

May 16, 2001

MEMORANDUM TO: Thomas L. King, Director
Division of Risk Analysis and Applications, RES

FROM: Roy J. Caniano, Deputy Director, */RA/*
Division of Reactor Safety

SUBJECT: REQUEST FOR PROPOSED ABNORMAL OCCURRENCES AND
"OTHER EVENTS OF INTEREST" ITEMS FOR THE SECOND
QUARTER FISCAL YEAR 2001

The purpose of this memorandum is in response to your request for events which may be reportable as abnormal occurrences (AOs) and "Other Events of Interest" items for the second quarter of fiscal year 2001.

The attached AO event from Southeast Missouri State University (SEMO); Cape Girardeau, Missouri was screened against the AO criteria included in FY 1999 AO report NUREG-0090, "Report to Congress on Abnormal Occurrences," Vol. 22, Appendix A. Also, Management Directive 8.1, "Abnormal Occurrence Reporting Procedure," was used to prepare the attached writeup.

Consistent with Management Directive 8.1, Part I, the following paragraph is included:

The Nuclear Regulatory Commission (NRC) staff has identified the attached event as a potential abnormal occurrence (AO), and it may be included in the AO report that the NRC prepares annually to inform Congress of events reported by the NRC and Agreement State Licensees which the Commission has determined are significant to public health and safety.

Region III does not have any events that fit Appendix C of the AO report based on the direction provided by the Commission in the Staff Requirements Memorandum (SRM) dated September 4, 1998, on SECY-98-175, "Proposed Guidelines for Appendix C, Other Events of Interest, to the Abnormal Occurrence Report of Congress."

This memorandum and the attached potential AO have been placed in ADAMS as a publicly available document.

Attachment: As stated

DOCUMENT NAME: G:\Branch TSS\semoabno.wpd **See previous concurrence**
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POTENTIAL ABNORMAL OCCURRENCE REPORT

Abnormal Occurrence Reference - Any unintended exposure to an adult (any individual 18 years of age or older) resulting in an annual sum of the deep dose equivalent (external dose) and committed dose equivalent (intake of radioactive material) to any individual organ or tissue, other than the lens of the eye, bone marrow and the gonads, of 2500mSv (250 rems) or more.

Date and Place - June 13, 2000; Southeast Missouri State University (SEMO); Cape Girardeau, Missouri.

Nature and Probable Consequences - An individual, hired by SEMO to evaluate their radiation safety program, received a calculated 2630 millisievert (mSv) (263 rems) committed dose equivalent (CDE) to the bone surface from inhalation of americium-241 (Am-241). The inhalation occurred while performing decontamination activities at SEMO on June 13, 2000. While the dose is a 50 year cumulative dose, the entire dose is assessed against calendar year 2000.

A routine NRC inspection at Southeast Missouri State University on February 16, 2000, identified that the radiation safety program had suffered significant degradation. The university had been without a radiation safety officer (RSO) since October 1, 1999, and university officials were not certain if they had radioactive materials in their possession, what material they were authorized to possess, or what the general terms and conditions of their license contained. During the inspection, the licensee and an NRC inspector located a safe labeled as containing radioactive material in the basement of Magill Hall, Room 21. When the licensee's staff opened the safe, they identified radioactive material which the university was not authorized to possess, including one vial (appearing to be empty) labeled as containing 5 millicuries of Am-241. SEMO had been authorized to possess and use unsealed Am-241 in the 1960's. The licensee hired a consultant to characterize the material in the safe and assess possible contamination in and around Room 21. This consultant received the 263 rem exposure during these activities on June 13, 2000.

On June 21, 2000, the NRC initiated a special inspection in response to a report from the university that their consultant had identified loose Am-241 contamination in the basement of Magill Hall. Independent surveys by the NRC confirmed alpha contamination (primarily removable) in the basement (in and around room 21) and Room 242 of Magill Hall. The licensee restricted access to all areas found to be contaminated. Gamma spectroscopy analysis of samples confirmed the contaminant as Am-241. Inadequate radiological surveys and handling techniques for radioactive material resulted in contamination in a number of areas in Magill Hall.

Although there are no apparent acute effects from the intake, the potential for an increased risk in cancer over time cannot be ruled out.

Cause or Causes - The overexposure appears to have been caused by the failure to assess and take appropriate precautions to limit exposure to Am-241. These failures led to an inhalation of Am-241 during the inventory and decontamination activities of the consultant on June 13, 2000.

Actions Taken to Prevent Recurrence

Licensee - The licensee hired a second contractor who successfully decontaminated Magill Hall. The licensee appointed a new Radiation Safety Officer to monitor the radiation safety program. Further, the licensee is currently reviewing its radiation safety program, with emphasis on inventory control. With the exception of two americium-241 sources, the licensee has disposed of all radioactive material found in the safe. The University is pursuing disposal of the two americium-241 sources.

NRC - The NRC staff reviewed the licensee's decontamination plan and performed a confirmatory survey of Magill Hall after remediation was completed by the consultant. On November 29, 2001, the NRC released Magill Hall for unrestricted use.

The NRC issued Information Notice 2001-01 to all material licensees. The Notice addresses the importance of accurate inventory controls to prevent unauthorized possession of radioactive material.

The NRC is reviewing its options regarding possible enforcement action against the University. To gain additional information, the NRC has scheduled a Pre-decisional Enforcement Conference for June 12, 2001, to discuss the apparent violations of NRC regulations with Southeast Missouri State University.