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Water Reactor
Divisions

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January 31, 1980

NS-TMA-2201

Mr. D. G. Eisenhut
Acting Director
Division of Operating Reactors
U. S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, Maryland 20014

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Dear Mr. Eisenhut:

Subject: Framatome Reactor Vessel Nozzle Cracking

Reference: Letter NS-TMA-2178 dated December 13, 1979
(to D. G. Eisenhut from T. M. Anderson)

The referenced letter, which summarized Westinghouse investigations related to the stated subject, indicated that a 70° ultrasonic test (UT) technique (similar to that used by the French) was being developed and that five reactor vessels manufactured by Rotterdam Dock Yard (for McGuire Unit 2, Catawba Unit 1, Sequoyah Unit 1, and Watts Bar Units 1 and 2) were still under investigation. This letter presents an updated status of those efforts.

The UT technique for manual contact examination, including evaluation criteria, has been finalized; it should be noted that development of immersion search units for remote inspection is ongoing. Like the technique employed by the French, the Westinghouse manual contact technique uses a 70° longitudinal wave search unit (with scans in both circumferential directions) and a 0° longitudinal wave search unit (in areas where indications are detected with the 70° examination system).

The evaluation criteria defines which reflectors can be considered innocuous (i.e., those indicative of inclusions, porosity, or lack of bonding between the cladding and base metal). Reflectors exhibiting characteristics other than those defined for innocuous indications are considered suspect and are evaluated on an individual basis; such suspect indications satisfy the following criteria:

1. detectable in both circumferential directions using the 70° examination system,

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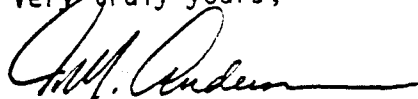
2. not detectable using the 0° examination system, and
3. exhibiting measurable length.

Manual contact ultrasonic examination of the Watts Bar Unit 2 reactor vessel nozzles has been completed. Of the eight nozzles, two nozzles contained no reportable indications. A total of 24 reportable indications were detected in the remaining six nozzles. Seventeen of those 24 reflectors were characterized as innocuous because they were detected in only one direction, had corresponding 0° indications, or exhibited no length. The remaining seven indications, which were considered suspect, have been evaluated individually; based on their low amplitudes, short lengths, locations within the nozzle, and small number (i.e., only seven indications in eight nozzles), it has been concluded that they are not indicative of the cracking condition identified by the French.

Review of the welding process/heat treatment used by Rotterdam Dock Yard in the fabrication of the nozzles for the five (previously identified) reactor vessels indicates that the condition of the Watts Bar Unit 2 reactor vessel nozzles is representative of the condition of the nozzles of the other four reactor vessels. In conclusion, Westinghouse does not believe that the McGuire Unit 2, Catawba Unit 1, Sequoyah Unit 1, and Watts Bar Units 1 and 2 reactor vessel nozzles are susceptible to cracking similar to that detected by the French.

Please contact Mr. R. J. Sero (412-373-4189) if you need any additional information.

Very truly yours,



T. M. Anderson, Manager
Nuclear Safety Department

CLG/TMA/jaw

cc: V. S. Noonan
J. P. Knight
W. S. Hazelton