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May 4, 1982

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Byron Station Units 1 and 2
Braidwood Station Units 1 and 2
Turbine Missile Evaluation
NRC Docket Nos. 50-454, 50-455,
50-456 and 50-457

Dear Mr. Denton:

This is to provide information regarding the Byron/Braidwood turbine missle hazard analysis which is in progress. A report of this work will be provided by the end of August, 1982. NRC review of that report should close Outstanding Item 2 of the Byron SER.

Attachment A to this letter outlines the premises and methodology being used in the current turbine missle hazard analysis effort. Key points were reviewed with NRC personnel in a conference call on March 31, 1982. Please let us know at the earliest opportunity if the analysis plan is unacceptable. Questions should be addressed to this office.

One signed original fifteen copies of this letter are provided for your use.

Very truly yours,

T. R. Tramm

T. R. Tramm
Nuclear Licensing Administrator

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ATTACHMENT A

Byron/Braidwood Turbine Missile Hazard Analysis Plan

The following items summarize the assumptions and methodology to be used in the turbine missile hazard analysis:

1. Turbine missile generation probability and missile characteristics are provided by Westinghouse. These probability values are based on stress corrosion mode of turbine disc failure at rated speed and design overspeed as a function of turbine inspection interval. For destructive overspeed, probability values are based on ductile burst mode of turbine disc failure.

2. Plant damage probability is evaluated by a simulation process in which the consequence of turbine missiles impacting various plant equipment and initiating accident scenarios is studied. The following steps are involved in this analysis:

   a. The plant is modeled as cubicles which house essential equipment. In this model, actual reinforced concrete and structural steel barriers are considered for simulating the missile path.

   b. The passage of a missile through a cubicle barrier is assumed to cause failure of all equipment in that cubicle.

   c. Fault trees are developed which relate the failure of plant equipment to accident scenarios.

   d. Accident scenarios meet the requirements of Regulatory Guide 1.115 for turbine missile protection of essential systems.

3. Equipment redundancy, separation, and operator intervention is considered in the development of fault trees.

4. To determine if turbine missiles can penetrate cubicle barriers, the CEA-EDF formula will be used for reinforced concete and masonry wall barriers and the BRL formula will be used for steel barriers.

5. The overall probability of turbine missile damage is based on combining the turbine missile generation probability with the plant probability and will be presented at various turbine inspection intervals.