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VARGA,S.A. Operating Reactors Branch 1

SUBJECT: Forwards summary of existing & proposed Tech Specs providing redundant DHR capability,per 830711 request for Tech Spec mods.No further changes to Tech Spec required.

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WISCONSIN PUBLIC SERVICE CORPORATION

P.O. Box 1200, Green Bay, Wisconsin 54305

September 9, 1983

Director of Nuclear Reactor Regulation
Attention: Mr. S. A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Varga:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Redundant Decay Heat Removal Capability

References:
1. Letter to C. W. Giesler of WPSC from S. A. Varga of the NRC dated July 11, 1983
2. Letter to H. R. Denton of the NRC from C. W. Giesler of WPSC dated August 24, 1983
3. Letter to S. A. Varga of the NRC from C. W. Giesler of WPSC dated November 10, 1982

In your letter of July 11, 1983 (reference 1), you requested that we modify our existing technical specifications to address your concerns regarding redundant decay heat removal capability at the Kewaunee Nuclear Power Plant (KNPP). In the enclosure to this letter we have summarized the existing and proposed technical specifications that provide this capability and the corresponding surveillance requirements that ensure its availability. After reviewing all of the applicable technical specifications we believe that redundant decay heat removal capability has been provided for the KNPP and no further changes to our technical specifications are required.

Very truly yours,

Carl W. Giesler

C. W. Giesler
Vice President - Nuclear Power

JGT/js
Enc.
cc - Mr. Robert Nelson, US NRC

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Enclosure to Letter from C. W. Giesler

To S. A. Varga

Dated September 9, 1983

Redundant Decay Heat Removal Capability

Redundant Decay Heat Removal Capability

Below we have summarized the existing and proposed technical specifications that provide redundant decay heat removal capability for the Kewaunee Nuclear Power Plant (KNPP) and the corresponding surveillance requirements that ensure its availability. This discussion has been grouped according to the various operating modes found in Standard Technical Specifications.

Modes 1, 2 and 3

Proposed Amendment No. 55 to the KNPP Technical Specifications (reference 2) submitted the following change.

TS 3.4.a The reactor shall not be heated above 350°F unless the following conditions are satisfied.

1. TWO steam generators are operable.

   A. System piping and valves directly associated with providing auxiliary feedwater flow to the steam generators are operable.

   B. Five main steam safety valves per operable steam generator are available.

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This proposed specification ensures that sufficient heat removal capability would exist for both power operation and decay heat removal. Although one steam generator would provide sufficient decay heat removal capability, two steam generators are required in order to provide the necessary redundancy to meet the single failure criterion.

By definition, a steam generator would be considered operable if the conditions of proposed TS 3.4.a.1.A and B were met. Operability would be demonstrated by conducting periodic tests in accordance with the surveillance requirements of Section TS 4.0. The piping and valves of the auxiliary feedwater system and the main steam safety valves are tested consistent with in-service inspection (ISI) requirements. The integrity of the steam generators and reactor coolant loops would be demonstrated by conducting ISI and leak tests in accordance with existing ISI regulations and Section TS 4.3.

Operability of the steam generators would also be verified each shift, consistent with Table TS 4.1-1, by checking the following instrument channels.

Table TS 4.1-1 Item No.	Channel Description
4	RCS Temperature
5	RCS Flow
11	S/G Level
12	S/G Flow Mismatch
23	S/G Pressure

Modes 4 and 5

Reference 2 also submitted the following changes to the KNPP Technical Specifications.

TS 3.1.a.2 Decay Heat Removal Capability

A. At least TWO of the following FOUR heat sinks shall be operable whenever the average reactor coolant temperature is less than or equal to 350°F but greater than 200°F. 55

1. Steam Generator 1A[(a)]
2. Steam Generator 1B[(a)]
3. Residual Heat Removal Train A
4. Residual Heat Removal Train B

B. TWO residual heat removal trains shall be operable whenever the average reactor coolant temperature is less than or equal to 200°F and irradiated fuel is in the reactor.

1. Each residual heat removal train shall be comprised of:

a) ONE operable residual heat removal pump

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b) ONE operable residual heat removal heat exchanger

c) An operable flow path consisting of all valves, piping and instrumentation associated with the above train of components and required to remove decay heat from the core during normal shutdown situations. This flow path shall be capable of taking suction from the appropriate reactor coolant system hot leg and returning to the loop B cold leg.

2. If one residual heat removal train is inoperable, corrective action shall be taken immediately to return it to the operable status.

(a) An operable steam generator is defined by TS 3.4.a.1.

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When the average reactor coolant temperature is less than or equal to 350°F but greater than 200°F a combination of the available heat sinks would be sufficient to remove the decay heat and provide the necessary redundancy to meet the single failure criterion.

In the cold shutdown condition (Tavg $\leq$ 200°F) both residual heat removal (RHR) trains are required to be operable by the proposed specifications because the steam generators are unavailable. Should one RHR train become inoperable, immediate corrective action shall be taken to return it to the operable condition. Under these conditions there would be a negligible amount of sensible heat stored in the reactor coolant system and the remaining RHR train would be capable of removing all of the decay heat being generated. A definition of an RHR train, consistent with its functional requirement of removing decay heat from the core during normal shutdown situations, was also included.

The surveillance requirements consistent with maintaining and verifying steam generator operability were discussed above under Modes 1, 2 and 3. The operability and integrity of the RHR system would be demonstrated by periodic tests conducted in accordance with existing ISI regulations, Section TS 4.4 and Section TS 4.5. It should be noted that Section TS 4.4 has been revised by Proposed Amendment No. 52 (reference 3). The operability of the RHR system would also be verified each shift when it is in operation, in accordance with Table TS 4.1-1 Item 14, by checking the RHR pump flow instrument channels.

Mode 6

During refueling operations redundant decay heat removal capability would be provided by the existing technical specifications outlined below.

TS 3.8.a.4 At least ONE residual heat removal pump shall be operable.

TS 3.8.a.10 The minimum water level above the vessel flange shall be maintained at 23 feet. 55

TS 3.8.b If any of the specified limiting conditions for refueling are not met, refueling of the reactor shall cease. Work shall be initiated to correct the violated conditions so that the specified limits are met, and no operations which may increase the reactivity of the core shall be performed.

One RHR pump is required to be operable during refueling operations in order to maintain a uniform boron concentration in the core and to remove the decay heat being generated. With the reactor vessel head removed and a minimum of 23 feet of water above the vessel flange, a large heat sink would also be available. This would provide adequate time to restore core cooling should the RHR pump become inoperable. Therefore, a single failure of the RHR pump would not result in a complete loss of decay heat removal capability since the KNPP is required to maintain a minimum water level of 23 feet above the reactor vessel flange during refueling operations.

Surveillance requirements consistent with maintaining and verifying the operability of the RHR pump were discussed under Modes 4 and 5 above. The

refueling cavity water level would be verified prior to initiating and daily during refueling operations.

After reviewing all of the applicable technical specifications we believe that redundant decay heat removal capability has been provided for the KNPP and no further changes to our technical specifications are required.