

# DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 9, 1997

**MEMORANDUM FOR:** G. W. Cunningham, Technical Director

**FROM:** J. Kent Fortenberry / Joe Sanders

**SUBJECT:** SRS Activity Report for Week Ending May 9, 1997

**H-Canyon Safety Equipment** - Further discussions on functional classification has led to additional revisions. Specifically, the motor operators for the cooling water diversion valves have been added to the list of safety class components. Previously, only the manual function of the valve was credited, relying heavily on timely operator response. In addition, operability requirements for these valves will now include stroke times. The current valve functional test did not specify a closure time. DOE-SR has asked WSRC to scrub all other safety systems to verify that specific performance parameters (stroke times, etc.) are specified.

**Integration of Safety and Health into Facility Disposition Activities** - DOE-EH personnel were onsite this week as part of an effort to develop a technical standard for integrating safety and health into facility disposition activities (i.e., deactivation, surveillance & monitoring, decontamination, and decommissioning). The purpose of the standard is to provide a "roadmap" for applying current ES&H requirements to facility disposition activities. Guidance and examples on applying current ES&H requirements to facility disposition activities could be useful. However, there seemed to be some sentiment that facility disposition activities were inherently less hazardous than operating activities, and that the current "operations-oriented" ES&H directives and standards are too restrictive to be applied to facility disposition activities. DOE-EH has also visited Mound and LANL, and will soon be visiting Hanford, to discuss site-specific activities and lessons learned. The revision "0" draft of the technical standard is expected to be issued in late June 1997.

**Tritium Release from Building 232-H Extraction Facility** - On April 30, about 700 curies of tritium (0.0716 grams) were released from the tritium extraction furnace. A release greater than or equal 1700 curies (an amount that in an oxide form and with worse-case meteorology could result in an offsite dose of 0.1 mrem) requires reporting as an unusual occurrence. The release of 700 curies was classified as an off-normal occurrence.

The release occurred several weeks after an extraction operation when the spent melt was removed from the furnace. Subsequent to targets being extracted (melted) but prior to the furnace being opened to remove the spent melt, the furnace is flushed for several weeks with moist air to capture residual tritium. A mass spectrometer is used to detect tritium in the flush stream but it is capable of detecting only relatively large amounts. A continuous air monitor in the furnace room normally alarms when the furnace is opened. However, the facility design sweeps

the tritium out the stack and does not have the capability to divert exhaust air to a cleanup system upon detection of higher than expected levels of tritium within the room.

This release is higher than normal, but not entirely unexpected. although releases that occur when the furnace

is opened are usually below 100 curies, recent releases have been higher than normal. The higher releases are believed to be caused by significant corrosion of the aluminum clad targets. Targets currently being extracted, and the next five extraction charges, are from the P-Reactor Basin which has experienced water chemistry problems. During extraction, oxygen from the corroded aluminum forms oxide compounds on the crucible and interior furnace walls and captures some tritium. although the furnace is flushed with moist air to remove the tritium (via exchange between protium and tritium), this is not fully effective and the some of the residual tritium is released when the furnace is opened. Higher than normal releases can be expected during the next 5 discharges.