MAR 16 1977

Docket Nos: 50-438
and 50-439

Tennessee Valley Authority
ATTN: Mr. Godwin Williams, Jr.
Manager of Power
830 Power Building
Chattanooga, Tennessee 37201

Gentlemen:

SUBJECT: FUEL HANDLING ACCIDENT - BELLEFONTE NUCLEAR PLANT, UNITS 1 AND 2

We are in the process of evaluating a refueling accident inside the containment building since it may not have been adequately considered in the licensing review.

Based on our preliminary review, potential site boundary radiation exposures due to such an accident at your facility would be within the exposure guidelines of 10 CFR Part 100 if containment isolation can be effected in a timely fashion.

In order to confirm these results and determine if the acceptance criteria of Standard Review Plan 15.7.4 are met, and to document the factors involved in the evaluation, we request that you provide a detailed evaluation of the potential consequences of such an accident at your facility in your FSAR. Your analysis should utilize assumptions comparable to those given in Regulatory Guide 1.25, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors," assuming the worst single failure. It should consider, in a conservative manner, any mixing in the containment atmosphere which would delay release of material, any filtration of effluent which would reduce releases, and any automatic isolation of the containment which would limit releases. Your analysis should utilize parameters (e.g., maximum allowable valve closure times) as limited by the proposed technical specifications. Clearly indicate any credit taken in the analyses for nonsafety grade equipment and provide appropriate justification for this credit. Detailed questions which should be addressed in your response are enclosed.

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You should compare proposed technical specifications (e.g., valve closure times, filter-testing) with results of the above analyses to show that parameters important in the evaluation are maintained at levels which will assure that conservatively calculated offsite consequences are well within the exposure guidelines of 10 CFR Part 100 over the plant lifetime.

This request for generic information was approved by GAO under a blanket clearance number B-180225 (R0072). This clearance expires July 31, 1977.

Original signed by
A. W. Dromerick

Olan D. Parr, Chief
Light Water Reactors Branch No. 3
Division of Project Management
Office of Nuclear Reactor Regulation

Enclosure:
Information Needed to
Evaluate Containment
Refueling Accident

cc w/enclosures:
See Next Page

OFFICE ➤						
SURNAME ➤						
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cc: Herbert S. Sanger, Jr., Esq.
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INFORMATION NEEDED TO EVALUATE CONTAINMENT ISOLATION CAPABILITY DURING REFUELING ACCIDENT

1) Describe all instrumentation which would detect a fuel-handling accident (FHA) inside containment. Your response should include the following information:
   a) instrumentation function, e.g., close containment isolation valves;
   b) type of instruments and setpoints, e.g., mr/hr, and normal background reading;
   c) safety class, redundancy, power sources, and technical specification requirements;
   d) a description of instrument response following a FHA taking into account instrument location;
   e) response time for the instrument to signal containment isolation after the FHA.

2) Describe the response of the containment isolation and ventilation valves following the FHA. Include valve closure times including expected valve closure time as well as technical specification requirements.

3) Provide the transit time from the point where a monitor can respond to a release from the FHA to the inboard isolation valve based on the maximum air velocity (peak centerline velocity) at maximum exhaust flow. Also include the transit time based on average velocity and normally expected air flows. Conservatively assume that the FHA is a puff release from the pool at a point closest to an exhaust grill.

4) Provide drawings of the containment which clearly show the location of the radiation monitors relative to the ventilation exhaust system including all exhaust inlets, filters, dampers, and duct arrangement up to the outboard isolation valves.

5) If the summation of the instrument response time (question 1.e) and valve dampers closure time (question 2) is greater than the gas transit time (question 3), provide an analysis as to the volume and amount of radioactive exhaust air which could be released. Your response should include the following:

   a) duct sizes;

   b) maximum (peak) air velocity;

   c) average air velocity;

   d) containment isolation valve closure characteristics;

   e) exhaust system flow rates;

   f) methodology used to calculate gas transit times from the pool surface to the exhaust system;

   g) air velocity profiles over the pool surface. You should consider the effects of pool water temperature on air flow trajectories.

6) Describe any charcoal filters which would mitigate the consequence of the FHA. If so, include the following information: type (e.g., kidney), redundancy, power sources, safety grade, technical specification requirements.

In responding to the above, reference can be made to specific pages or figures in the Safety Analysis Report.

DISTRIBUTION w/enclosures

Docket File
NRC PDR
Local PDR
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LWR-3 File
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