

MAY 24 1982

MEMORANDUM FOR: G.C. Lainas, Assistant Director  
for Safety Assessment  
Division of Licensing

FROM: Thomas A. Ippolito, Chief  
Operating Reactors Assessment Branch  
Division of Licensing

SUBJECT: GENERIC RECOMMENDATIONS RESULTING FROM  
STEAM GENERATOR TUBE RUPTURE EVENT

We have reviewed NUREG-0909 with respect to developing recommendations for improvements which would be generic to all PWR's. Our review includes consideration of the responses we have received to date to Mr. Denton's May 3, 1982 memorandum and our own recent involvement in the Ginna Restart SER. As a result we feel that we can identify some of the most prominent lessons applicable to all PWR's.

We have a high degree of confidence in our understanding of the initiating event for the SGTR also of the subsequent failure mechanisms. It is clear from the evidence presented to date that a foreign object of significant size is necessary to initiate the failure mechanisms. It is likely that the object was left in the generator as a result of generator internals modifications performed in 1975. These objects went undetected until the post-rupture inspections because of a lack of surveillance of the secondary side of the generator. Mechanical damage appears to be cause of failure of the Ginna tubes with corrosion, wastage and other of the more usual mechanisms having little or no effect on the subject tubes.

As a consequence, we believe that it is apparent that:

- (1) inspection requirements of the secondary side of the steam generators have not been adequately covered in our previous requirements and need improvement;
- (2) a loose part monitoring system on the secondary side of the steam generator is needed;
- (3) repair procedures should be reevaluated (plugging, by itself may not prevent continued tube degradation and in fact continued failure of tubes can go undetected and might result in consequential failures).

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It seems appropriate that we should require corrective action in the above areas. Specifically, licensees should be required to:

- (1) Inspect the secondary side of the steam generators in a similar manner to RG&E's program for Ginna, i.e., the use of fiber optics or miniature tv camera to detect debris or tube damage. The initial inspection would be concurrent with the next scheduled ECT examination of the tubes. The frequency of subsequent inspections of the secondary side would be based on the results of the initial inspection. In addition, these visual inspections should be required at any time modifications or repairs are made to the secondary side of the steam generators;
- (2) Install as soon as practicable loose parts monitoring system and a loose parts monitoring program considering the guidance contained in Regulatory Guide 1.133 to monitor the secondary side of steam generators;
- (3) Reevaluate tube plugging methods to include considerations for monitoring and limiting the effects of continued tube degradation after plugging. The use of limited leakage plus may be a method of mitigating further tube degradation for plugged tubes and should be considered.

We have also considered the need for short term requirements for improvements in water chemistry control, more frequent ECT inspections, a reduction in primary to secondary allowable leakage limits, and Steam Generator Tube Rupture emergency procedures. We believe that increased frequency of ECT inspections and lower leakage limits should be left for further consideration as a part of our overall effort in developing generic recommendations which will include consideration of the A-3, A-4 and A-5 programs and valve impact considerations. However, improvements in water chemistry control have been under study by utilities and preliminary industry guidelines have been developed and have been adopted by some plants. We recommend that our short term action include reference to these guidelines and improvements be undertaken by licensees as quickly as practicable.

With respect to plant emergency procedures, we will require changes that are compatible with the emergency procedures now under review. We do not believe that short term requirements are prudent without a careful evaluation of the existing procedures.

Original signed by

Thomas A. Ippolito, Chief

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