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Committed to Nuclear Excellence

Kewaunee / Point Beach Nuclear
Operated by Nuclear Management Company, LLC

NRC-02-033

April 17, 2002

10 CFR 50.36

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Ladies/Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Bases Revision(s) to the Kewaunee Nuclear Power Plant Technical Specifications

Nuclear Management Company (NMC), licensee for the Kewaunee Nuclear Power Plant (KNPP), hereby submits a revision to the Bases for the Technical Specifications (TS). The change to TS B2.3 is being submitted to remove obsolete safety analysis assumptions regarding the reactor coolant pump trip on underfrequency to reflect the Cycle 23 Reload Safety Analysis and approved TS Amendment No. 142.

In additon, Section TS B2.3 has been converted to WORD format. This administrative conversion includes reformatting the Basis section title, capitalizing defined words, and changes to correct punctuation and other grammatical inconsistencies. The conversion is part of an ongoing effort to standardize KNPP's Technical Specifications.

These changes have been screened for evaluation pursuant to the requirements of 10 CFR 50.59 in accordance with approved KNPP procedures and were determined to be acceptable.

Attached is a copy of revised TS Bases pages TS B2.3-1 and TS B2.3-2 for your controlled Technical Specifications.

Sincerely,

Tom Webb

Thomas J. Webb
Regulatory Affairs Manager

PRR/slc
Attachments

A001

cc - NRC Regional Administrator
NRC Resident Inspector
PSCW

BASIS - Limiting Safety System Settings - Protective Instrumentation (TS 2.3)

Nuclear Flux

The source range high flux reactor trip prevents a startup accident from subcritical conditions from proceeding into the power range. Any setpoint within its range would prevent an excursion from proceeding to the point at which significant thermal power is generated.

The power range reactor trip low setpoint provides protection in the power range for a power excursion beginning from low power. This trip was used in the safety analysis.[1]

The power range reactor trip high setpoint protects the reactor core against reactivity excursions which are too rapid to be protected by temperature and pressure protective circuitry. The prescribed setpoint, with allowance for errors, is consistent with the trip point assumed in the accident analysis.[2]

Two sustained rate protective trip functions have been incorporated in the Reactor PROTECTION SYSTEM. The positive sustained rate trip provides protection against hypothetical rod ejection accident. The negative sustained rate trip provides protection for the core (low DNBR) in the event two or more rod control cluster assemblies (RCCAs) fall into the core. The circuits are independent and ensure immediate reactor trip independent of the initial OPERATING state of the reactor. These trip functions are the LIMITING SAFETY SYSTEM actions employed in the accident analysis.

Pressurizer

The high and low pressure trips limit the pressure range in which reactor operation is permitted. The high pressurizer pressure trip setting is lower than the set pressure for the safety valves (2485 psig) such that the reactor is tripped before the safety valves actuate. The low pressurizer pressure trip causes a reactor trip in the unlikely event of a loss-of-coolant accident.[3] The high pressurizer water level trip protects the pressurizer safety valves against water relief. The specified setpoint allows margin for instrument error [2] and transient level overshoot before the reactor trips.

Reactor Coolant Temperature

The overtemperature ΔT reactor trip provides core protection against DNB for all combinations of pressure, power, coolant temperature, and axial power distribution, provided only that: 1) the transient is slow with respect to piping transit delays from the core to the temperature detectors (about 2 seconds), and 2) pressure is within the range between the high and low pressure reactor trips. With normal axial power distribution, the reactor trip limit, with allowance for errors[2] is always below the core SAFETY LIMITS shown in Figure TS 2.1-1. If axial peaks are greater than design, as indicated by differences between top and bottom power range nuclear detectors, the reactor trip limit is automatically reduced.

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[1] USAR Section 14.1.1
[2] USAR Section 14.0
[3] USAR Section 14.3.1

The overpower ΔT reactor trip prevents power density anywhere in the core from exceeding a value at which fuel pellet centerline melting would occur, and includes corrections for axial power distribution, change in density and heat capacity of water with temperature, and dynamic compensation for piping delays from the core to the loop temperature detectors. The specified setpoints meet this requirement and include allowance for instrument errors.[(2)]

The overpower and overtemperature PROTECTION SYSTEM setpoints include the effects of fuel densification and clad flattening on core SAFETY LIMITS.[(4)]

Reactor Coolant Flow

The low-flow reactor trip protects the core against DNB in the event of either a decreasing actual measured flow in the loops or a sudden loss of power to one or both reactor coolant pumps. The setpoint specified is consistent with the value used in the accident analysis.[(5)]

The undervoltage and low frequency reactor trips provide additional protection against a decrease in flow. The undervoltage setting provides a direct reactor trip and a reactor coolant pump breaker trip. The undervoltage setting ensures a reactor trip signal will be generated before the low-flow trip setting is reached. The low frequency setting provides only a reactor coolant pump breaker trip.

Steam Generators

The low-low steam generator water level reactor trip ensures that there will be sufficient water inventory in the steam generators at the time of trip to allow for starting the Auxiliary Feedwater System. [(6)]

Reactor Trip Interlocks

Specified reactor trips are bypassed at low power where they are not required for protection and would otherwise interfere with normal operation. The prescribed setpoints above which these trips are made functional ensures their availability in the power range where needed. Confirmation that bypasses are automatically removed at the prescribed setpoints will be determined by periodic testing. The reactor trips related to loss of one or both reactor coolant pumps are unblocked at approximately 10% of power.

Table TS 3.5-1 lists the various parameters and their setpoints which initiate safety injection signals. A safety injection signal (SIS) also initiates a reactor trip signal. The periodic testing will verify that safety injection signals perform their intended function. Refer to the basis of Section 3.5 of these specifications for details of SIS signals.

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(4) WCAP-8092
(5) USAR Section 14.1.8
(6) USAR Section 14.1.10