(6) Steam Generator Upper Lateral Supports

The design of the steam generator upper lateral supports may be modified by reducing the number of snubbers from four (4) to one (1) per steam generator.

(7) License Transfer

(A) WPSC shall take all necessary steps to ensure that the decommissioning trusts are maintained in accordance with the application for approval of the transfer of MG&E's ownership interest in KNPP to WPSC and the requirements of the Order approving the transfer, and consistent with the safety evaluation supporting the Order. Additionally, if the MG&E nonqualified fund is not transferred to WPSC, WPSC, or NMC acting on WPSC's behalf, shall explicitly include the status of the MG&E nonqualified fund in all future decommissioning funding status reports that WPSC, or NMC, submit in accordance with 10 CFR 50.75(f)(1).

(B) On the closing date of the transfer of MG&E's interests in KNPP to WPSC, MG&E shall transfer to WPSC all of MG&E's accumulated qualified decommissioning trust funds for KNPP. Immediately following such transfer, the amounts for radiological decommissioning of KNPP in WPSC's decommissioning trusts must, with respect to the interests in KNPP that WPSC would then hold, be at a level no less than the formula amounts under 10 CFR Section 50.75.

(8) Operator Actions

The auxiliary feedwater system local manual operator actions as described in the License Amendment Request submitted May 5, 2005, and supplemented on June 9, 2005, shall be eliminated no later than completion of Kewaunee refueling outage R-29.

D. The NMC shall comply with applicable effluent limitations and other limitations and monitoring requirements, if any, specified pursuant to Section 401(d) of the Federal Water Pollution Control Act Amendments of 1972.

E. This license is effective as of the date of issuance, and shall expire at midnight on December 21, 2013.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by

A. Giambusso, Deputy Director
for Reactor Projects
Directorate of Licensing

Attachment:

Appendices A and B - Technical Specifications

Date of Issuance: December 21, 1973

Amendment No. 183

Section	Title	Page

3.4 STEAM AND POWER CONVERSION SYSTEM

APPLICABILITY

Applies to the OPERATING status of the Steam and Power Conversion System.

OBJECTIVE

To assure minimum conditions of steam-relieving capacity and auxiliary feedwater supply necessary to assure the capability of removing decay heat from the reactor, and to limit the concentrations of water activity that might be released by steam relief to the atmosphere.

SPECIFICATION

a. Main Steam Safety Valves (MSSVs)

1. The Reactor Coolant System shall not be heated > 350°F unless a minimum of two MSSVs per steam generator are OPERABLE.

2. The reactor shall not be made critical unless five MSSVs per steam generator are OPERABLE.

3. If the conditions of TS 3.4.a.1 or TS 3.4.a.2 cannot be met within 48 hours, then within 1 hour initiate action to:

   - Achieve HOT STANDBY within 6 hours
   - Achieve HOT SHUTDOWN within the following 6 hours
   - Achieve and maintain the Reactor Coolant System temperature < 350°F within an additional 12 hours.

b. Auxiliary Feedwater System

1. The Reactor Coolant System shall not be heated > 350°F unless the following conditions are met:

   A. Auxiliary feedwater train "A" and auxiliary feedwater train "B" are OPERABLE and capable of taking suction from the Service Water System and delivering flow to the associated steam generator.

   B. The turbine-driven auxiliary feedwater train is OPERABLE and capable of taking suction from the Service Water System and delivering flow to both steam generators, OR

      The turbine-driven auxiliary feedwater train is declared inoperable.

   C. The auxiliary feedwater pump low discharge pressure trip channels are OPERABLE.

   D. The auxiliary feedwater pump low suction pressure trip channels are OPERABLE.

2. When the Reactor Coolant System temperature is > 350°F, if three auxiliary feedwater trains are discovered to be inoperable, initiate immediate action to restore one auxiliary feedwater train to OPERABLE status and suspend all LIMITING CONDITIONS FOR OPERATION requiring MODE changes until one auxiliary feedwater train is restored to OPERABLE status.

3. The reactor power shall not be increased above 1673 MWt unless three trains of AFW are OPERABLE. If two of the three AFW trains are inoperable, then within two hours, reduce reactor power to ≤ 1673 MWt.

4. When the Reactor Coolant System temperature is > 350°F, any of the following conditions of inoperability may exist during the time interval specified:

   A. One auxiliary feedwater train may be inoperable for 72 hours.

   B. Two auxiliary feedwater trains may be inoperable for 4 hours.

   C. One steam supply to the turbine-driven auxiliary feedwater pump may be inoperable for 7 days.

5. When the Reactor Coolant System temperature is > 350°F, one auxiliary feedwater pump's low discharge pressure trip channel and/or low suction pressure trip channel may be inoperable for a period not to exceed 4 hours. If this time period is exceeded or more than one pump's trip channel(s) are inoperable then the associated auxiliary feedwater train(s) shall be declared inoperable and the OPERABILITY requirements of TS 3.4.b.3 and TS 3.4.b.4 applied.

6. If the OPERABILITY requirements of TS 3.4.b.4 above are not met within the times specified, then within 1 hour action shall be initiated to:

   - Achieve HOT STANDBY within 6 hours
   - Achieve HOT SHUTDOWN within the following 6 hours
   - Achieve and maintain the Reactor Coolant System temperature < 350°F within an additional 12 hours.

7. When reactor power is < 15% of RATED POWER, any of the following conditions may exist without declaring the corresponding auxiliary feedwater train inoperable:

   A. The auxiliary feedwater pump control switches located in the control room may be placed in the "pull out" position.

   B. Valves AFW-2A and AFW-2B may be in a throttled or closed position.

   C. Valves AFW-10A and AFW-10B may be in the closed position.

TABLE TS 4.1-1

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TEST OF INSTRUMENT CHANNELS

CHANNEL DESCRIPTION	CHECK	CALIBRATE	TEST	REMARKS
43. AFW Pump Low Discharge Pressure Trip	Not Applicable	Each refueling cycle	Quarterly (a)	(a) Verification of relay setpoints not required.
44. Axial Flux Difference (AFD)	Weekly			Verify AFD within limits for each OPERABLE excore channel
45. Service Water Turbine Header Isolation Logic Trip (SW 4 A/B)	Not Applicable	Each refueling cycle	Each refueling cycle	
46. AFW Pump Low Suction Pressure Trip	Not Applicable	Each refueling cycle	Quarterly (a)	(a) Verification of relay setpoints not required.

BASIS - Steam and Power Conversion System (TS 3.4)

Main Steam Safety Valves (TS 3.4.a)

The ten main steam safety valves (MSSVs) (five per steam generator) have a total combined rated capability of 7,660,380 lbs./hr. at 1181 lbs./in.^{2} pressure. This flow ensures that the main steam pressure does not exceed 110 percent of the steam generator shell-side design pressure (the maximum pressure allowed by ASME B&PV Code) for the worst-case loss-of-sink-event.

While the plant is in the HOT SHUTDOWN condition, at least two main steam safety valves per steam generator are required to be available to provide sufficient relief capacity to protect the system.

The OPERABILITY of the MSSVs is determined by periodic surveillance testing in accordance with the Inservice Testing Plan.

Auxiliary Feedwater System (TS 3.4.b)

The Auxiliary Feedwater (AFW) System is designed to remove decay heat during plant startups, plant shutdowns, and under accident conditions. During plant startups and shutdowns the system is used in the transition between Residual Heat Removal (RHR) System decay heat removal and Main Feedwater System operation.

The AFW System is considered OPERABLE when the components and flow paths required to provide redundant AFW flow from the AFW pumps to the steam generators are OPERABLE. This requires that the two motor-driven AFW pumps be OPERABLE, each capable of taking suction from the Service Water System, capable of discharge throttling with AFW-3A or AFW-3B, and supplying AFW to separate steam generators (SGs). The turbine-driven AFW pump is required to be OPERABLE with redundant steam supplies from each of two main steam lines upstream of the main steam isolation valves and shall be capable of taking suction from the Service Water System, capable of discharge throttling with AFW-2C, and supplying AFW to both of the steam generators. With no AFW trains OPERABLE, immediate action shall be taken to restore a train.

Auxiliary feedwater trains are defined as follows:

"A" train -	"A" motor-driven auxiliary feedwater pump and associated AFW valves and piping to "A" steam generator, not including AFW-10A or AFW-10B
"B" train -	"B" motor-driven auxiliary feedwater pump and associated AFW valves and piping to "B" steam generator, not including AFW-10A or AFW-10B
Turbine-driven train -	Turbine-driven AFW pump and associated AFW valves and piping to both "A" steam generator and "B" steam generator, including AFW-10A and AFW-10B

Two analyses apply to the Loss of Normal Feedwater event:

1. Analysis of the Loss of Normal Feedwater (LONF) event at 1772 MWt.

2. Analysis of the Loss of Normal Feedwater event at 1673 MWt.

One AFW pump provides adequate capacity to mitigate the consequences of the LONF event at 1673 MWt. In the LONF event at 1772 MWt, any two of the three AFW pumps are necessary to provide adequate heat removal capacity.

In the unlikely event of a loss of off-site electrical power to the plant, continued capability of decay heat removal would be ensured by the availability of either the steam-driven AFW pump or one of the two motor-driven AFW pumps, and by steam discharge to the atmosphere through the main steam safety valves. Each motor-driven pump and turbine-driven AFW pump is normally aligned to both steam generators. Valves AFW-10A and AFW-10B are normally open. Any single AFW pump can supply sufficient feedwater for removal of decay heat from the reactor.

As the plant is cooled down, heated up, or operated in a low power condition, AFW flow will have to be adjusted to maintain an adequate water inventory in the steam generators. This can be accomplished by any one of the following:

1. Throttling the discharge valves on the motor-driven AFW pumps

2. Closing one or both of the cross-connect flow valves

3. Stopping the pumps

If the main feedwater pumps are not in operation at the time, valves AFW-2A and AFW-2B must be throttled or the control switches for the AFW pumps located in the control room will have to be placed in the "pull out" position to prevent their continued operation and overfill of the steam generators. The cross-connect flow valves may be closed to specifically direct AFW flow. Manual action to re-initiate flow after it has been isolated is considered acceptable based on analyses performed by WPSC and the Westinghouse Electric Corporation. These analyses conservatively assumed the plant was at 100% initial power and demonstrated that operators have at least 10 minutes to manually initiate AFW during any design basis accident with no steam generator dryout or core damage. The placing of the AFW control switches in the "pull out" position, the closing of one or both cross-connect valves, and the closing or throttling of valves AFW-2A and AFW-2B are limited to situations when reactor power is <15% of RATED POWER to provide further margin in the analysis.

During accident conditions, the AFW System provides three functions:

1. Prevents thermal cycling of the steam generator tubesheet upon loss of the main feedwater pump

2. Removes residual heat via the steam generators from the Reactor Coolant System until the temperature drops below 300-350°F and the RHR System is capable of providing the necessary heat sink

3. Maintains a head of water in the steam generator following a loss-of-coolant accident

Each AFW pump provides 100% of the required capacity to the steam generators as assumed in the accident analyses performed at 1772 MWt to fulfill the above functions. The exception is the LONF accident analysis performed at 1772 MWt. Based on the LONF accident analysis at 1772 MWt, two AFW pumps are required to provide adequate capacity.

The pumps are capable of automatic starting and can deliver full AFW flow within one minute after the signal for pump actuation. However, analyses from full power demonstrate that initiation of flow can be delayed for at least 10 minutes with no steam generator dryout or core damage. The head generated by the AFW pumps is sufficient to ensure that feedwater can be pumped into the steam generators when the safety valves are discharging and the supply source is at its lowest head.

Analyses by WPSC and the Westinghouse Electric Corporation show that AFW-2A and AFW-2B may be in the throttled or closed position, or the AFW pump control switches located in the control room may be in the "pull out" position without a compromise to safety. This does not constitute a condition of inoperability as listed in TS 3.4.b.1 or TS 3.4.b.4. The analysis shows that diverse automatic reactor trips ensure a plant trip before any core damage or system overpressure occurs and that at least 10 minutes are available for the operators to manually initiate auxiliary feedwater flow (start AFW pumps or fully open AFW-2A and AFW-2B) for any credible accident from an initial power of 100%.

The OPERABILITY of the AFW System following a main steam line break (MSLB) was reviewed in our response to IE Bulletin 80-04. As a result of this review, requirements for the turbine-driven AFW pump were added to the Technical Specifications. In a secondary line break, it is assumed that the pump discharging to the intact steam generator fails and that the flow from the redundant motor-driven AFW pump is discharging out the break. Therefore, to meet single failure criteria, the turbine-driven AFW pump was added to Technical Specifications.

The OPERABILITY of the AFW system following a LONF event was analyzed as part of the stretch uprate. As a result of the analysis at 1772 MWt, requirements for three OPERABLE AFW trains prior to increasing power above 1673 MWt were added to the Technical Specifications. In a LONF event, it is assumed that one of the AFW pumps fails. Therefore, to meet single failure criteria, all three pumps are required to be OPERABLE prior to increasing power level above 1673 MWt.

For all design basis accidents other than MSLB and the LONF at 1772 MWt, the two motor-driven AFW pumps supply sufficient redundancy to meet single failure criteria.

The cross-connect valves (AFW-10A and AFW-10B) are normally maintained in the open position This provides an added degree of redundancy above what is required for all accidents except for a MSLB. During a MSLB, one of the cross-connect valves will have to be repositioned regardless if the valves are normally opened or closed. Therefore, the position of the cross-connect valves does not affect the performance of the turbine-driven AFW train. However, performance of the train is dependent on the ability of the valves to reposition. Although analyses have demonstrated that operation with the cross-connect valves closed is acceptable, the TS restrict operation with the valves closed to <15% of RATED POWER. At > 15% RATED POWER, closure of the cross-connect valves renders the TDAFW train inoperable.

An AFW train is defined as the AFW system piping, valves and pumps directly associated with providing AFW from the AFW pumps to the steam generators. The action with three trains inoperable is to maintain the plant in an OPERATING condition in which the AFW System is not needed for heat removal. When one train is restored, then the LIMITING CONDITIONS FOR OPERATION specified in TS 3.4.b.2, TS 3.4.b.3, and TS 3.4.b.4 are applied. The two and four hour clocks in TS 3.4.b.3 and TS 3.4.b.4 are started simultaneously. The two hour clock of TS 3.4.b.3 is for the power level restriction. The four-hour clock of TS 3.4.b.4 is for starting the shutdown sequence. Should the plant shutdown be initiated with no AFW trains available, there would be no feedwater to the steam generators to cool the plant to 350°F when the RHR System could be placed into operation.

It is acceptable to exceed 350°F with an inoperable turbine-driven AFW train. However, OPERABILITY of the train must be demonstrated within 72 hours after exceeding 350°F or a plant shutdown must be initiated. This provides 72 hours with steam pressure for post-maintenance testing of the turbine AFW pump.

TS 3.4.b.5

AFW Pump Low Discharge Pressure Trip

This Function must be OPERABLE when the average RCS temperature is > 350°F to ensure that the AFW System is available to maintain the SGs as the heat sink for the reactor. This Function does not have to be OPERABLE when the average RCS temperature is ≤ 350°F because RHR is required to be OPERABLE to remove decay heat.

A low discharge pressure signal in the AFW pump discharge line protects the AFW pumps from damage due to runout conditions during alignment and operation of the pumps to a depressurized steam generator. A low-pressure signal sensed by any one of the pump switches will cause the associated AFW pump to trip. Operator action is required to align the associated pump to the non-faulted steam generator, throttle the AFW pump discharge flow, if necessary, and restart the pump(s).

AFW Pump Low Suction Pressure Trip

This Function must be OPERABLE when the average RCS temperature is > 350°F to ensure that the AFW System is available for alignment to Service Water for the AFW System to maintain the SGs as the heat sink for the reactor. This Function does not have to be OPERABLE when the average RCS temperature is ≤ 350°F because RHR is required to be OPERABLE to remove decay heat.

A low pressure signal in the AFW pump suction line protects the AFW pumps against a loss of the normal water supply from the condensate storage tanks (CSTs). Three pressure switches are located on the AFW pump suction line from the CST. A low-pressure signal sensed by any one of the switches will cause the associated AFW pump to trip. Operator action is required to bypass the trip circuit or align to the Service Water source and restart the associated AFW pump. Service Water alignment and restart of the AFW pumps ensures an adequate supply of water to maintain at least one of the SGs as the heat sink for reactor decay heat and sensible heat removal.

Condensate Storage Tank (TS 3.4.c)

The specified minimum usable water supply in the condensate storage tanks (CST) is sufficient for four hours of decay heat removal. The four hours are based on the Kewaunee site specific station blackout (loss of all AC power) coping duration requirement. Total CST water supply is maintained above a level that includes minimum usable water supply in technical specifications based on the station blackout analysis, allowance for flow to the condenser before isolation, allowance for AFW pump cooling, unusable level, and instrument error in each tank's level instrument.

The shutdown sequence of TS 3.4.c.3 allows for a safe and orderly shutdown of the reactor plant if the specified limits cannot be met. [1]

Secondary Activity Limits (TS 3.4.d)

The maximum dose that an individual may receive following an accident is specified in GDC 19 and 10 CFR 50.67. The limits on secondary coolant activity ensure that the calculated doses are held to the limits specified in GDC 19 and to a fraction of the 10 CFR 50.67 limits.

The secondary side of the steam generator's activity is limited to $\leq$ 0.1 μCi/gram DOSE EQUIVALENT I-131 to ensure the dose does not exceed the GDC-19 and 10 CFR 50.67 guidelines. The applicable accidents identified in the USAR[2] are analyzed assuming various inputs including steam generator activity of 0.1 μCi/gram DOSE EQUIVALENT I-131. The results obtained from these analyses indicate that the control room and off-site doses are within the acceptance criteria of GDC-19 and a fraction of 10 CFR 50.67 limits.

[1] USAR Section 8.2.4
[2] USAR Section 14.0