

July 12, 2006

TSTF-06-15

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555-0001

**SUBJECT:** Response to NRC Request for Review of Draft Safety Evaluation and Request for Additional Information Regarding TSTF-412, Revision 2, "Provide Actions for One Steam Supply to Turbine Driven AFW/EFW Pump Inoperable," dated April 14, 2006

**REFERENCE:** Letter from T. H. Boyce (NRC) to the Technical Specifications Task Force, "Draft Safety Evaluation (SE) for Review and Comment and a Request for Additional Information Regarding TSTF-412, Revision 2, 'Provide Actions for One Steam Supply to Turbine Driven AFW/EFW Pump Inoperable'," dated April 14, 2006.

Dear Sir or Madam:

In the referenced letter, the NRC provided a draft Safety Evaluation and a Request for Additional Information (RAI) regarding TSTF-412, Revision 2, "Provide Actions for One Steam Supply to Turbine Driven AFW/EFW Pump Inoperable." TSTF-412, Revision 2, was submitted to the NRC by the TSTF on January 31, 2006. This letter responds to the NRC's referenced request. Our responses are attached.

Should you have any questions, please do not hesitate to contact us.



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Paul Infanger (PWROG/B&W)

Enclosure

cc: Tim Kobetz, Technical Specifications Section, NRC  
David E. Roth, Technical Specifications Section, NRC

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Comments on the Draft Safety Evaluation

The TSTF proposes two minor clarifications to the draft Safety Evaluation:

- 1 In the second full paragraph of Section 3.0, the last sentence ends "...with steam being released through the Atmospheric Dump Valves (ADVs)." TSTF-412 pointed out that steam could also be dumped to the main condenser (if available) via the steam bypass valves. The sentence should be modified to end "... with steam being released through the Atmospheric Dump Valves (ADVs) or to the main condenser." This change does not affect the conclusions of the Safety Evaluation (SE).
- 2 In Section 3.0, under "LCO 3.7.5 Condition A (as proposed)," the first sentence states, "Condition A is modified to refer to the inoperability of a turbine driven AFW/EFW train due to an inoperable steam supply, instead of referring to the inoperability of a turbine driven AFW/EFW pump." This is not correct. A correct statement would be, "Condition A is modified to refer to the inoperability of a turbine driven AFW/EFW train due to an inoperable steam supply, instead of referring to a steam supply to a AFW/EFW pump being inoperable." This change does not affect the conclusions of the SE.

The TSTF provides the following responses to the NRC Request for Additional Information (RAI):

RAI #1 The staff noted a potential inconsistency between Condition D (as proposed) and Condition E (as proposed). Condition E requires immediate action to be taken to restore one AFW/EFW train to operable status and prohibits any Mode changes until at least one AFW/EFW train is made operable. This conflicts with Condition D in that it would require that the plant be placed in Mode 4 if a turbine driven AFW/EFW train is restored to the point where it is inoperable solely due to one inoperable steam supply for the pump turbine. Even though the turbine driven AFW/EFW train would be in a condition that requires the plant to be placed in Mode 4 by Condition D, Condition E does not permit a mode change until at least one AFW/EFW train is fully restored to operable status. Please evaluate the proposed Conditions and provide assurance that potentially conflicting requirements such as this one are not inadvertently established.

Response The turbine-driven AFW/EFW pump is typically supplied by two 100% capacity steam lines. Either steam line can be used to drive the turbine-driven AFW/EFW pump to full capacity. However, both steam lines are required to be operable due to the potential to lose one supply line due to an accident that results in a faulted steam generator (SG). Condition E is intended to address the condition of three inoperable AFW/EFW trains in which there is insufficient AFW/EFW flow available from any pump to safely shutdown the plant to Mode 4. This is clarified in the Condition E Note which states that the turbine-driven pump is inoperable for reasons other than a single inoperable steam supply line. Therefore, due to the lack of AFW/EFW cooling capacity, Condition E requires the restoration of an AFW/EFW train instead

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of a shutdown. Condition D also addresses the condition in which all three AFW/EFW pumps are inoperable; however, the Condition D Note states that the turbine-driven AFW pump is inoperable solely due to one inoperable steam supply. Therefore, in Condition D the turbine-driven AFW train is functional and can be used to safely shutdown the plant.

The RAI can be answered by understanding that the proposed Condition E and the applicable portion of Condition D (i.e., 3 AFW/EFW Trains inoperable) are modified by Notes that make the Conditions mutually exclusive with regard to the condition of the turbine-driven AFW pump. The Note in Condition E states that the Condition is only applicable when the turbine-driven AFW/EFW train is inoperable for reasons other than one inoperable steam supply. Similarly, Condition D is modified by a Note that states that the condition is only applicable when the turbine-driven AFW/EFW train is inoperable solely due to one inoperable steam supply. Therefore, the application of these conditions with regard to the inoperable turbine-driven pump is specific and different such that the Conditions can not be applied simultaneously.

For example, the scenario postulated in RAI #1 addresses the initial condition of two turbine-driven pump steam supplies inoperable which makes Condition E applicable (per the modifying Note). The proposed scenario then goes on to speculate what would happen if one of the inoperable steam supplies was restored to operable status such that the turbine-driven pump was inoperable solely due to one inoperable steam supply. The question assumes that Condition E remains applicable and expresses concern that Condition E does not provide the same Action as Condition D for one inoperable steam supply. However, due to the Note modifying Condition E, Condition E is not applicable. Therefore, when the condition of the inoperable turbine-driven pump changes (with regard to inoperable steam supplies) the applicable Condition also changes (due to the modifying Notes). If the turbine-driven pump inoperability is limited solely to one inoperable steam supply, only Condition D addresses that particular inoperable condition. Therefore, in the proposed scenario, once a steam supply is restored to operable status and the remaining inoperable steam supply is the sole reason the turbine-driven pump is inoperable, only Condition D addresses the new condition (per its modifying Note) and the applicable Required Actions of Condition D are applied.

The application of these Conditions as described above is not optional or open to interpretation. The Improved Standard Technical Specifications (ISTS) provide guidance in the application of Conditions in Section 1.3, "Completion Times." In the description portion of Section 1.3, the ISTS states: "An ACTIONS Condition remains in effect and the Required Actions apply until the Condition no longer exists or the unit is not within the LCO Applicability." The proposed Conditions D and E are written such that only one defined Condition can exist at a time. Therefore, there is no inconsistency in the application of these Conditions.

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RAI #2      An underlying assumption made in the Safety Evaluation technical analysis is that all PWRs have an AFW/EFW System consisting of two motor driven and one steam turbine driven AFW/EFW pump trains. It is assumed that the motor driven pump trains are each capable of providing either 50% or 100% of the feedwater flow required to bring the plant from all applicable MODES of LCO 3.7.5 to RHR System entry conditions, and that the steam turbine driven AFW/EFW pump train shall be able to provide either 100% or 200% of the required feedwater flow to all steam generators. Furthermore, the steam turbine driven AFW/EFW pump train has the capability to cooldown the plant from all applicable MODES of LCO 3.7.5 to RHR System entry conditions with one inoperable steam supply. The staff would like the WOG to provide descriptions of any or all other PWR AFW/EFW configurations that may not mirror this three train design

Response    The TSTF recognizes that some pressurized water reactor (PWR) plants may not have the AFW/EFW System design described in the ISTS Bases, TSTF-412, Revision 2, and the NRC's draft SE, although that system design is common. However, the preferred method to address plant specific AFW/EFW design differences and to provide clear guidance to licensees requesting to adopt TSTF-412 is to describe the assumed system design in the Safety Evaluation (as already exists in Section 3.0 of the draft SE) and request that licensees adopting the change either verify that their system design is consistent with the assumed design or, if not, describe their system design and justify why the conclusions in the Safety Evaluation are applicable to their plant.