REFERENCE

MASTER ✓

From: Ground Support Engineering

Date: October 26, 1962

Subject: Transmittal of WANL-TME-178

Astronuclear Laboratory

Mr. H. Faught

cc: W. Esselman
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Attached are four (4) copies of WANL-TME-178. This information should be transmitted by TWX and followed by copies of the attached correspondence to Aerojet-General Corp., attention L. E. White(REON).

A. M. Poindexter, Manager
Ground Support Engineering

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Attachments

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WANL-TME-178

From: Ground Support Engineering

Date: October 26, 1962

Subject: Radiation Data Requirements
at the E-MAD Facility

Astronuclear Laboratory

A. M. Poindexter

The following information has been compiled based on the best information presently in our hands. It is submitted in answer to Aerojet TWX Number 213, dated October 17, 1962.

1. The total quantity of fission gases remaining in each fuel element after 30 days, allowing for diffusion of the gases, would be approximately 20 millicuries. If this amount were retained until dissection, the release due to this operation would be negligible.
2. The exhaust stack radiation monitoring system should include suitable monitors for continuously measuring both the gaseous and particulate fission product activities discharged from the stack. If it can be demonstrated after gaining operating experience that the levels of gaseous fission product activities do not represent a serious hazard to personnel; then monitoring for particulate activity only will be adequate.

Radiation data from the system, expressed in appropriate units such as counts per second, should be read locally (at the monitoring station) and recorded in the Health Physics office. The recorded data will permit the determination of gross activity releases, and the read out will detect any significant or abrupt change in activity levels. Monitors should be provided with audible and visual alarms which are activated locally and in the Health Physics office when the maximum discharge level is reached. These alarm contacts must be adjustable and can be set to correspond to any discharge concentration ($\mu\text{c}/\text{cc}$) if the sample volume, activity (c/s), and the discharge rate (CFM) from the stack are known. Also, the monitor alarm circuit should be tied into whatever ventilation system interlocks are provided to prevent excessive activity discharges.

3. The calculations indicate that there will not be a problem due to radioactive gaseous emissions as previously stated in Item 1. However, it is anticipated that, under credible situations, stack activity discharges could be excessive, therefore consideration should be given to ventilation system interlocks capable of preventing such an occurrence.

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An automatic closure system which stops all discharges from the stack, a system in which the stack inlet is recirculated through an absolute filter system prior to discharge, and provisions for storage of stack effluents should be among those interlocks considered.

4. Neutron monitor output is to be utilized in determining the degree of subcriticality of cores handled in the hot areas for the purpose of maintaining criticality control standards and procedures. This output will also be utilized to initiate evacuation alarm signals in the event that neutron levels in the vicinity of a core or fuel approach critical levels. These neutron monitors should have a range of 10 to 10^4 neutrons/cm²/sec. Gamma monitors should have a maximum range of at least 1000R/hr.

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