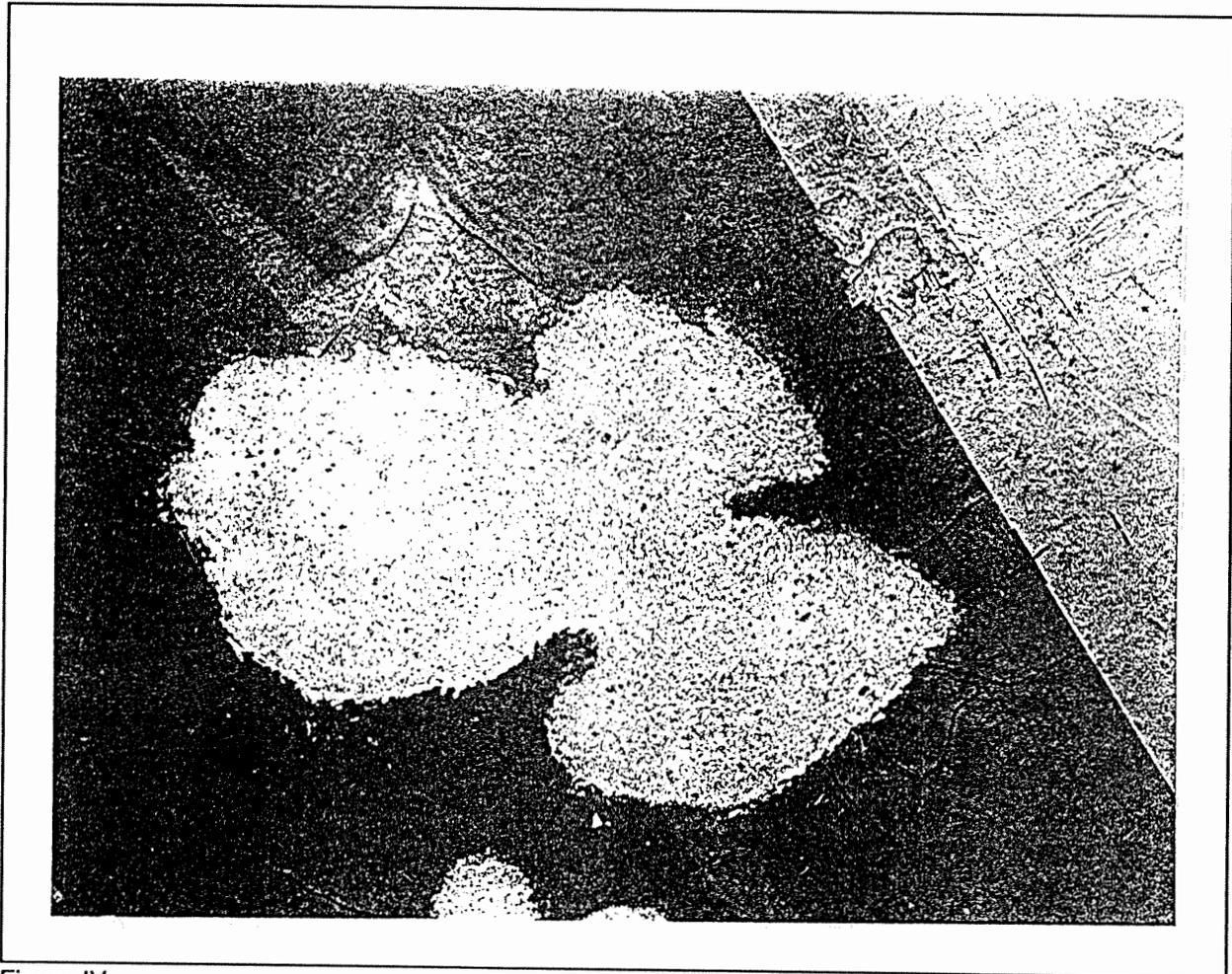


Figure IV  
Control room floor after decontamination  
(ETEC 11/11/93 393973)