

Westinghouse Electric Corporation

Power Systems

Box 355  
Pittsburgh Pennsylvania 15230

June 10, 1980

NS-TMA-2254

Ref.: a. NS-TMA-2214, 3/14/80  
b. NS-TMA-2235, 4/23/80

Mr. Stefan S. Pawlicki  
Chief, Materials Engineering Branch  
Division of Engineering  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
7920 Norfolk Avenue  
Bethesda, Maryland 20014

Dear Mr. Pawlicki:

Subject: Inspection of Control Rod Guide Tube Support Pins  
in Operating Nuclear Power Plants

Reference a. submitted information on stress corrosion cracking in control rod guide tube support pins observed in a Westinghouse design PWR plant operating in a foreign country. Reference b. provided information related to the safety and licensing of the TVA Sequoyah nuclear plant, a plant having the Upper Head Injection (UHI) safeguards engineering design feature. For non-UHI operating plants, a recommendation in Reference a. was to perform ultrasonic inspection of the guide tube support pins from two or more domestic plants, with any further actions based on the results of such inspections. This letter is to advise of an inspection plan and preparations in that regard.

The plants to be inspected would collectively contain support pins with heat treatment temperatures less than 1950°F including pins heat treated at 1625°F. This includes the range of heat treatment temperatures which are more susceptible to stress corrosion cracking, as discussed in References a. and b. Since the experience in foreign operating plants and the materials assessment program show initiation of cracking after a short exposure time, plant inspection should not be dependent on the operating cycle.

Ultrasonic inspection has been demonstrated to be a viable inspection technique on the support pins based on qualification testing and experience in foreign operating plants. Detection of cracks has been confirmed by penetrant inspection and metallographic examination. Cracks can be detected in both the leaf and shank of the support pins which were the areas found to be cracked in the foreign plants.

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If ultrasonic inspection of the support pins from the plants inspected showed no indications of cracks, there would be no further inspections. Cracked support pins found in foreign plants would be concluded not to be a generic issue and no further examinations would be planned for domestic operating plants.

If there are any ultrasonic indications during this inspection, a sample of such pins, including each heat treatment temperature, would be penetrant inspected. If there are no cracks in any of the pins from the plants inspected, there would be no further inspections in any plants and the program would be concluded as discussed above.

If penetrant inspection of a support pin showed a crack, metallographic examination and further evaluation would be performed to determine a specific plan regarding the need for support pin replacement and further operating plant inspections.

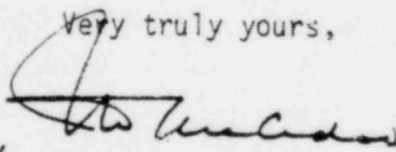
Equipment for ultrasonic inspection of support pins has been manufactured and qualified. Tooling for support pin removal and replacement is being developed and qualified and this effort will be completed in late September, 1980. Some customizing of the tooling may be required depending on configurations in the plants to be inspected. This schedule is consistent with the refueling outage of plants which contain a matrix of support pin heat treatments representative for inspection.

The specific plant's outage work plan and critical path considerations would determine the time required for this effort. For reference purposes, based on experience in the foreign plants and estimates related to operation of the tooling being designed, all the support pins in a four loop plant could be removed and replaced in approximately fifteen (15) days exclusive of set-up time.

The utility customers have been advised on the subject of guide tube support pin cracking, the heat treatment of support pins in their specific plants, and the recommendation for inspection. They will also be advised of the availability of support pin inspection and replacement tooling for their decision on whether to conduct a plant inspection. Inspection and/or replacement of the guide tube support pins is the responsibility of the utility customer. Westinghouse is prepared to assist the customers in arriving at their decision.

Should you have questions on this plan or wish to discuss it further, please contact Mr. W. S. Brown, Manager, Environmental & Operational Safety, Nuclear Safety Department, at 412 - 373-4240.

Very truly yours,

  
for T. M. Anderson, Manager  
Nuclear Safety Department