

Attachment 1

Surry Power Station

Proposed Technical Specification Changes

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4.2 AUGMENTED INSPECTIONS

Applicability

Applies to inservice inspections which augment those required by ASME Section XI.

Objective

To provide the additional assurance necessary for the continued integrity of important components involved in safety and plant operation.

Specifications

- A. Inspections shall be performed as specified in TS. Table 4.2-1. Nondestructive examination techniques and acceptance criteria shall be in compliance with the requirements of TS 4.0.5.
- B. The normal inspection interval is 10 years.
- C. Detailed records of each inspection shall be maintained to allow a continuing evaluation and comparison with future inspections.

Bases

The inspection program for ASME Section XI of the ASME Boiler and Pressure Vessel Code limits its inspection to ASME Code Class 1, 2, and 3 components and supports. Certain components, under Miscellaneous Inspections in this section, were added because of no corresponding code requirement. This added requirement provides the inspection necessary to insure the continued integrity of these components.

Item 1.4

The low pressure turbine rotor blades are inspected concurrent with the disk and hub inspections. The disk and hub inspection frequency is based on existing crack size, crack growth rate, and system operating conditions. ASME Section XI does not provide specific examination requirements or acceptance criteria for turbine rotor inspections. Procedures and acceptance criteria for turbine rotor inspections are consistent with general industry practices.

TABLE 4.2-1

SECTION A. MISCELLANEOUS INSPECTIONS

<u>Item No.</u>	<u>Required Examination Area</u>	<u>Required Examination Methods</u>	<u>10-Year Interval Inspection</u>	<u>Remarks</u>
1.1	Deleted			
1.2	Low Head SIS piping located in valve pit	Visual	Non-applicable	This pipe shall be visually inspected at each refueling shutdown.
1.3	Primary Pump Flywheel	See remarks	See remarks	Examination to be conducted in accordance with regulatory position C.4.b of regulatory guide 1.14 Rev. 1, August 1975
1.4	Low Pressure Turbine Rotor	Visual and Magnetic Particle or Dye Penetrant	See Remarks	100% of the blades every 6 operating years. Inspections are normally performed concurrent with LP turbine rotor disk and hub inspections.

Attachment 2

Surry Power Station

Discussion and Significant Hazards Consideration

Discussion of Changes

Introduction

Augmented inspection requirements were included in the original Technical Specifications for components with no corresponding ASME Code inspection requirements. These inspections were deemed necessary to ensure the continued integrity of these components. Later editions of the ASME Code have included inspection requirements for many of these components and we have revised the Technical Specifications to eliminate the items that are now addressed by the ASME Code from the augmented inspection program. However, turbine blade inspections have not been incorporated into the ASME Code and remain in the Technical Specifications. Therefore, we are revising the Technical Specification inspection requirements for turbine blades to reflect the current industry practice.

Background

In the early 1980s cracking was identified in Westinghouse low pressure (LP) turbine rotor disks. In February of 1980 the NRC informed licensees/users of Westinghouse low pressure turbines that stress corrosion cracks were being found in the keyway and bore areas of low pressure turbine disks, and requested that ultrasonic inspections of the low pressure disks be performed. In August of 1981 the NRC approved the Westinghouse methodology for determining the inspection frequency of the low pressure turbine rotor disks and requested Virginia Electric and Power Company to commit to use the criteria identified in the staff's Safety Evaluation to establish the frequency of future inspections. In our letter dated September 22, 1981, we committed to use the specified criteria identified in the NRC's Safety Evaluation to determine the frequency of future low pressure turbine rotor disk inspections.

The turbine disks are inspected approximately every sixty operating months during refueling outages, in accordance with manufacturer's recommendations. It has been Virginia Electric and Power Company's practice to inspect the low pressure turbine blades when the low pressure turbine disks are being inspected. However, the inspection interval can be postponed in accordance with the approved methodology to accommodate the operating cycle.

Discussions with the turbine vendor have indicated that there is no set interval for inspection of lashed and shrouded turbine blades. However, they do recommend that the low pressure turbine blades be inspected every seventy-two operating months. The

current augmented inspection requirement for low pressure turbine blade inspections is every five years on a calendar basis. Therefore, consistent with the approved methodology for low pressure turbine disk inspections, we are revising the required frequency of the low pressure turbine rotor blade inspections to an operating-time basis. Seventy-two months will accommodate an extension to the disk inspection interval as noted above.

NUREG-0452, Standard Technical Specifications for Westinghouse Pressurized Water Reactors, Revision 4, and NUREG-0800, Standard Review Plan, Revision 3, require the inspection of all inaccessible portions of the turbine once every ten years. The disk and blade inspections will continue to be completed well within this inspection frequency.

Specific Changes

The inspection frequency for the low pressure turbine blades, in Technical Specification Table 4.2-1, is being changed from:

- "100% of the blades every five years," to
- "100% of the blades every six operating years"

An "operating year" is defined as a cumulative 365 operating day period with the turbine rotating at nominal operating speed.

An additional remark is being added to Item 1.4 of Table 4.2-1 to indicate that the blade inspection will normally be performed concurrent with the low pressure turbine rotor disk and hub inspections.

A discussion of the low pressure turbine blade inspection frequency is being included in the Basis Section of Technical Specification 4.2

The following administrative changes are being made:

- Table notes 1 and 2 on page TS 4.2-3 are being deleted. The augmented inspection program was revised to eliminate components included in later versions of the ASME Code by Amendments 128 and 128, dated May 24, 1989, for Units 1 and 2, respectively. Several of the inspection requirements were deleted, but the notes were not removed.

- The note for the one-time Technical Specification change associated with low pressure turbine blade inspections in being deleted. The one-time extension has been completed.

Safety Significance

The mechanisms that cause blade distress only occur during turbine operation. Performing the low pressure turbine blade inspections based on six years of operating time will continue to provide adequate assurance that any low pressure turbine blade flaws that might lead to failure at speeds up to 120% of design will be detected prior to growing to a critical size.

The proposed change in low pressure turbine blade inspection frequency does not affect the consequences of any accident. The consequences of a turbine missile are not being increased since the low pressure turbine blades are not considered credible missile sources. Performing inspections of the low pressure turbine rotor blades on an operating-time basis rather than a calendar basis will have a negligible affect on the probability of a low pressure turbine blade failure. There will be more hours of operation on the blades between inspections. However, inspections every six operating years are adequate to detect any blade flaws that might lead to failure at speeds up to 120% of design. The Westinghouse turbine division supports this conclusion. Likewise, the administrative changes do not affect the probability of or consequences of any accident previously identified in the UFSAR.

Plant operations are not being changed. Therefore, no new accident precursors or accidents will be generated by the change in low pressure turbine blade inspection frequency. Likewise, the administrative changes do not affect plant operations. Therefore, no new accidents are being generated by these changes.

The margin of safety, as noted in any Technical Specification basis, is not being affected by the change in low pressure turbine rotor blade inspection frequency. Performing inspections of the low pressure turbine blades on this frequency will assure that low pressure turbine blade flaws that may lead to failure of a low pressure turbine blade at speeds up to 120% of design will be detected prior to failure. Likewise, the administrative changes do not affect turbine operation. Therefore, the margin of safety is not reduced by the proposed changes.

Significant Hazards Considerations

Virginia Electric and Power Company has reviewed the proposed changes against the criteria of 10 CFR 50.92 and has concluded that the changes as proposed do not pose a significant hazards consideration. Specifically, operation of Surry Power Station in accordance with the proposed Technical Specifications changes will not:

1. Involve a significant increase in the probability of occurrence or consequences of an accident previously evaluated.

Changing the low pressure turbine blade inspection frequency does not significantly affect the probability of occurrence or consequences of any previously evaluated accidents. An inspection frequency based on turbine operating time will continue to assure that low pressure turbine blade flaws that may lead to brittle failure of a blade at speeds up to 120% of design will be detected prior to failure. Operation of the turbine is not being altered and the overspeed protection system is unchanged. Since the low pressure turbine blades are not considered credible missiles, the UFSAR's turbine overspeed/missile analysis is unaffected by the proposed changes. Likewise, the administrative changes have no impact on plant operations.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated.

Changing the low pressure turbine blade inspection frequency does not involve any physical modification of the plant or result in a change in a method of operation. A new failure mode is not introduced. Low pressure turbine blade failures are enveloped by the existing turbine missile analysis. Likewise, the administrative changes have no impact on plant operations. Therefore, a new or different type of accident is not made possible.

3. Involve a significant reduction in a margin of safety.

The proposed changes do not affect any safety limits or limiting safety system settings. System operating parameters are unaffected. The availability of equipment required to mitigate or assess the consequences of an accident is not reduced. An inspection frequency based on turbine operating time will continue to assure that low pressure turbine blade flaws that may lead to failure of a low pressure turbine blade at speeds up to 120% of design will be detected prior to

failure. Likewise, the administrative changes have no impact on plant operations or the safety analysis. Safety margins are, therefore, not decreased.