ATTACHMENT 1

PROPOSED TECHNICAL SPECIFICATIONS CHANGE

NORTH ANNA UNIT 1

VIRGINIA ELECTRIC AND POWER COMPANY

9. Preservice Inspection means an inspection of the full length of each tube in each steam generator performed by eddy current techniques prior to service to establish a baseline condition of the tubing. This inspection shall be performed using the equipment and techniques expected to be used during subsequent inservice inspection.

b. The steam generator shall be determined OPERABLE after completing the corresponding actions (plug all tubes exceeding the plugging limit and all tubes containing through-wall cracks) required by Table 4.4-2.

4.4.5.5 Reports

a. Following each inservice inspection of steam generator tubes, the number of tubes plugged in each steam generator shall be reported to the Commission within 15 days.

b. The complete results of the steam generator tube inservice inspection shall be reported on an annual basis for the period in which this inspection was completed. This report shall include:

1. Number and extent of tubes inspected.

2. Location and percent of wall-thickness penetration for each indication of an imperfection.

3. Identification of tubes plugged.

c. Results of steam generator tube inspections which fall into Category C-3 require prompt notification of the Commission pursuant to Section 50.72 to 10 CFR Part 50. A Licensee Event Report shall be submitted pursuant to Section 50.73 to 10 CFR Part 50 and shall provide a description of investigations conducted to determine cause of the tube degradation and corrective measures taken to prevent recurrence.

ATTACHMENT 2

PROPOSED TECHNICAL SPECIFICATIONS CHANGE

NORTH ANNA UNIT 2

VIRGINIA ELECTRIC AND POWER COMPANY

9. Preservice Inspection means an inspection of the full length of each tube in each steam generator performed by eddy current techniques prior to service to establish a baseline condition of the tubing. This inspection shall be performed using the equipment and techniques expected to be used during subsequent inservice inspection.

b. The steam generator shall be determined OPERABLE after completing the corresponding actions (plug all tubes exceeding the plugging limit and all tubes containing through-wall cracks) required by Table 4.4-2.

4.4.5.5 Reports

a. Following each inservice inspection of steam generator tubes, the number of tubes plugged in each steam generator shall be reported to the Commission within 15 days.

b. The complete results of the steam generator tube inservice inspection shall be reported on an annual basis for the period in which this inspection was completed. This report shall include:

1. Number and extent of tubes inspected.

2. Location and percent of wall-thickness penetration for each indication of an imperfection.

3. Identification of tubes plugged.

c. Results of steam generator tube inspections which fall into Category C-3 require prompt notification of the Commission pursuant to Section 50.72 to 10 CFR Part 50. A Licensee Event Report shall be submitted pursuant to Section 50.73 to 10 CFR Part 50 and shall provide a description of investigations conducted to determine cause of the tube degradation and corrective measures taken to prevent recurrence.

ATTACHMENT 3

DISCUSSION OF PROPOSED CHANGES AND SAFETY EVALUATION

VIRGINIA ELECTRIC AND POWER COMPANY

Discussion of Proposed Changes and Safety Evaluation

1.0 Background and Introduction

NRC Regulatory Guide 1.83, Revision 1 (Reference 1), describes a method acceptable to the NRC staff for implementing General Design Criteria (GDC) 14, 15, 31, and 32 of Appendix A to 10 CFR Part 50 by reducing the probability and consequences of steam generator tube failures through periodic inservice inspection for early detection of defects and deterioration.

GDC-14, "Reactor Coolant Pressure Boundary," and GDC-31, "Fracture Prevention of Reactor Coolant Pressure Boundary," require that the reactor coolant pressure boundary have an extremely low probability of abnormal leakage, of rapidly propagating failure, and of gross rupture. GDC-15, "Reactor Coolant System Design," requires that the reactor coolant system be designed with sufficient margin to ensure that the design conditions of the reactor coolant pressure boundary are not exceeded during any condition of normal operation, including anticipated operational occurrences. Furthermore, GDC-32 "Inspection of Reactor Coolant Pressure Boundary," requires that components which are part of the reactor coolant pressure boundary be designed to permit periodic inspection and testing of critical areas to assess their structural and leaktight integrity.

Surveillance Requirements 4.4.5.1 through 4.4.5.5 of the North Anna Power Station Units 1 and 2 Technical Specifications describe an augmented inservice inspection program which is required to be performed in conjunction with the inservice inspection requirements of Section XI of the ASME Boiler and Pressure Vessel Code (Reference 2). The combination of these inspection programs serve to demonstrate the operability of the steam generators.

As part of the augmented inspection program, Specification 4.4.5.4.a.9 requires that an inspection of the full length of each tube in each steam generator be performed by eddy current techniques prior to service to establish a baseline condition of the tubing. This surveillance requirement further specifies that the preservice inspection be performed after the field hydrostatic test and prior to initial power operation using the equipment and techniques expected to be used during subsequent inservice inspection. The purpose of this amendment request is to revise the Technical Specification requirement for preservice inspection of steam generator tubes by removing the unnecessary restriction that the preservice inspection be performed after the field hydrostatic pressure test.

2.0 Technical Specification Change Description

This proposed Technical Specifications change affects Surveillance Requirement 4.4.5.4.a.9. The phrase, "after the field hydrostatic test and prior to initial POWER OPERATION," found in the second sentence of that paragraph is requested to be deleted. Subsequent to deletion of this phrase, Surveillance Requirement 4.4.5.4.a.9 will read as follows:

Preservice Inspection means an inspection of the full length of each tube in each steam generator performed by eddy current techniques prior to service to establish a baseline condition of the tubing. This inspection shall be performed using the equipment and techniques expected to be used during subsequent inservice inspection.

This proposed change creates a North Anna Specification identical to Surveillance Requirement 4.19.E.a.9 in the Technical Specifications for Surry Power Station Units 1 and 2 (Reference 3). In addition, the created Specification is similar to and provides the same intent as Surveillance Requirement 4.0.6.4.a.9 in the Technical Specifications for Comanche Peak Unit 1 (Reference 4).

This proposed change does not affect or change any limiting conditions for operation (LCO) or any other surveillance requirements in the Technical Specifications and the Basis for Surveillance Requirement 4.4.5.4.a.9 remains unchanged.

3.0 Discussion of Changes

North Anna Power Station's inservice inspection program for steam generator tubing conforms to the requirements of ASME Section XI, the North Anna Technical Specifications, and the guidance of NRC Regulatory Guide 1.83, Revision 1. However, the requirement that the preservice inspection of the tubing be performed only after the field hydrostatic pressure test is impractical.

In accordance with the requirements of ASME Section XI, the conduct of preservice inspections, periodic inservice inspections, and hydrostatic testing of pressure retaining components in the reactor coolant pressure boundary provides reasonable assurance that evidence of structural degradation will be detected in time to permit corrective action before the safety function of a component will be compromised. Specifically, with respect to this issue, ASME Section XI requires the preservice inspections (i.e., baseline eddy current examinations) of replacement components be performed prior to resumption of service following the replacement. Subarticle IWB-2200, Preservice Examination, of ASME Section XI allows that shop performed examinations may serve in lieu of the on-site preservice examinations provided that 1) the examinations are conducted under conditions and with equipment and techniques equivalent to those that are expected to be employed for subsequent inservice examinations, and 2) the shop examination records are documented and identified in a form consistent with Code requirements. In addition, the Code allows that these preservice examinations may be performed either prior to or following the system hydrostatic pressure tests. The requested Technical Specification change continues to conform with the ASME Section XI requirements.

Discussion of Proposed Changes and Safety Evaluation

Regulatory Guide 1.83, Revision 1, provides the NRC's regulatory positions on the content and establishment of an inservice inspection program for steam generator tubing. Regulatory position C.3.a of Regulatory Guide 1.83, Revision 1, emphasizes that all tubes in the steam generators should be inspected by eddy current or alternative techniques prior to service to establish a baseline condition of the tubing. The regulatory position does not specifically require that this baseline inspection be performed following any field hydrostatic pressure test. In fact, the discussion of Regulatory Guide 1.83, Revision 1, acknowledges the use of the usual shop examination of tubing as an adequate baseline examination.

The augmented Technical Specification surveillance requirements for inspection of the steam generator tubes further ensure that the structural integrity of this portion of the Reactor Coolant System will be maintained. Accordingly, the purpose of Specification 4.4.5.4.a.9 is to require the baseline condition of the steam generator tubes be established prior to placing the steam generator into service. This surveillance requirement is only applicable for initial plant startup and for any subsequent unit restart following replacement of a steam generator tube bundle. The preservice inspection serves to provide reasonable assurance that subsequent inservice inspections will provide evidence of structural degradation of the tubes. The proposed Technical Specification change does not affect or change this basis. However, the requirement that the preservice inspection of the tubing be performed only after the field hydrostatic pressure test is considered impractical for replacement of steam generators in a plant that has been previously inservice. As evidenced above, industry standards and NRC guidance allow the shop performed examinations to serve as the baseline examination of steam generator tubing.

This proposed schedular change does not reduce the effectiveness of the eddy current baseline inspection. The shop-performed eddy current examinations will be performed after the required ASME Section III (Reference 5) hydrostatic pressure test. Subsequent to installation of the replacement steam generator, system hydrostatic pressure tests must be performed in accordance with ASME Section XI. These test pressures are substantially less than the Section III hydrotest and will not affect the results of the baseline eddy current examinations.

The proposed Technical Specification change does not change the intent of the surveillance requirement. The preservice inspection of the tubes of the replacement steam generators will still be performed prior to placing replacement steam generators into service. However, there is substantial benefit to performing the preservice inspection of the tubing of the steam generators in the vendor's shop in lieu of in-place on site. These benefits include:

1. ALARA. Although an in-place preservice inspection of the steam generator tubes could be performed near the end of the associated replacement outage, many of the surrounding components will still be radiologically activated or "hot" and many areas may still be contaminated. Hence, the dose to the inspection personnel would be reduced by performing the inspection in the vendor's shop. Even considering on the scope of the

preservice inspection and the outage related efforts used to reduce dose to workers, a 5 - 10 Man-rem savings would be expected by performing this inspection in the shop in lieu of in-place.

2. Ease of inspection. The shop inspection effort is easier to conduct than the in-place inspection in that the inspection equipment can be positioned in close proximity to the steam generator tube bundle assemblies and access by personnel is facilitated.

3. Reduced outage time. The inspection can be performed in the shop at a convenient time after the shop hydrostatic pressure test without impact on the delivery schedule. However, for each steam generator inspected in the field, it is expected take approximately 7 days to complete the inspection and an additional 2 days to complete the data analysis. If performed during the replacement outage with the steam generators in-place, the majority of this time would be on the critical path of the outage schedule. By eliminating this inspection activity from the schedule, the outage duration could be reduced.

The purpose for proposing this Technical Specification change at this time is to reduce the dose impact and schedular impact of the preservice inspection on the North Anna Unit 1 steam generator replacement project. The impact of this change is limited to the schedule for performing the preservice inspection of the steam generators tubes. However, in all cases, the preservice inspection must be performed prior to returning the unit to service. If necessary, the preservice inspection could be performed during the replacement outage. Therefore, this proposed Technical Specification change request should not be presumed to negate the licensing efforts to perform the steam generator replacement under the provisions of 10 CFR 50.59.

The NRC has previously allowed this baseline inspection philosophy to be included in the Technical Specifications of other operating nuclear power plants. For example, with the recent licensing of Comanche Peak Unit 1, the NRC approved a Technical Specification Surveillance Requirement which is similar to and provides the same intent as the proposed change requested herein.

4.0 Safety Evaluation

The proposed amendment affects only the schedule for performing the preservice inspection of tubing in replacement steam generators by removing the restriction that the preservice inspection be performed after the field hydrostatic pressure test. This proposed change does not affect or change any limiting conditions for operation (LCO) or any other surveillance requirements in the Technical Specifications. This proposed amendment continues to comply with the requirements of Regulatory Guide 1.83, Revision 1, and ASME Section XI.

The proposed amendment continues to ensure that preservice inspection of replacement steam generator tubes will be performed to establish the baseline

condition of the tubing. Further, the inspection is still required to be performed prior to resumption of service following the replacement. Therefore, the change continues to ensure that subsequent inservice inspections will provide evidence of structural degradation of steam generator tubes.

This proposed schedular change does not reduce the effectiveness of the eddy current baseline inspection. The shop-performed eddy current examinations will be performed after the required ASME Section III hydrostatic pressure test. This hydrotest will be conducted at a test pressure of 1.25 times the design pressure. Subsequent to installation of the replacement component, system hydrostatic pressure tests must be performed in accordance with ASME Section XI. These test pressures are substantially less than the Section III hydrotest and will not affect the results of the baseline eddy current examinations.

The proposed Technical Specifications change would provide the benefit and flexibility of performing the required pres[illegible]ce inspections of the replacement steam generator tubing at the vendor's fabrication facility. This inspection schedule is a suitable alternative to performing the tubing examinations in the field after installation of the replacement steam generator components. By eliminating the post-installation inspection, the alternative inspection schedule also serves to reduce dose to inspection technicians.

This proposed change to the Technical Specifications does not involve modifications to any of the existing equipment or affect the operation of any existing systems. The current reactor coolant system reliability and operation are maintained in accordance with the descriptions found in the UFSAR. Further, the proposed change does not affect the assumptions, design parameters, or results of any UFSAR accident analysis. Therefore, this change pose any equipment operability concerns.

The NRC has previously allowed this baseline inspection philosophy to be included in the Technical Specifications of other operating nuclear power plants. For example, this proposed amendment is identical to the one issued for Surry Power Station Units 1 and 2 (References 6 and 7). In addition, the NRC approved a Technical Specification Surveillance Requirement for Comanche Peak Unit 1 (Reference 4) which is similar to and provides the same intent as the proposed change requested herein.

Based on the above evaluation, it is concluded that the proposed Technical Specification change does not constitute an unreviewed safety question and does not pose a significant hazard to the health and safety of the public.

References

1. NRC Regulatory Guide 1.83, Revision 1, "Inservice Inspection of Pressurized Water Reactor Steam Generator Tubes," dated July 1975.

2. ASME Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," 1983 Edition, Summer 1983 Addenda (applicable to North Anna Unit 1), and 1986 Edition (applicable to North Anna Unit 2).

3. Technical Specifications to Operating License Nos. DPR-32 and DPR-37 for Surry Power Station Units 1 and 2, respectively, Surveillance Requirement 4.19.E.a.9.

4. Surveillance Requirement 4.0.6.4.a.9 of the Technical Specifications to Operating License No. NPF-87 for Comanche Peak Unit 1 (Docket No. 50-445), dated April 17, 1990.

5. ASME Boiler and Pressure Vessel Code, Section III, "Nuclear Power Plant Components," 1986 Edition.

6. Letter from C. M. Stallings (Virginia Electric and Power Company) to Mr. H. R. Denton (NRC), "Amendment to Operating Licenses, Surry Power Station, Unit Nos. 1 and 2, Proposed Technical Specification Change No. 24," Serial No. 395, dated May 24, 1979.

7. Letter from S. A. Varga (NRC) to Mr. J. H. Ferguson (Virginia Electric and Power Company), "Amendment No. 65 to Facility Operating License No. DPR-32 for Unit No. 1 of the Surry Power Station," (Virginia Power Letter Log Serial No. 115), dated February 10, 1981.

ATTACHMENT 4

10 CFR 50.92
NO SIGNIFICANT HAZARDS CONSIDERATION
EVALUATION

VIRGINIA ELECTRIC AND POWER COMPANY

10 CFR 50.92
No Significant Hazards Considerations Evaluation

Surveillance Requirements 4.4.5.4.a.9 requires that an inspection of the full length of each tube in each steam generator be performed by eddy current techniques prior to service to establish a baseline condition of the tubing. This surveillance requirement further specifies that the preservice inspection be performed after the field hydrostatic test and prior to initial power operation using the equipment and techniques expected to be used during subsequent inservice inspection. However, the requirement that the preservice inspection of the tubing be performed only after the field hydrostatic pressure test is impractical. Therefore, the purpose of this amendment request is to revise the Technical Specification requirement for preservice inspection of steam generator tubes by removing the unnecessary restriction that the preservice inspection be performed after the field hydrostatic pressure test.

The purpose of the augmented Technical Specification inspection for steam generator tubing is commensurate with the requirements of ASME Section XI in that the conduct of preservice inspections, periodic inservice inspections, and hydrostatic testing of pressure retaining components in the reactor coolant pressure boundary provides reasonable assurance that evidence of structural degradation will be detected in time to permit corrective action before the safety function of a component will be compromised. However, with specitic respect to this issue, ASME Section XI allows that shop performed examinations may serve in lieu of the on-site preservice examinations provided that 1) the examinations are conducted under conditions and with equipment and techniques equivalent to those that are expected to be employed for subsequent inservice examinations, and 2) the shop examination records are documented and identified in a form consistent with Code requirements. In addition, the Code allows that these preservice examinations may be performed either prior to or following the system hydrostatic pressure tests. Therefore, the requested Technical Specification change continues to conform with the ASME Section XI requirements and the intent of the Surveillance Requirement remains unchanged.

Regulatory Guide 1.83, Revision 1, provides the NRC's regulatory positions on the content and establishment of an inservice inspection program for steam generator tubing. Regulatory position C.3.a of Regulatory Guide 1.83, Revision 1, directs that all tubes in the steam generators should be inspected by eddy current or alternative techniques prior to service to establish a baseline condition of the tubing. The regulatory position does not specifically require that this baseline inspection be performed following any field hydrostatic pressure test. In fact, the discussion of Regulatory Guide 1.83, Revision 1, acknowledges the use of the usual shop examination of tubing as an adequate baseline examination.

The augmented Technical Specification surveillance requirements for inspection of the steam generator tubes further ensure that the structural integrity of this portion of the Reactor Coolant System will be maintained. Accordingly, the purpose of Specification 4.4.5.4.a.9 is to require the baseline condition of the steam generator tubes be established prior to placing the steam generator into service. This surveillance requirement is only applicable for initial plant startup and for any subsequent unit restart following replacement of a steam generator tube bundle. The preservice inspection serves to provide reasonable assurance that subsequent inservice inspections will provide evidence of structural degradation of the tubes. The

proposed Technical Specification change does not affect or change this basis. However, the requirement that the preservice inspection of the tubing be performed only after the field hydrostatic pressure test is considered impractical for replacement of steam generators in a plant that has been previously inservice. As evidenced above, industry standards and NRC guidance allow the shop performed examinations to serve as the baseline examination of steam generator tubing.

This proposed schedular change does not reduce the effectiveness of the eddy current baseline inspection. The shop-performed eddy current examinations will be performed after the required ASME Section III hydrostatic pressure test. Subsequent to installation of the replacement steam generators, system hydrostatic pressure tests must be performed in accordance with ASME Section XI. These test pressures are substantially less than the Section III hydrotest and will not affect the results of the baseline eddy current examinations.

The proposed Technical Specification change does not change the intent of the surveillance requirement. The preservice inspection of the tubes of the replacement steam generators will still be performed prior to placing replacement steam generators into service. However, there is substantial benefit to performing the preservice inspection of the tubing of the steam generators in the vendor's shop in lieu of in-place after installation. These benefits include:

1. ALARA. Although an in-place preservice inspection of the steam generator tubes could be performed near the end of the associated replacement outage, many of the surrounding components will still be radiologically activated or "hot" and many areas may still be contaminated. Hence, the dose to the inspection personnel would be reduced by performing the inspection in the vendor's shop. Even considering on the scope of the preservice inspection and the outage related efforts used to reduce dose to workers, a 5 - 10 Man-rem savings would be expected by performing this inspection in the shop in lieu of in-place.

2. Ease of inspection. The shop inspection effort is easier to conduct than the in-place inspection in that the inspection equipment can be positioned in close proximity to the steam generator tube bundle assemblies and access by personnel is facilitated.

3. Reduced outage time. The inspection can be performed in the shop at a convenient time after the shop hydrostatic pressure test without impact on the delivery schedule. However, for each steam generator inspected in the field, it is expected take approximately 7 days to complete the inspection and an additional 2 days to complete the data analysis. If performed during the replacement outage with the steam generators in-place, the majority of this time would be on the critical path of the outage schedule. By eliminating this inspection activity from the schedule, the outage duration could be reduced.

The NRC has previously allowed this baseline inspection philosophy to be included in the Technical Specifications of other operating nuclear power plants. For example, this proposed amendment is identical to Surveillance Requirement 4.19.E.a.9 for Surry Power Station Units 1 and 2. In addition, the NRC recently approved the

Operating License for Comanche Peak Unit 1 with Technical Specification Surveillance Requirement 4.0.6.4.a.9 which is similar to and provides the same intent as the proposed change requested herein.

Virginia Electric and Power Company has reviewed this proposed change and determined that the proposed change does not involve a significant hazards consideration as defined in 10 CFR 50.92. The basis for this determination is that this change:

1. Does not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed change has no adverse impact upon probability or consequences of any accident previously evaluated. The proposed Technical Specification change does not change the intent of the surveillance requirement. Only the schedule for conducting the baseline examination of the replacement steam generator tubing is changed. The preservice inspection of the tubes of the replacement steam generators will still be performed prior to placing replacement steam generators into service. The preservice inspection will continue to provide reasonable assurance that subsequent inservice inspections will provide evidence of structural degradation of the tubes.

   This proposed schedular change does not reduce the effectiveness of the eddy current baseline inspection. The shop-performed eddy current examinations will be performed after the required ASME Section III hydrostatic pressure test. Subsequent to installation of the replacement steam generators, system hydrostatic pressure tests must be performed in accordance with ASME Section XI. These test pressures are substantially less than the Section III hydrotest and will not affect the results of the baseline eddy current examinations.

   The proposed change does not affect the assumptions, design parameters, or results of any UFSAR accident analysis and the proposed amendment does not add or modify any existing equipment. Therefore, no new or unique accident precursors are introduced by this change in surveillance requirements.

2. Does not create the possibility of a new or different kind of accident from any accident previously evaluated.

   The proposed revision to the Technical Specifications will not result in any physical alteration to any plant system, nor would there be a change in the method by which any safety-related system performs its function. The absence of any hardware or software changes indicates that the accident initiators remain unaffected, so no unique accident possibility is created. Since the proposed change to the surveillance requirements affects only the schedule for the preservice inspection and the preservice inspection will still be required prior to returning the unit to service, operation of the facilities with this proposed Technical Specifications change does not create the possibility for any new or different kind of accident which has not already been evaluated in the Updated Final Safety Analysis Report (UFSAR).

3. Does not involve a significant reduction in a margin of safety.

   The results of the accident analyses which are documented in the UFSAR have not been affected by this proposed change to the steam generator tubing preservice inspection surveillance requirements. In addition, the design and operation of the steam generators are not affected by the change and the operability of the steam generators will continue to be demonstrated by the augment inservice inspection requirements of the Technical Specifications.

   Although the change allows the rescheduling of the preservice inspection, the proposed amendment continues ensure that the preservice inspection of each tube in each steam generator will be performed. Therefore, the operability of each steam generator will continue to be verified by inservice inspections. Since equipment reliability will be maintained, the proposed Technical Specification change will not involve a significant reduction in a margin of safety.

Based on the above significant hazards consideration evaluation, Virginia Electric and Power Company concludes that the activities associated with this proposed Technical Specification change satisfies the no significant hazards consideration standards of 10 CFR 50.92(c) and, accordingly, a no significant hazards consideration finding is justified.