

NORTHEAST UTILITIES



THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

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Docket No. 50-423
B11168

Open Items

Auxiliary Systems Branch

ASB-2 Failure Due to Non-seismic CAT I Equipment Inside Safety-related Structures (Draft SER Section 3.4.1, 9.2.1, 9.3.3)

The applicant has not adequately addressed flooding resulting from failures of non-seismic Category I tanks, piping, and vessels inside safety-related structures per SRP Section 3.4.

Response (5/84)

The plant design basis for internal flooding due to postulated piping failures is developed by considering the worst case fluid release from a single piping failure per ASB3-1 section 3.3.a. The worst case condition is established by considering fluid inventory, discharge rate, leak detection capability, isolation time, location of safety related equipment and the capacity of structures to withstand hydrostatic and buoyancy loads.

Non-QA Category I tanks and vessels in safety related structures do not contain sufficient inventory to cause flooding of safety related equipment resulting from a hypothetical worst case single tank or vessel failure. In addition, safety related equipment required for safe shutdown of the plant is located in cubicles, or on elevated platforms which would preclude damage due to flooding resultant from postulated failures of Non-QA Cat I tanks or vessels during a seismic event.

Internal flooding due to gross catastrophic failure of more than one non-seismic tanks, piping systems, or vessels is not considered credible and is therefore not postulated. This position is supported by historical evidence of survival of such components through major seismic events in both power and petrochemical plants.

The consequences of flooding of safety related equipment are assessed in combination with the most limiting single active failure in a mitigating system. Also considered are the dynamic and environmental effects of pipe whip and jet impingement on essential systems, structures and components.

Open Items

Auxiliary Systems Branch

ASB-3 Analysis for Internally Generated Missiles Inside
Containment (Draft SER Section 3.5.1.1)

The applicant should confirm that his analysis has considered pressurized gas bottles, accumulators and instrument wells as potential missiles.

Response

Refer to the revised FSAR Section 3.5.1.2.1.

is designed safety feature for radiation release or damage the containment boundary.

In addition, a missile accident which is not caused by a LOCA event is not a LOCA. Table 2.2-2 identifies the accident sequences, including those that occur inside the containment which are not caused by a LOCA. The radiological consequences of which are reduced for safety by the provision to a cold condenser system and safety system to reduce the release.

It is noted that the containment has been evaluated for potential for release of radiation. As a result of this review, the following information concerns potential missile accidents and systems which require protection from internally generated missiles inside the containment.

2.2.1.1 Missile Generation and Description

The reactor vessel, steam generators, pressurizer, and other components which are subject to missile generation are not considered as a source of radiation because of the containment of the reactor vessel and steam generators. The only source of radiation is the reactor vessel and steam generators. The only source of radiation is the reactor vessel and steam generators.

The reactor coolant pump (RCP) is not considered a source of radiation because of the reasons discussed in Section 2.2.1.1. The RCP is not considered a source of radiation because of the small amount of stored energy.

The centrifugal pumps, fans, and air compressors (centrifugal and axial) are not considered as a source of radiation because of the containment. The containment has been evaluated for missiles and has been found to be adequate. The maximum load applied to the centrifugal pumps, fans, and air compressors is equivalent to the operating speed of their rotors. Therefore no overstress is expected and missiles associated with centrifugal pumps, fans or air compressors within the containment are not postulated.

The following nuclear steam supply system components are considered to have a potential for missile generation inside the reactor containment:

1. Control rod drive mechanism housing plug, drive shaft, and the drive shaft and drive mechanism latched together
2. Valves
3. Temperature and pressure sensor assemblies
4. Instrumentation nozzles

The following are the control rod drive mechanism (CRDM) assemblies which are not considered as a source of radiation because of the containment. The following are the control rod drive mechanism (CRDM) assemblies which are not considered as a source of radiation because of the containment.

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Pressurized gas bottles, accumulators and instrument wells in the balance of plant systems are considered to be potential source of internally generated missiles.

Open Items

Auxiliary Systems Branch

ASB-12 Safety Related Equipment on Lowest Elevation (Draft SER Section 9.3.3)

The applicant should verify that the safety-related equipment located on the lowest elevation is protected by watertight doors or is otherwise protected, and should discuss why this protection is adequate. This is an open item.

Response (5/84)

Safety related equipment located at the lowest elevation of the ESF building is separated into separate, train related cubicles. These cubicles are designed to prevent water intrusion from sources both internal and external to the building. The cubicles have watertight walls to elevation 21'-6" which protect the redundant trains of safety-related equipment from a single passive failure of piping. Safety-related level instrumentation (3DAS LS66 A/B) located in these cubicles will alarm in the control room when the water level in either cubicle reaches a depth of 2 inches. Ladder access is provided to these cubicles from the 21'-6" elevation.

A flooding analysis was performed, assuming operator action within thirty minutes, subsequent to the postulated piping failure. It was verified that the safety-related level alarms would provide sufficient warning for the operator to take appropriate action. Maximum depth of water in worst case scenario is 9.7 feet which is below RSS pump motors located in these cubicles (el - 28.5).