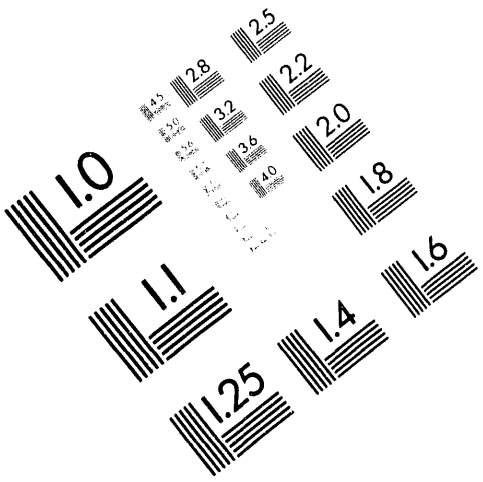

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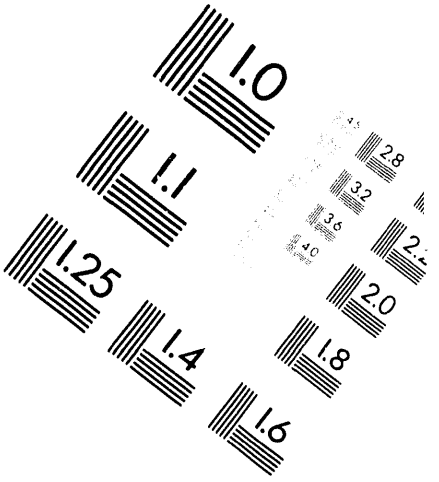

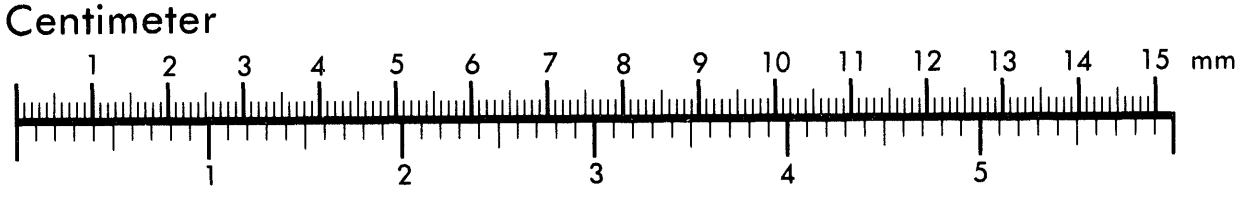

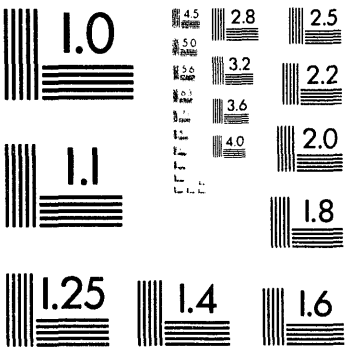

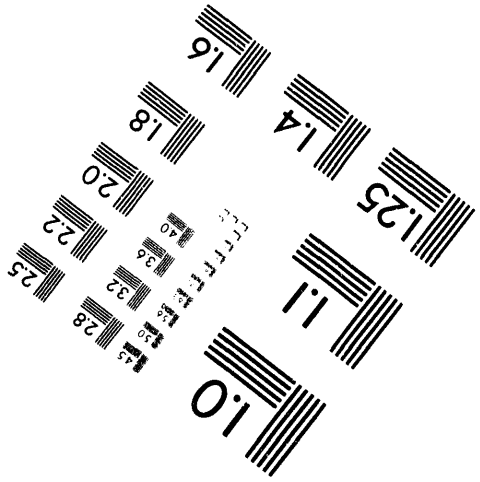

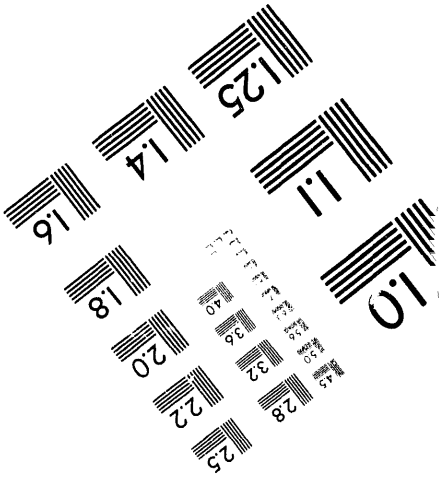

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WSRC-MS-94-0107

DECONTAMINATION AND DECOMMISSIONING EXPERIENCE AT THE SAVANNAH RIVER SITE (U)

by

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DISCLAIMER

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DECONTAMINATION AND DECOMMISSIONING EXPERIENCE AT THE SAVANNAH RIVER SITE(U)

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DECONTAMINATION AND DECOMMISSIONING EXPERIENCE AT THE SAVANNAH RIVER SITE(U)

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ABSTRACT

A continuing concern within the DOE complex is how to address the retirement of a facility which contains special nuclear material (SNM). When the life expectancy of a facility has been reached, decisions must be made pertaining to 1) removing the material from the facility, 2) accounting for the material, and 3) final disposition of the material. This paper will discuss such a decontamination and decommissioning (D&D) process which we are presently dealing with at the Savannah River Site. The process must follow DOE Order 5633.3A as well as internal company procedures regarding MC&A. In some D&D cases the material can be exempt from the DOE Order when all of the following criteria are met: 1) the material has been declared waste, 2) the material has been written off the MC&A books, and 3) the material is under the control of a waste management organization.

INTRODUCTION

We are presently working on a program to D&D a Westinghouse Savannah River Company (WSRC) laboratory facility. The Separations Equipment Development (SED) facility is located in the Savannah River Technology Center (SRTC) area. The facility was constructed between 1969 and 1971. Operations were shut down and placed in a surveillance and maintenance mode in 1978. The facility was accepted into the DOE Environmental Restoration (ER) Decontamination and Decommissioning (D&D) Program in 1992 and a SED D&D team was formed at that time.

The facility was designed to separate plutonium isotopes from plutonium compounds. It processed plutonium isotopes in units known as columns. Physically, it is a two-story facility occupying 2000 sq. ft. of floor space. The facility consists of many columns, traps and pumps, several glove boxes, processing equipment and ancillary equipment, and systems. The SED facility is in a radiological controlled area (RCA) and restricted due to classified equipment and Special Nuclear Material (SNM). This facility now contains SNM which must be removed from its present location.

A Tiger Team assessment identified a concern for the amount of radiation in SRTC, amount of SNM in SRTC, and

the risk at the site boundary associated with this radioactive material. The mission of the SED D&D team was to remove the risk posed by storage of the radioactive material. The objectives were to: 1) perform D&D to SRS Health, Safety, Safeguards, Security and Environmental regulations; 2) reduce public risk by moving the material to the center of the site; 3) D&D to an ALARA condition; 4) keep radiation exposures below specified limits and 5) minimize D&D costs.

DISCUSSION

The WSRC Material Control and Accountability (MC&A) Section is a part of the SED D&D team. The MC&A responsibilities on the D&D team include the following areas:

- DOE Order 5633.3A compliance.
- Assuring that the WSRC MC&A Manual is followed.
- In addition, three important areas of MC&A are addressed: SNM removed from the process, SNM in storage, and SNM at the burial site.

Materials removed from the process

The measurement method, and its uncertainty, for measuring in-process holdup and any material removed from the process must be documented. A plan and a schedule must be developed describing how measured materials are brought into accountability. There must be assurance that inventory differences generated by this process will be reconciled.

Materials in storage

Prior to removing the SNM from the process, the physical and administrative controls must be established to ensure safeguards for the SNM. Adequate documentation of the appropriate level of surveillance implemented for item storage must be in place. The method and frequency of physical inventory needs to be developed.

Materials at the burial site

The process by which waste materials are removed from accountability once certified for transfer to the burial site must be fully documented. The measurement system must be capable of ensuring that the waste generated meets the SRS waste acceptance criteria.

APPROACH

The measurement program for the SED facility consists of a measurement control plan, a summary level Non Destructive Analysis (NDA) assay plan, and a laboratory procedure. Due to the nature of the uncertainties of the NDA measurements for this process, it was determined that an informal peer review of the measurement program would be needed. Los Alamos National Laboratory has been contracted to provide this peer review.

DOE Order 5633.3A allows termination of safeguards for SNM currently on inventory. The SNM in the

SED facility exceeds the attractiveness level allowed in the DOE Order for safeguards termination, however, a provision is provided in the DOE Order which allows disposal of higher attractiveness level material with the concurrence of the appropriate DOE headquarters groups.

MC&A initially requested that the provision in the DOE Order 5633.3A be exercised to terminate safeguards on the SED material. Justification for discarding the SNM comes mainly from the following factor: SRTC scientists who worked on the SED project during its operational phase have documented that an aggressive chemical treatment on the material would be necessary to remove quantities of the SNM that would be significant for theft, diversion or re-use.

While DOE is evaluating the request to terminate safeguards on this material, MC&A is developing several disposition options for the SRTC SED facility. These options are to: 1) determine the feasibility of characterizing the SNM as waste for interim disposal at the burial ground; 2) send the SNM material to a secure area in the center of the site; 3) vitrify the SNM and store it in a vault, 4) repackage the SNM into smaller containers and store it in a vault and 5) recover the SNM for future use.

SUMMARY

D&D within the DOE community is rapidly becoming one of the highest priority items throughout the complex. WSRC is in the early stages of tackling this difficult problem. D&D of the SRTC SED facility is one of the first undertakings at WSRC. The SED project has attracted the attention of many outside groups. Requirements are being establishing during this project for future D&D efforts.

The DOE Order 5633.3A limit for attractiveness level E is so small at 0.1 weight percent that very few facilities will meet this criteria, therefore, other options must be considered.

WSRC MC&A and local DOE MC&A are developing a generic matrix to address alternatives to help us with this problem at our site. This matrix would document specific criteria for disposal packages which are subject to limiting waste acceptance criteria. Concurrence by the appropriate DOE headquarters groups would be obtained for disposition of these materials. This matrix will be valuable for future D&D efforts for the site.

ACKNOWLEDGMENTS

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REFERENCES

1. U. S. Department of Energy, Control and Accountability of Nuclear Materials, DOE Order 5633.3A, Feb 22, 1993

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