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DmB

November 29, 1984

Mr. James G. Keppler
Regional Administrator
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Byron Generating Station Units 1 and 2
Braidwood Generating Station Units 1 and 2
10 CFR 50.55(e) 30-day Report
Energy Absorbing Material
NRC Docket Nos. 50-454/455 and 50-456/457

Reference (a): E. D. Swartz letter to H. R. Denton
dated November 15, 1984

Dear Mr. Keppler:

On October 30, 1984, Commonwealth Edison Company notified Mr. R. Lerch of your office of a potential deficiency reportable pursuant to 10 CFR 50.55(e) regarding the crush strength of energy absorbing material (EAM) used in pipe whip restraints. This letter provides information concerning this matter to fulfill the thirty-day reporting requirement and is considered an interim report. For tracking purposes, this potential deficiency was assigned Numbers 84-07 at Byron and 84-19 at Braidwood.

Description of Deficiency

During testing of Byron energy absorbing material (EAM) at Hexcel, the supplier of the EAM, it was discovered that some material used in the pipe whip restraints had a lower than specified crush strength. Hexcel's earlier production testing results for this material were reviewed and showed that, when tested prior to delivery, it met the specified crush strength.

Analysis of Safety Implications

Deficient EAM in pipe whip restraints could result in damage to nearby equipment during postulated breaks of high energy lines. Case-by-case analyses would be necessary to determine the actual consequences of this deficiency. Such analyses would consider the consequences of whip restraint failure, the as-built capability of the restraints and the actual expected loads, and the likelihood of the design basis breaks.

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Corrective Action Taken

Hexcel has been requested to provide an evaluation of the EAM piece which showed the most significant reduction in crush strength. Hexcel has informed us that the brazing process used to manufacture Byron/Braidwood EAM was revised in 1980. The new brazing process used to manufacture EAM is considered by Hexcel to be a significant improvement over the original brazing process and is not suspected of any discrepancy at this time.

Based on this information, the following steps have been taken to resolve the problem with respect to Byron/Braidwood stations:

1. Westinghouse Designed Restraints

   Hexcel has informed us that the EAM used in Westinghouse designed restraints was manufactured using their current brazing process. Although this process is not considered suspect by Hexcel, they have been requested to test a number of specimens from a core block manufactured using the current process to evaluate the material variability within the core block. The results from these tests, along with the details of the manufacturing process used for this test block and the core block used to fabricate Westinghouse designed restraints, will be evaluated to determine if any further corrective action is necessary.

2. Sargent & Lundy Designed Restraints

   a. The number of restraints required for each unit has been re-evaluated by eliminating the arbitrary intermediate pipe breaks. An analysis for elimination of intermediate pipe breaks has been submitted to NRR with a request for expeditious review in Reference (a).

   b. After considering the potential deletions of those restraints which are associated with arbitrary intermediate breaks, there are 21 restraints in each unit at Byron/Braidwood Stations which utilize EAM. Although we believe that design adequacy of these restraints can be shown by further analysis using lower crush strenght, we plan to replace those EAM pieces from these 21 restraints which are associated with terminal breaks. The replacement material will be manufactured by Hexcel using their current brazing process. This approach has been chosen based on considerations of scheduling, feasibility of replacement and preservation of safety margin in restraint design.

c. In order to address the issue of material variability for the new material, no less than four specimens from different parts of the core block will be tested to determine the crush strength. Design of restraints will be re-evaluated for any crush strength values outside the specified range. In this evaluation, the information obtained from the evaluation described in paragraph (1) will also be considered.

We expect that all corrective action will be complete by January 15, 1985 and that a final report on the corrective actions taken will be filed by January 31, 1985.

Please address any questions that you or your staff may have concerning this matter to this office.

Very truly yours,

David H. Smith
Nuclear Licensing Administrator

cc: Resident Inspector - Byron
Resident Inspector - Braidwood

Director of Inspection and Enforcement
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