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Document Control Desk  
US Nuclear Regulatory Commission  
Washington, DC 20555

Attention: B. Sheron, Director  
Division of Engineering, NRR

Subject: Westinghouse Anticipated Licensing Activity  
Addressing Steam Generator Tube Integrity Issues

Dear Mr. Sheron:

This correspondence is provided in response to your request made during the June 15, 1994 meeting between Westinghouse and the NRC staff to define the schedule for when license amendment request (LAR) packages for steam generator tube integrity issues will be made to the NRC staff in support of Fall '94 and Spring '95 outages. This letter also discusses, per your request, the regulatory impact of the proposed generic letter on the steam generator tube interim plugging criteria (IPC) licensing strategies for tube support plate elevation outer diameter initiated stress corrosion cracking.

A schedule for either planned or anticipated licensing activities is provided below along with a summary of the impact of the proposed generic letter on steam generator tube IPC licensing strategies. It is our judgment that unless the generic letter provides provisions for an alternate eddy current probability of detection (POD) methodology, the use of the TRANFLO code in the tube support plate deflection analysis and tube expansion, and the application of the EPRI leak rate correlation, a nonstandard format for future IPC submittals is highly likely. The likelihood for nonstandard IPCs further increases if the generic letter limits repair limits to 1.0 volt for 3/4" tubing and 2.0 volt for 7/8" tubing. Westinghouse proposes to work closely with the NRC staff to resolve any technical issues related to our planned utility support.

At the June 15 meeting, it was stated by Westinghouse that the staff can realistically expect up to 16 LAR (revised estimate of 18 LAR) packages to be submitted during this time frame to largely address the occurrence of either inner or outer diameter initiated stress corrosion cracking at the tubesheet region or tube support plate elevations. The breakdown is as follows: 3 plants for the installation of laser welded sleeves, 8 (instead of 6) plants for steam generator tube interim plugging criteria, 4 plants for steam generator tube sleeve hybrid expansion joint (HEJ) alternate plugging criteria, 2 plants for F\* criteria, and 1 plant in support of the implementation of direct tube repair. It was also stated at that meeting that Westinghouse is considering the issuance of generic topical reports, potentially through a utility minigroup, to ease the review burden for the NRC staff. Westinghouse plans to submit generic (some cases limited to a specific steam generator model) topical reports for tube expansion alternate

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plugging criteria (APC), laser welded sleeving, HEJ sleeves and DTR. Discussions have been initiated with several utilities for their participation in a minigroup in support of steam generator tube APC implementation.

Presently, only 4 steam generator tube IPC submittals are definite. The steam generator tube IPC submittals will be of two forms, a standard IPC (4 plants minimum) and others considering limited tube support displacement analysis (2 plants) and tube expansion (2 plants which represent the technical support for plant specific LAR packages for up to 12 Model 51 and 4 Model D4 steam generator plants). The five '94 IPC submittals will be made between July and December with three plants requiring implementation of the standard IPC to preclude unnecessarily plugging tubes with one plant providing supplemental information submittals supporting limited tube support plate displacement for Model D4 steam generators and another plant submitting tube expansion for Model 51 steam generators. A meeting is scheduled with the appropriate group of utilities on June 29, 1994 to address HEJ sleeve joint degradation. It is anticipated that a HEJ repair or APC submittal will also be made in September of 1994 with 1 plant needing implementation in the fourth quarter of 1994. The remainder of the projected LARs are dependent on plant need which, although highly likely, may or may not materialize during the Fall '94 and Spring '95 scheduled outages. The attached table provides a summary of the expected licensing activity in the next nine months or so on steam generator tube integrity related issues.

Concerning the overall licensing strategy (and industry and manpower expenditures) for steam generator tube IPC for the Fall '94 submittals and beyond, it is readily apparent that the final licensing strategy is driven by the resolution of the remaining IPC technical issues: 1) eddy current POD, 2) the use of the TRANFLO code in the tube support plate deflection analysis, 3) an acceptable methodology for the elimination of outliers from the steam generator tube leakage correlation database including application of the EPRI leak rate correlation, and 4) the tube repair voltage limits for 3/4" and 7/8" tubing authorized in the generic IPC letter. A nonstandard format for future IPC submittals is highly likely unless the pending generic letter includes provisions for an alternate POD methodology, permitting limited tube support plate displacement and tube expansion with increased repair limits, and application of the EPRI leak rate correlation. A 1.0 volt repair limit for 3/4" inch tubing on any plant and a 2.0 volt repair limit for 7/8" tubing on plants with prior IPCs can lead to high plugging rates and an accelerated need for tube expansion or a full APC to increase the repair limits.

A standard IPC (1.0 volt criteria for 3/4" diameter tubes; 2.0 volt criteria for 7/8" diameter tubes) following the contents of draft NUREG-1477 can only accommodate a small number of indications. It also only applies when voltage growth rates are acceptably low. A standard IPC with an alternate POD can accommodate a larger number of indications but it too applies only when voltage amplitudes are low for the dominant number of indications and when voltage growth rates are modest. Four of the eight plants submitting LARs for steam generator tube IPC in the Fall '94 and Spring '95 are in a situation where NRC acceptance of the use of the TRANFLO code in the postulated steam line break tube support plate deflection analysis, a more realistic method for accounting for undetected indications and RPC NDD indications in the end of cycle voltage distribution projections, and the use of the EPRI leak rate correlations would permit these plants to justify higher voltage repair limits than the current standard IPC permits by eliminating tube burst margin/probability as a limiting factor in the application of the plugging limit. SLB leakage becomes the potential limiting factor in the longer term and it is envisioned that

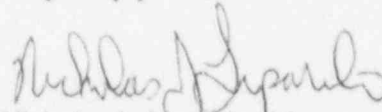
insitu leak testing can be developed in the near term to further improve upon the determination of projected steam line break leakage and to minimize the need to revise primary coolant activity limits in the plant Technical Specifications.

Westinghouse functions in a support role for our customers in addressing steam generator tube degradation issues by providing engineering solutions. It is our goal to attempt to extend the life of steam generators to the maximum extent possible utilizing sound engineering and safety practices. Consistent with this philosophy, for tube support plate elevation outer diameter initiated stress corrosion cracking, it is our judgment that a steam generator interim plugging criteria that includes alternate POD and leak rate methodologies and an allowance for tube expansion would permit us to achieve our objective in supporting our utilities. With such a criteria in place, it is believed that all plants could implement a 3.0 volt plugging criteria in the near term and increase this voltage limit in 1.5 volt increments on a cycle to cycle basis (until a maximum voltage plugging limit of approximately 10 to 15 volts is reached). This would preclude unnecessarily plugging or sleeving tubes over the next approximately five year period and, while at the same time, would permit the development of improved secondary chemistry including a potential inhibitor to reduce corrosion at the TSPs to negligible levels such that only limited sleeving and direct tube repairs would be necessary. This option essentially eliminates TSP elevation OD SCC as a degradation mechanism that could eventually lead a plant to steam generator replacement.

Westinghouse will continue to discuss these approaches with our utility customers over the next few weeks. If customer interest warrants, a generic topical report on limited tube support plate deflection and tube expansion can be submitted to the NRC staff by October of 1994. At the very latest, it is planned to provide a discussion of an alternate POD methodology on a plant docket for staff review no later than October, 1994.

In the mean time, Westinghouse supports open communication with the NRC staff to resolve any technical/licensing issues in any area of our planned utility support. In particular, Westinghouse would welcome the opportunity to address any of the remaining technical issues in the very near term (sometime during July 1994) relative to the implementation of the steam generator IPC for tube support plate elevation OD SCC. Please contact Bob Sterdis of my staff at 412-374-4311 with a meeting date and time so that we can begin timely resolution of these issues.

Very truly yours,



Nicholas J. Liparulo, Manager

Nuclear Safety Regulatory and Licensing Activities

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Attachment

| Summary of Anticipated Licensing Activity        |                               |                                   |           |
|--|-------------------------------|-----------------------------------|-----------|
| Submittal Topic                                  | Plants With '94 Submittals    | Plants With Spring '95 Submittals | Total     |
| Laser Welded Sleeving                            | 2<br>(3-94,3-94)              | 1<br>(1-95)                       | 3         |
| HEJ Sleeve Repair or Alternate Plugging Criteria | 1<br>(4-94)                   | 3<br>(1-95,3-95,3-95)             | 4*        |
| SG IPC (Standard)                                | 3 minimum<br>(3-94,3-94,3-94) | 1 minimum<br>(3-95)               | 4 minimum |
| SG IPC+<br>(TSP Displacement and Tube Expansion) | 1***,1****<br>(3-94,1-95)     | 2****<br>(1-95,3-95)              | 4*        |
| F*   | 0                             | 2<br>(2-95,3-95)                  | 2         |
| Direct Tube Repair                               | 1<br>(1-95)                   | 0                                 | 1         |
| <b>Total</b>                                     | 9                             | 9                                 | 18**      |

**Notes:**

(1,2,3,4-94/95 represents outages scheduled during the 1st, 2nd, 3rd, and 4th quarter of 1994 or '95, respectively)

- \* Number reduces to 1 if approval of generic document can be applied to other plants
- \*\* Number can be reduced to as low as 12 to reflect the formation of utility minigroups and if the approval of the generic document can be applied to other plants
- \*\*\* Updates to an existing submittal under NRC review
- \*\*\*\* Expected as tube expansion for Model 51 and D4 steam generators and possibly limited displacement for a Model D3 steam generator
- + Approval on a generic basis could avoid 6 to 9 later submittals