Docket 50-316/247

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

GL-79-52

October 17, 1979

(TO ALL OPERATING NUCLEAR POWER PLANTS)

REGULATORY DOCKET FILE COPY

Gentlemen:

SUBJECT: RADIOACTIVE RELEASE AT NORTH ANNA UNIT 1 AND LESSONS LEARNED

Recently an incident occurred at North Anna Unit 1, which resulted in the release of radioactivity to the Auxiliary Building and then to the environment. The release path associated with the incident is described in the enclosure.

By letter dated September 13, 1979, you were asked to meet the requirements proposed by the NRC staff's TMI-2 Lessons Learned Task Force as documented in NUREG-0578. Section 2.1.6a of that report requires actions to minimize the release of radioactivity from systems outside containment. While these actions are primarily directed towards minimizing leakage from these systems, the staff has determined that release paths exemplified by the North Anna Unit 1 incident or similar release paths as identified in IE Circular 79-21 (to be issued October 19, 1979) should also be considered.

Therefore you are requested to address, in conjunction with your response to Section 2.1.6a of NUREG-0578, the North Anna Unit 1 incident, as it applies to your facilities, and any similar release paths revealed by the review of your facilities. Any modifications deemed necessary as a result of your review should be identified by January 1, 1980, along with your schedule for completing these modifications on a priority basis.

Sincerely,

Robert F. Heineman

Darrell G. Eisenhut, Acting Director
Division of Operating Reactors

Enclosure:
Radioactivity Release Pathway

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Enclosure

NORTH ANNA UNIT 1

RADIOACTIVITY RELEASE PATHWAY

On September 25, 1979, North Anna Unit 1 experienced a reactor trip and safety injection. Following termination of safety injection an operator failed to realign the suction of a charging pump from the Refueling Water Storage Tank to the Volume Control Tank (VCT). As a result, the VCT pressure increased and a liquid safety relief valve opened a 4 inch line to the High Level Waste Drain Tanks (HLWDT). The HLWDT is designed to be vented to the process vent through a one inch line containing a flow restricting orifice. The process ventilation system contains a particulate and charcoal filter prior to release to the environment.

Due to an error in construction, the HLWDT vent line was open to the auxiliary building atmosphere and the orifice was not in place. The HLWDT is also vented via an air vent and water overflow 4 inch line to the low level waste drain tanks which were vented through 4 inch lines to the auxiliary building atmosphere. The relief of radioactive fluid from the VCT into the HLWDT caused a pressure surge in the system resulting in a release of gaseous radioactivity intothe auxiliary building from both the low level waste drain tank air vents and the open line from the HLWDT. Had the HLWDT vent line been lined up to the process ventilation system, it appears that a release could still have occurred because of the relief to the low level waste drain tanks.

The activity in the auxiliary building reached approximately 155 times MPC, consisting mostly of noble gases. The activity was subsequently released to the environment via the auxiliary building ventilation system which contains both particulate and charcoal filters. The total release has been estimated to be approximately 7.5 Ci of Xe-133 and resulted in undetectable offsite dose consequences. Although the offsite consequences were minimal, had fuel damage occurred, a significant amount of radioactivity could have been released via this pathway.

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