

I. TECHNICAL SPECIFICATION CHANGE REQUEST (TSCR) NO. 219

GPU Nuclear requests that the following revision be made to the TMI-1 Technical Specifications (TS):

Replace the existing pages 4-11, 4-13, 4-52 and 4-52a with the attached revised pages 4-11, 4-13, 4-52 and 4-52a.

II. REASON FOR CHANGE

EFW pumps are currently being tested in the recirculation mode at least every 31 days (monthly) when Reactor Coolant System (RCS) temperature is greater than 250°F (TS 4.9.1.1). This change, as reflected on pages 4-52 and 4-52a, will result in extending the testing frequency for the Emergency Feedwater (EFW) pumps at TMI-1 from monthly to quarterly as specified by the ASME Boiler and Pressure Vessel Code for safety related pumps.

The revised pages 4-11 and 4-13 incorporate editorial changes to reflect a change to the regulations (57FR34666) which separated out the 10 CFR requirements for inservice testing (IST) from those of inservice inspection (ISI) in paragraph 50.55a(g) by placing the IST requirements in a separate paragraph 50.55a(f). Other non-substantive changes are also included for the purpose of clarity.

An administrative change to TS 4.2.4 on page 4-11 reflects the fact that the applicable Section XI Edition no longer divides the 10-year inspection interval into three equal periods of 3 1/3 years. The 1986 Edition of Section XI divides the 10-year inspection interval into three ISI periods of 36 months, 48 months, and 36 months respectively.

III. SAFETY EVALUATION JUSTIFYING CHANGE

This change is consistent with the 1980 and later editions of the ASME Boiler and Pressure Vessel Code Section XI. This change is also consistent with the requirements of the B&W Revised Standard Technical Specifications (RSTS) for safety related ECCS Pumps as reflected in the RSTS bases. The RSTS Bases states: "Section XI of the ASME Code provides the activities and frequencies necessary to satisfy the requirements" of RSTS Surveillance Requirement (SR) 3.5.2.4.

In comparing the proposed EFW surveillance requirements with the RSTS, it is more appropriate to address the RSTS surveillance requirements for safety related ECCS Pumps (SR 3.5.2.4) rather than the more restrictive requirements for EFW Pumps (SR 2.7.5.2) because the TMI-1 PRA<sup>1</sup> has shown that the contribution of the EFW pumps to the calculated core damage frequency (CDF) is less than that of other TMI-1 safety related Emergency Core Cooling System (ECCS) pumps (e.g., HPI Pumps). The discussion which follows also provides a comparison of the proposed changes with the RSTS requirements for EFW Pumps.

The EFW pumps are included in the TMI-1 Inservice Test (IST) Program. Therefore, tests are required to be performed in accordance with the acceptance standards specified by Section XI of the ASME Boiler and

<sup>1</sup> See GPU Nuclear submittal, from H. D. Hukill to NRC, TMI-1 Level 1 Probabilistic Risk Assessment (PRA), dated December 7, 1987.

Pressure Vessel Code as required by 10CFR50.55a(f) (TS 4.2.2). EFW Pumps are currently being tested in the recirculation mode at least every 31 days when Reactor Coolant System (RCS) temperature is greater than 250°F in accordance with TS 4.9.1.1. The intent for this surveillance requirement as stated in the bases is to provide assurance of the operational readiness of the pumps. The 31 day requirement for EFW pump testing was incorporated into the TMI-1 Technical Specifications when the applicable Section XI Code Edition, the 1974 Edition through Summer of 1975 Addenda, specified a monthly safety-related pump test frequency.

Currently a quarterly testing frequency is specified by Section XI for all safety-related pumps. Beginning with the 1980 Edition of the Section XI Code, the inservice pump test frequency for safety-related pumps was changed from monthly to quarterly. Any revision of the quarterly test frequency of safety related pumps would require additional NRC approval beyond this TSCR prior to implementation.

Although the TMI-1 IST Program was upgraded to the requirements stated in the 1980 Edition of the Code, as discussed in GPU Nuclear letter to the NRC dated December 7, 1982 (5211-82-2207), EFW pump testing has continued to be performed every 31 days because of the more restrictive requirements of TS 4.9.1.1, which has remained unchanged to date. Extension of the EFW pump test frequency to quarterly as specified by the applicable Code will not degrade the reliability and capability of the EFW System.

The operating history of TMI-1's EFW Pumps indicates that there is not a concern in changing to a quarterly test frequency because the EFW Pumps have exhibited a very low failure rate. It is noteworthy that the turbine-driven pump (EF-P1) uses a Worthington turbine with a mechanical control system. Therefore, TMI-1 is not susceptible to the hydraulic or electronic control system problems which have caused failure at other plants.

The Revised Standard Technical Specifications (RSTS) for EFW Pumps, Surveillance Requirement (SR) 3.7.5.2 specifies testing every 31 days on a STAGGERED TEST BASIS, where one of the three EFW pumps is tested each month. The TMI-1 TS surveillance program does not specify a STAGGERED TEST BASIS for the EFW Pumps or any safety related pumps. The EFW pumps serve as standby pumps and would not be expected to degrade over a three month period because they would not normally be in service. The EFW Pumps are operated only during testing and in the event that main feedwater flow to the OTSGs were unavailable. TMI-1 EFW pumps are not used during normal startup or shutdown activities.

Considering the low failure rates of TMI-1's EFW Pumps, testing one of the three pumps each month would not be expected to offer a distinct safety benefit over testing the three pumps each quarter back to back. This change does not create a potential for common mode failures. Test of the turbine driven pump would normally be performed separate from that of the motor-driven pumps. The pump surveillance procedures require independent verification of valve position. EFW valve position checks are also performed in accordance with TS 4.9.1.3 and the Auxiliary Operator Log. System outages or other maintenance which could

Effect pump operability would be accompanied by post maintenance testing prior to placing the pump back in service.

The current TMI-1 EFW Pump Surveillance uses the methodology specified by the RSTS SR 3.5.2.4 and 3.7.5.2 (comparing the pumps developed head at the test flow point with the required developed head). Neither the current TS nor the proposed change specifies a particular test method as does the RSTS. There does not appear to be a basis for disallowing the use of other test methods which are or may be allowed by Section XI to satisfy the Code requirements. A future Code Edition could in fact favor a different method from that specified by the RSTS. As stated above, satisfying Section XI requirements would be sufficient to satisfy the RSTS pump test requirements.

The proposed change in testing frequency will not change the method of testing, the acceptance criteria for the test, nor will the change result in the performance of any new tests. Since the testing method is not changed, the extension of the test frequency would not cause a radiological safety concern. Extending the test frequency will result in a reduction of the total amount of slightly radioactive steam released via the steam-driven EFW pump which exhausts steam directly to atmosphere. Therefore any potential radiological safety effects associated with EFW pump surveillance, however small or insignificant these effects may be, would be reduced.

#### IV. NO SIGNIFICANT HAZARDS CONSIDERATIONS

Operation of the facility in accordance with this proposed amendment will have no adverse effect on nuclear safety or safe plant operations. CPUN has determined that this Technical Specification Change Request involves no significant hazards consideration as defined by the NRC in 10 CFR 50.92 in that operation of TMI-1 in accordance with the proposed amendment will not.

1. Involve a significant increase in the probability of occurrence or the consequences of an accident previously evaluated.  
(10 CFR 50.92(c)(1))

The EFW Pumps will continue to be tested quarterly to the same standards applied to safety related pumps as defined by the ASME Section XI Code. Satisfactory completion of testing in accordance with the Code is accepted as verification that safety related pumps will be available to perform their intended function. Therefore the proposed amendment will not involve a significant increase in the probability of occurrence or consequences of an accident previously evaluated.

2. Create a possibility of a new or different kind of accident from any previously evaluated.  
(10 CFR 50.92(c)(2))

This change affects only the frequency of testing the EFW pumps. No changes to plant hardware or EFW System operation are involved. Nor will there be any change in the method of testing the EFW System, or additional tests. Therefore, the possibility of a new or different kind of accident from any accident previously evaluated is not created.

3. Involve a significant reduction in margin of safety.  
(10 CFR 50.92(c)(3))

Extension of the testing frequency to quarterly will not affect the operation of any system or equipment. Completion of EFW pump testing quarterly in accordance with the criteria specified in the ASME Section XI Code provides assurance that the EFW pumps are capable of performing their intended function. Therefore, the proposed amendment will not involve a significant reduction in a margin of safety.

In addition, the NRC provided guidance in the Federal Register pertaining to the application of the above three standards by listing examples of amendments that are considered "not likely to involve significant hazards considerations" (48FR14873). This proposed change could be considered similar to the following two examples contained in the Federal Register listing:

Example (iv): A relief granted upon demonstration of acceptable operation from an operating restriction that was imposed because acceptable operation was not yet demonstrated.

This proposed change could be considered similar to this example because the ASME Section XI Code requirements for safety-related pump test frequency were changed in 1980 from monthly to quarterly. The NRC accepted the change in safety-related pump test frequency by approving use of the 1980 Code in compliance with the pump and valve inservice test requirements of 10CFR50.55a. Equivalent changes to the Standard Technical Specifications have also been approved by the NRC as reflected in the RSTS (NUREG 1430). It is also noteworthy that TMI-1 EFW Pumps have demonstrated a very low failure rate through years of monthly testing sufficient to justify change to a quarterly test frequency.

Example (vi): A change which either may result in some increase to the probability or consequences of a previously-analyzed accident or may reduce in some way a safety margin, but where the results of the change are clearly within all acceptable criteria with respect to the system or component specified in the Standard Review Plan.

The potential for an increase in the probability of occurrence or consequences of an accident or any decrease in a margin of safety as a result of changing the EFW Pump test frequency from monthly to quarterly

would be offset by a potential increase in reliability from reduced wear and tear on the pumps by eliminating two pump starts every quarter. The results of this proposed change are clearly within all acceptable criteria with respect to the system or component specified in the Standard Review Plan (SRP). In fact, this change represents an improvement in maintaining the physical condition of the pump due to decreased wear. SRP 10.4.9-7 "Auxiliary Feedwater System (PWR)" does not specify a pump test frequency. SRP 3.9.6.3, "Inservice Testing of Pumps and Valves," Section II.1.c states that the test frequencies and durations are acceptable if the provisions of Section XI are met.

Thus, operation of the facility in accordance with the proposed amendment involves no significant hazards considerations.

V. IMPLEMENTATION

It is requested that the amendment authorizing this TSCR be effective upon issuance.

ATTACHMENT

TECHNICAL SPECIFICATION CHANGE



## 4.2 REACTOR COOLANT SYSTEM INSERVICE INSPECTION AND TESTING

### Applicability

This technical specification applies to the inservice inspection (ISI) and inservice testing (IST) of the reactor coolant system pressure boundary and portions of other safety oriented system pressure boundaries.

### Objective

The objective of the ISI and IST programs is to provide assurance of the continuing integrity of the reactor coolant system while at the same time minimizing radiation exposure to personnel in the performance of inservice inspections and tests.

### Specification

- 4.2.1 ISI of ASME Code Class 1, Class 2, and Class 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50, Section 50.55a(g), except where specific written relief has been granted by the NRC.
- 4.2.2 IST of ASME Code Class 1, Class 2 and Class 3 pumps and valves shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50, Section 50.55a(f), except where specific written relief has been granted by the NRC.
- 4.2.3 (Deleted)
- 4.2.4 The accessible portions of one reactor coolant pump motor flywheel assembly will be ultrasonically inspected within the first ISI period, two reactor coolant pump motor flywheel assemblies within the first two ISI periods and all four by the end of the 10 year inspection interval. However, the U.T. procedure is developmental and will be used only to the extent that it is shown to be meaningful. The extent of coverage will be limited to those areas of the flywheel which are accessible without motor disassembly, i.e., can be reached through the access ports. Also, if radiation levels at the lower access ports are prohibitive, only the upper access ports will be used.

### Bases

Specifications 4.2.1 and 2 ensure that inservice inspection of ASME Code Class 1, 2 and 3 components and inservice testing of ASME Code Class 1, 2, and 3 pumps and valves will be performed in accordance with a periodically updated version of Section XI of the ASME Boiler and Pressure Vessel Code and Addenda as required by 10 CFR 50, paragraphs 55a(f) and 55a(g). Relief from any of the above requirements has been provided in writing by the NRC and is not a part of these technical specifications.



#### 4.9 DECAY HEAT REMOVAL CAPABILITY - PERIODIC TESTING

##### Applicability

Applies to the periodic testing of systems or components which function to remove decay heat.

##### Objective

To verify that systems/components required for decay heat removal are capable of performing their design function.

##### Specification

- 4.9.1 Emergency Feedwater System - Periodic Testing (Reactor Coolant System Temperature greater than 250°F.)
- 4.9.1.1 Verify each EFW Pump is tested in accordance with the requirements and acceptance criteria of the ASME Section XI Inservice Test Program.
- 4.9.1.2 During testing of the EFW System when the reactor is in STARTUP, HOT STANDBY or POWER OPERATION, if one steam generator flow path is made inoperable, a dedicated qualified individual who is in communication with the control room shall be continuously stationed at the affected EFW local manual valves. On instruction from the Control Room Operator, the individual shall realign the valves from the test mode to their operational alignment.
- 4.9.1.3 At least once per 31 days, each EFW System flowpath valve from both CSTs to the OTSGs via the motor driven pumps and the turbine driven pump shall be verified to be in the required status.
- 4.9.1.4 On a refueling interval basis:
- a) Verify that each EFW pump starts automatically upon receipt of an EFW test signal.
  - b) Verify that each EFW control valve responds upon receipt of an EFW test signal.
  - c) Verify that each EFW control valve responds in manual control from the control room and remote shutdown panel.
- 4.9.1.5 Prior to start-up, following a refueling shutdown or a cold shutdown greater than 30 days, conduct a test to demonstrate that the motor driven EFW pumps can pump water from the condensate tanks to the Steam Generators.

#### 4.9.1.6 Acceptance Criteria

These tests shall be considered satisfactory if control board indication and visual observation of the equipment demonstrates that all components have operated properly except for the tests required by Specification 4.9.1.1.

#### 4.9.2 Decay Heat Removal Capability - Periodic Testing (Reactor Coolant System Temperature 250°F or less).\*

##### 4.9.2.1 On a daily basis, verify operability of the means for decay heat removal required by specification 3.4.2 by observation of console status indication.

\* These requirements supplement the requirements of 4.5.2.2 and 4.5.4.

#### Bases

ASME Section XI specifies requirements and acceptance standards for the testing of nuclear safety related pumps. The quarterly EFW pump test frequency specified by the ASME Section XI Code will be sufficient to verify that the turbine-driven and both motor-driven EFW pumps are operable. Compliance with the normal acceptance criteria assures that the EFW pumps are operating as expected. The surveillance requirements ensure that the overall EFW System functional capability is maintained.

Daily verification of the operability of the required means for decay heat removal ensures that sufficient decay heat removal capability will be maintained.