

# NORTHEAST UTILITIES



THE CONNECTICUT LIGHT AND POWER COMPANY  
WESTERN MASSACHUSETTS ELECTRIC COMPANY  
HOLYOKE WATER POWER COMPANY  
NORTHEAST UTILITIES SERVICE COMPANY  
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August 14, 1984

Docket No. 50-423  
Bi1261

Director of Nuclear Reactor Regulation  
Mr. B. J. Youngblood, Chief  
Licensing Branch No. 1  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Reference: (1) B. J. Youngblood to W. G. Council, SER for Millstone Nuclear Power Station, Unit 3, dated August 2, 1984.

Dear Mr. Youngblood:

Millstone Nuclear Power Station, Unit No. 3  
Transmittal of a Response to the SER Open Item (1)

Enclosed is NNECO's response to the SER open item (Reference 1) concerning an internally generated missile from the non-safety related equipment and its effect on safety-related equipment. This response should fully resolve the Staff's concern regarding the open item.

If there are any questions, please contact our licensing representative directly.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY  
et. al.

By NORTHEAST NUCLEAR ENERGY COMPANY  
Their Agent

W. G. Council  
Senior Vice President

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## SER Open Items

### SER-1 - Internally Generated Missiles (Inside and Outside Containment)

The applicant should confirm that his analysis has considered (1) missiles that could result from non-safety related equipment and (2) the effects of such a missile on the safety-related equipment as result of missile impingement concurrent with a single active failure in the redundant safety train.

#### Response (8/84)

FSAR Sections 3.5.1.1 and 3.5.1.2 provide a description regarding potential missiles that would originate from safety and non-safety related systems component/equipment failures. If the equipment associated with the missile operates during normal plant conditions, the missile event is postulated to occur during normal operation. If the equipment only operates during conditions other than normal plant operation, the missile event is postulated to occur during those specific plant operation conditions. The most limiting single active failure is postulated in a component required to mitigate the consequences of the event and to achieve a safe shutdown condition. If the failure results in an automatic turbine or reactor trip, then a simultaneous loss of offsite power is considered when evaluating the plant design adequacy. In addition to the initial failure, a single active failure is also assumed in a mitigating system with the following exceptions:

- o A single active failure is not assumed if the initial failure event is postulated in one of two redundant trains of a system whose function is required during normal plant operation as well as to shut down the reactor and mitigate the consequences of the failure (e.g., service water, component cooling, residual heat removal).
- o A single active failure is not assumed if the initial failure event is postulated in one of two redundant trains of a system whose function is not required during normal plant operation if the failure does not require an automatic protective action to mitigate the consequences of the failure. Where an automatic protective action is required, then a single active failure is postulated. However, if this single active failure is taken in the redundant train, then nonsafety-related systems, which are unaffected by the initial failure, can be considered available to mitigate the event. The feasibility of using a nonsafety system considers a loss of offsite power if the consequences of the initial failure causes unit trip, and on the basis of adequate control room indication, available for operator action, operator training, and access to the equipment utilized.

interactions between missiles generated from non-safety related components and safety related targets are typically precluded by plant layout which generally segregates non-safety related equipment from safety related systems. However,

there exist non-safety related components and systems which service safety related buildings and systems which cannot practically be separated. The potential interactions are evaluated on a case by case basis applying the criteria outlined above whether or not the missile is postulated from a safety related or a non-safety related source.

The total number of interactions to date between non-safety related missile sources and safety related targets is 155. It is estimated that 90% of the mechanical component interactions have been identified, and 15% of the electrical, instrumentation and control component interactions have been identified. Attachment SER1-1 provides three examples of the subject type of interaction. Specific scenarios are developed for each interaction applying the appropriate criteria to ensure that the consequences of the postulated event are acceptable.

## ATTACHMENT SERI-1

### Examples of Non-Safety Related Equipment Missiles Interacting with Safety Related Equipment

1. There is a non-safety related Aerated Drain System (DAS) sump pump in the orange Recirculation Spray System (RSS) pumps cubicle and another in the purple RSS pumps cubicle. Missiles generated by one of these DAS sump pumps could interact and cause loss of one train of RSS. This interaction is acceptable because RSS is not required to operate to mitigate the consequences of the DAS pump failure. Since RSS will not be called upon to operate, single failure is not applicable.
2. There are two non-safety fans in the same area of the Engineered Safety Features (ESF) building. Missiles generated from the failure of either fan could interact with the purple train of the Service Water System (SWP) and ESF Building Ventilation System (HVQ). This would cause the loss of air conditioning to the cubicles containing the purple High Pressure Safety Injection (SIH), Quench Spray System (QSS), and Residual Heat Removal System (RHS) pumps. Without air conditioning, these pumps could not operate. The failure of either of these fans does not cause a reactor trip, turbine trip, or require immediate shutdown. Thus, off-site power is not lost. In addition, none of the affected systems are required to operate to mitigate the consequences of the fan failure. Only one train of the safety system is affected by the fan failure. Thus, this event is acceptable. Since these safety systems will not be called upon to operate, single failure is not applicable.
3. There is a non-safety related Radioactive Gaseous Waste System (GWS) pump whose failure could generate missiles which could interact with both trains of the SWP which provides cooling to the charging pump (CHS) oil coolers. This would cause failure of both trains of CHS. Both trains of SIH and Reactor Plant Component Cooling (CCP) are unaffected by the generated missiles. SIH would assume the boration function and CCP would maintain the Reactor Coolant Pump seal cooling function of CHS. Single failure could be taken in either CCP or SIH and not jeopardize the plant's ability to reach cold shutdown.