ENCLOSURE 1

PROPOSED TECHNICAL SPECIFICATIONS REVISIONS

BROWNS FERRY NUCLEAR PLANT

UNITS 1, 2, AND 3

(TVA BFN TS 242)

ENCLOSURE 2

DESCRIPTION AND JUSTIFICATION
BROWNS FERRY NUCLEAR PLANT

Description of Change

The Browns Ferry Nuclear Plant (BFN) Units 1, 2, and 3 Technical Specifications, Section 3.5.C, including Table 3.5-1 and the Bases, are revised to clarify the limiting conditions for operation for the Residual Heat Removal Service Water (RHRSW) and Emergency Equipment Cooling Water (EECW) Systems. Specifically:

1. 3.5.C.1 is rewritten to refer the user to table 3.5-1 for RHRSW pump operability requirements prior to startup from a cold shutdown condition.

2. Table 3.5-1 is amended to address minimum service requirements prior to startup from a cold shutdown condition, to allow reduction by one of the number of RHRSW pumps required to be operable when the decay heat load can be handled by one RHR heat exchanger during shutdown, and to reformat.

3. 3.5.C (Bases) is amended to state that the entire shutdown cooling load is capable of being handled by one RHR heat exchanger after decay heat levels have decreased following shutdown.

Reason for Change

The present technical specifications are restrictive in two areas: (1) nine RHRSW pumps are required to be operable prior to startup of a unit regardless of the number of fueled units and (2) two RHRSW pumps assigned to RHR heat exchanger duty per fueled unit, plus one for single failure protection, are required to be operable regardless of the decay heat loads in a shutdown unit. The proposed changes will increase operational flexibility.

Administrative changes are being made to provide a title for table 3.5-1 and to use alphabetical instead of numerical characters to designate the notes for the table in order to avoid confusion.

Justification for Change

1. The present bases accurately indicate that two RHR heat exchangers, and thus two RHRSW pumps, "can more than adequately handle the cooling requirements of one unit in any abnormal or postaccident situation." Therefore, requiring that seven RHRSW pumps be assigned to service on the RHR heat exchangers, even though only one or two units are fueled, is overly restrictive. By allowing the plant to reduce the number of required operable RHRSW pumps in accordance with the number of defueled units, the safe operation of the plant will not be affected and the technical specifications for startup of a unit will be consistent with power operation of the unit.

Justification for Change (Cont'd)

2. The bases are amended to note that sometime after reactor shutdown, the decay heat level decreases to a point that only one RHR heat exchanger is required to provide cooling. This is consistent with section 4.8.B.1 of the Browns Ferry Final Safety Analysis Report (FSAR). With only one RHR heat exchanger required, the number of RHRSW pumps required can be reduced by one for each unit when fuel is in the reactor vessel after the reactor has been shutdown for 96 hours without affecting the safe operation of the plant.

3. The administrative changes do not change actual technical specification requirements, but provide consistency in the technical specifications.

ENCLOSURE 3

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION
BROWNS FERRY NUCLEAR PLANT
UNITS 1, 2, AND 3

Description of Amendment

The proposed amendment would modify the Browns Ferry Nuclear Plant Technical Specifications (Section 3.5.C, including Bases and Table 3.5-1) for units 1, 2, and 3 to:

1. Allow a reduction by two per defueled unit of the number of RHRSW pumps required to be operable before to restart of a shutdown unit,

2. Allow a reduction by one of the number of RHRSW pumps required to be operable for each shutdown unit still containing fuel when the decay heat level has decreased to a point where one RHR heat exchanger can handle the load.

Basis for Proposed No Significant Hazards Consideration Determination

NRC has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92(c). A proposed amendment to an operating license involves no significant hazards considerations if operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated, or (2) create the possibility of a new or different kind of accident from an accident previously evaluated, or (3) involve a significant reduction in a margin of safety.

1. Reducing the number of RHRSW pumps as proposed will not involve a significant increase in the probability or consequences of an accident previously evaluated. This proposed change is only applicable for specific shutdown conditions and specific conditions prior to reactor heatup.

   A review of the General Electric Residual Heat Removal System (GE RHR) Design Specification Revision 3 for various reactor shutdown conditions was performed. This review identified that 96 hours after reactor shutdown, decay heat has decreased to a level such that two RHRSW pumps will maintain adequate cooling capability. A specific maximum decay heat load analysis shows that 96 hours after reactor shutdown the decay heat is approximately 12.5 MWt. A RHR heat exchanger was determined (GE RHR Design Specification Revision 3) to be able to provide 44 by 10^6 Btu/hour (12.89 MWt) cooling capacity during the shutdown mode. Based on this analysis, BFN Technical Specification Table 3.5-1(e) reduces the minimum pump requirements by one RHRSW pump per fueled unit required to be operable 96 hours after shutdown. This will still require at least two RHRSW pumps to be operable to provide adequate cooling capacity for decay heat removal requirements and single failure criteria. BFN FSAR Section 4.8.6.1 states "During a nuclear system shutdown and cooldown,

Basis for Proposed No Significant Hazards Consideration Determination (Cont'd)

when the shutdown cooling subsystem is initially placed in operation, decay heat levels can be high and operation of two RHR heat exchangers may be required to remove the heat. When the decay heat level has decreased sufficiently, the entire shutdown cooling load can be handled by one RHR heat exchanger."

The current technical specifications and bases address reactor cooling requirements for reactor shutdown after being at power operation for steady state, abnormal, or postaccident conditions. The proposed change will not affect the reliability of this system. Reducing the number of RHRSW pumps required to be operable 96 hours after reactor shutdown is still within the envelope of the heat removal capability of the RHR System.

For restart of a unit that has been shutdown for at least 96 hours, the same analysis applies. However, once reactor heatup is initiated, additional RHRSW pumps will be started in accordance with table 3.5-1. In any event, a minimum of two RHRSW pumps will be maintained operable at all times to support the maximum possible decay heat removal requirements as specified by TVA calculations and to meet single failure criteria. Since this change does not alter or reduce the operation of the system, it will still perform its intended safety function and therefore does not create a significant increase in an accident previously evaluated.

2. This proposed change does not create the possibility of a new or different kind of accident from any previously evaluated. This proposed change is still within the bounds of the design of the system. Although the proposed technical specification allows a reduction in the number of RHRSW pumps required to be operable during a specific operating condition, adequate water supply will still be available in order for the system to perform its intended safety function. This proposed change does not alter the operation or function of the RHRSW System.

3. This proposed change does not involve a significant reduction in a margin of safety. It does not change or alter the required safety functions of the RHRSW System, nor does it physically modify any equipment, setpoints, or initiating time/sequence of the equipment.

   Single failure criteria requires that two operable RHRSW pumps be powered from separate emergency electrical power sources. If in event of a loss of offsite power and a failure of the diesel generator powering one of the RHRSW pumps, the second pump is available to maintain the required cooling capacity. This proposed change accounts for the single failure criteria.

   This change does not require any equipment modifications; therefore, there are no changes to the seismic or environmental qualification requirements associated with these systems.

Basis for Proposed No Significant Hazards Consideration Determination (Cont'd)

Since this proposed technical specification does not alter any of the design basis, safety analysis, or functions of any safety related equipment, there is no reduction in the margin of safety.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.5.C RHR Service Water and Emergency Equipment Cooling Water Systems (EECWS)	4.5.C RHR Service Water and Emergency Equipment Cooling Water Systems (EECWS)
1. Prior to STARTUP from a COLD SHUTDOWN CONDITION, the RHRSW pumps, including pump D1 or D2, shall be OPERABLE and assigned to service as indicated in Table 3.5-1.	1. a. Each of the RHRSW pumps normally assigned to automatic service on the EECW headers will be tested automatically each time the diesel generators are tested. Each of the RHRSW pumps and all associated essential control valves for the EECW headers and RHR heat exchanger headers shall be demonstrated to be OPERABLE once every three months.
	b. Annually each RHRSW pump shall be flow-rate tested. To be considered OPERABLE, each pump shall pump at least 4500 gpm through its normally assigned flow path.

TABLE 3.5-1

MINIMUM RHRSW AND EECW PUMP ASSIGNMENT

Time Limit (Days)	Minimum Number Of RHRSW	Minimum Number of EECW(B)
Indefinite	7 (D)(E)	3 (A)
30	7 or 6 (C)(D)(E)(F)	2 or 3 (A)(C)(F)
7	6 (D)(E)	2 (A)

(A) At least one operable pump must be assigned to each header.

(B) Only automatically starting pumps may be assigned to EECW header service.

(C) Nine pumps must be operable. Either configuration is acceptable: 7 and 2 or 6 and 3 (except as reduced by notes D and E).

(D) Requirements may be reduced by two for each unit with fuel unloaded.

(E) For units with fuel loaded, the minimum RHRSW pump requirements may be reduced by one pump for each unit that has been in COLD SHUTDOWN CONDITION for more than 96 hours. At least 2 of the required pumps must be powered from separate electric power sources with their associated RHR pumps, heat exchangers, and diesel generator(s) OPERABLE.

(F) These minimum service requirements are also applicable to startup from a COLD SHUTDOWN CONDITON.

3.5 Bases (Cont'd)

The suppression chamber can be drained when the reactor vessel pressure is atmospheric, irradiated fuel is in the reactor vessel, and work is not in progress which has the potential to drain the vessel. By requiring the fuel pool gate to be open with the vessel head removed, the combined water inventory in the fuel pool, the reactor cavity, and the separator/dryer pool, between the fuel pool low level alarm and the reactor vessel flange, is about 65,800 cubic feet (492,000 gallons). This will provide adequate low-pressure cooling in lieu of CSS and RHR (LPCI and containment cooling mode) as currently required in Specifications 3.5.A.4 and 3.5.B.9. The additional requirements for providing standby coolant supply available will ensure a redundant supply of coolant supply. Control rod drive maintenance may continue during this period provided no more than one drive is removed at a time unless blind flanges are installed during the period of time CRDs are not in place.

Should the capability for providing flow through the cross-connect lines be lost, a 10-day repair time is allowed before shutdown is required. This repair time is justified based on the very small probability for ever needing RHR pumps and heat exchangers to supply an adjacent unit.

REFERENCES

1. Residual Heat Removal System (BFNP FSAR subsection 4.8)

2. Core Standby Cooling Systems (BFNP FSAR Section 6)

3.5.C. RHR Service Water System and Emergency Equipment Cooling Water System (EECWS)

The EECW has two completely redundant and independent headers (north and south) in a loop arrangement inside and outside the Reactor Building. Each header is supplied by two automatic RHRSW pumps. A crosstie at the RHRSW pump discharge provides the capability for each header to be supplied by four automatically starting RHRSW pumps. Those components requiring EECW, except the control air compressors, are able to be fed from both headers thus assuring continuity of operation if either header becomes inoperable. The air compressors only use EECW as an emergency backup supply.

There are four RHR heat exchanger headers (A, B, C, & D) with one RHR heat exchanger from each unit on each header. There are two RHRSW pumps on each header; one normally assigned to each header (A2, B2, C2, or D2) and one on alternate assignment (A1, B1, C1, or D1). One RHR heat exchanger header can adequately deliver the flow supplied by both RHRSW pumps to any two of the three RHRSW heat exchangers on the header. One RHRSW pump can supply the full flow requirement of one RHR heat exchanger. Two RHR heat exchangers can more than adequately handle the cooling requirements of one unit in any abnormal or postaccident situation. When the decay heat level has decreased sufficiently following shutdown, the entire shutdown cooling load can be adequately handled by one RHR heat exchanger.

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(E) For units with fuel loaded, the minimum RHRSW pump requirements may be reduced by one pump for each unit that has been in COLD SHUTDOWN CONDITION for more than 96 hours. At least 2 of the required pumps must be powered from separate electric power sources with their associated RHR pumps, heat exchangers, and diesel generator(s) OPERABLE.

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Should the capability for providing flow through the cross-connect lines be lost, a 10-day repair time is allowed before shutdown is required. This repair time is justified based on the very small probability for ever needing RHR pumps and heat exchangers to supply an adjacent unit.

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