

February 21, 1990

Docket No. 50-482

Mr. Bart D. Withers  
President and Chief Executive Officer  
Wolf Creek Nuclear Operating Corporation  
Post Office Box 411  
Burlington, Kansas 66839

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Dear Mr. Withers:

SUBJECT: WOLF CREEK GENERATING STATION - AMENDMENT NO.35 TO FACILITY  
OPERATING LICENSE NO. NPF-42 (TAC NO. 75391)

The Commission has issued the enclosed Amendment No. 35 to Facility Operating License No. NPF-42 for the Wolf Creek Generating Station. The amendment consists of changes to the Technical Specifications in response to your application dated November 30, 1989.

The amendment enhances plant operations during Modes 5 and 6 when decay heat removal relies upon the Residual Heat Removal (RHR) System. The amendment reduces the required RHR flowrate during refueling operations as well as instituting additional criteria to improve overall decay heat removal capability.

A copy of our related Safety Evaluation is enclosed. The notice of issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

/s/

Douglas V. Pickett, Project Manager  
Project Directorate IV  
Division of Reactor Projects - III,  
IV, V and Special Projects  
Office of Nuclear Reactor Regulation

Enclosures:

- Amendment No.35 to License No. NPF-42
- Safety Evaluation

cc w/enclosures:  
See next page

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

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Wolf Creek Nuclear Operating Corporation  
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*Douglas V. Pickett*

Douglas V. Pickett, Project Manager  
Project Directorate IV  
Division of Reactor Projects - III,  
IV, V and Special Projects  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 35 to  
License No. NPF-42
2. Safety Evaluation

cc w/enclosures:  
See next page

Mr. Bart D. Withers  
Wolf Creek Nuclear Operating Corporation

Wolf Creek Generating Station  
Unit No. 1

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION

DOCKET NO. 50-482

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 35  
License No. NPF-42

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Wolf Creek Generating Station (the facility) Facility Operating License No. NPF-42 filed by the Wolf Creek Nuclear Operating Corporation (the Corporation), dated November 30, 1989, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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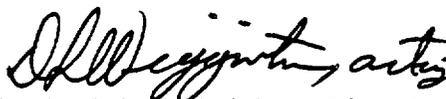
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 2.C.(2) of Facility Operating License No. NPF-42 is hereby amended to read as follows:

2. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 35, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated in the license. The Corporation shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. The license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Frederick J. Hebdon, Director  
Project Directorate IV  
Division of Reactor Projects - III,  
IV, V and Special Projects  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: February 21, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 35

FACILITY OPERATING LICENSE NO. NPF-42

DOCKET NO. 50-482

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by amendment number and contain marginal lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE PAGES

3/4 4-6  
3/4 5-9  
3/4 9-9  
3/4 9-10  
B 3/4 5-2  
B 3/4 9-2

INSERT PAGES

3/4 4-6  
3/4 5-9  
3/4 9-9  
3/4 9-10  
B 3/4 5-2  
B 3/4 9-2

## REACTOR COOLANT SYSTEM

### COLD SHUTDOWN - LOOPS FILLED

#### LIMITING CONDITION FOR OPERATION

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3.4.1.4.1 At least one residual heat removal (RHR) loop shall be OPERABLE and in operation\*, and either:

- a. One additional RHR loop shall be OPERABLE#, or
- b. The secondary side water level of at least two steam generators shall be greater than 10% of the wide range.

APPLICABILITY: MODE 5 with reactor coolant loops filled##.

#### ACTION:

- a. With one of the RHR loops inoperable and with less than the required steam generator level, immediately initiate corrective action to return the inoperable RHR loop to OPERABLE status or restore the required steam generator level as soon as possible.
- b. With no RHR loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required RHR loop to operation.

#### SURVEILLANCE REQUIREMENTS

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4.4.1.4.1.1 The secondary side water level of at least two steam generators when required shall be determined to be within limits at least once per 12 hours.

4.4.1.4.1.2 At least one RHR loop shall be determined to be in operation and circulating reactor coolant at least once per 12 hours.

---

#One RHR loop may be inoperable for up to 2 hours for surveillance testing provided the other RHR loop is OPERABLE and in operation.

##A reactor coolant pump shall not be started unless the secondary water temperature of each steam generator is less than 50°F above each of the Reactor Coolant System cold leg temperatures.

\*The RHR pump may be deenergized for up to 1 hour provided: (1) no operations are permitted that would cause dilution of the Reactor Coolant System boron concentration, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

## REACTOR COOLANT SYSTEM

### COLD SHUTDOWN - LOOPS NOT FILLED

#### LIMITING CONDITION FOR OPERATION

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3.4.1.4.2 Two residual heat removal (RHR) loops shall be OPERABLE# and at least one RHR loop shall be in operation.\*

APPLICABILITY: MODE 5 with Reactor Coolant loops not filled.

ACTION:

- a. With less than the above required RHR loops OPERABLE, immediately initiate corrective action to return the required RHR loops to OPERABLE status as soon as possible.
- b. With no RHR loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required RHR loop to operation.

#### SURVEILLANCE REQUIREMENTS

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4.4.1.4.2 At least one RHR loop shall be determined to be in operation and circulating reactor coolant at least once per 12 hours.

---

#One RHR loop may be inoperable for up to 2 hours for surveillance testing provided the other RHR loop is OPERABLE and in operation.

\*The RHR pump may be deenergized for up to 1 hour provided: (1) no operations are permitted that would cause dilution of the Reactor Coolant System boron concentration, (2) core outlet temperature is maintained at least 10°F below saturation temperature, and (3) the reactor vessel water level is above the vessel flange.

## EMERGENCY CORE COOLING SYSTEMS

### 3/4.5.4 ECCS SUBSYSTEMS - $T_{avg} \leq 200^{\circ}\text{F}$

#### LIMITING CONDITION FOR OPERATION

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3.5.4 All Safety Injection pumps shall be inoperable.

APPLICABILITY: MODE 5 with the water level above the top of the Reactor Vessel flange, and MODE 6 with the Reactor Vessel head on and with the water level above the top of the Reactor Vessel flange.

ACTION:

With a Safety Injection pump OPERABLE, restore all Safety Injection pumps to an inoperable status within 4 hours.

#### SURVEILLANCE REQUIREMENTS

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4.5.4 All Safety Injection pumps shall be demonstrated inoperable\* by verifying that the motor circuit breakers are secured in the open position at least once per 31 days.

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\*An inoperable pump may be energized for testing or for filling accumulators provided the discharge at the pump has been isolated from the RCS by a closed isolation valve with power removed from the valve operator, or by a manual isolation valve secured in the closed position.

## EMERGENCY CORE COOLING SYSTEMS

### 3/4.5.5 REFUELING WATER STORAGE TANK

#### LIMITING CONDITION FOR OPERATION

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3.5.5 The refueling water storage tank (RWST) shall be OPERABLE with:

- a. A minimum contained borated water volume of 394,000 gallons,
- b. A boron concentration of between 2400 and 2500 ppm of boron,
- c. A minimum solution temperature of 37°F, and
- d. A maximum solution temperature of 100°F.

APPLICABILITY: MODES 1, 2, 3, and 4.

#### ACTION:

With the RWST inoperable, restore the tank to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

#### SURVEILLANCE REQUIREMENTS

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4.5.5 The RWST shall be demonstrated OPERABLE:

- a. At least once per 7 days by:
  - 1) Verifying the contained borated water volume in the tank, and
  - 2) Verifying the boron concentration of the water.
- b. At least once per 24 hours by verifying the RWST temperature when the outside air temperature is either less than 37°F or greater than 100°F.

## REFUELING OPERATIONS

### 3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

#### HIGH WATER LEVEL

#### LIMITING CONDITION FOR OPERATION

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3.9.8.1 At least one residual heat removal (RHR) loop shall be OPERABLE and in operation.\*

APPLICABILITY: MODE 6 when the water level above the top of the reactor vessel flange is greater than or equal to 23 feet.

#### ACTION:

With no RHR loop OPERABLE and in operation, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required RHR loop to OPERABLE and operating status as soon as possible. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

#### SURVEILLANCE REQUIREMENTS

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4.9.8.1 At least once per twelve hours, one RHR loop shall be verified in operation and circulating coolant at a flow rate of:

- a. greater than or equal to 1000 gpm, and
- b. sufficient to maintain the RCS temperature at less than or equal to 140°F.

---

\*The RHR loop may be removed from operation for up to 1 hour per 8-hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor vessel hot legs.

## REFUELING OPERATIONS

### LOW WATER LEVEL

#### LIMITING CONDITION FOR OPERATION

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3.9.8.2 Two independent residual heat removal (RHR) loops shall be OPERABLE, and at least one RHR loop shall be in operation.\*

APPLICABILITY: MODE 6 when the water level above the top of the reactor vessel flange is less than 23 feet.

#### ACTION:

- a. With less than the required RHR loops OPERABLE, immediately initiate corrective action to return the required RHR loops to OPERABLE status, or to establish greater than or equal to 23 feet of water above the reactor vessel flange, as soon as possible.
- b. With no RHR loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required RHR loop to operation. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

#### SURVEILLANCE REQUIREMENTS

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4.9.8.2 At least once per twelve hours, one RHR loop shall be verified in operation and circulating coolant at a flow rate of:

- a. greater than or equal to 1000 gpm, and
- b. sufficient to maintain the RCS temperature at less than or equal to 140°F.

---

\*Prior to initial criticality, the RHR loop may be removed from operation for up to 1 hour per 2-hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor vessel hot legs.

## 3/4.5 EMERGENCY CORE COOLING SYSTEMS

### BASES

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#### 3/4.5.1 ACCUMULATORS

The OPERABILITY of each Reactor Coolant System (RCS) accumulator ensures that a sufficient volume of borated water will be immediately forced into the core through each of the cold legs in the event the RCS pressure falls below the pressure of the accumulators. This initial surge of water into the core provides the initial cooling mechanism during large RCS pipe ruptures.

The limits on accumulator volume, boron concentration and pressure ensure that the assumptions used for accumulator injection in the safety analysis are met.

The accumulator power operated isolation valves are considered to be "operating bypasses" in the context of IEEE Std. 279-1971, which requires that bypasses of a protective function be removed automatically whenever permissive conditions are not met. In addition, as these accumulator isolation valves fail to meet single failure criteria, removal of power to the valves is required.

The limits for operation with an accumulator inoperable for any reason except an isolation valve closed minimizes the time exposure of the plant to a LOCA event occurring concurrent with failure of an additional accumulator which may result in unacceptable peak cladding temperatures. If a closed isolation valve cannot be immediately opened, the full capability of one accumulator is not available and prompt action is required to place the reactor in a mode where this capability is not required.

#### 3/4.5.2, 3/4.5.3, and 3/4.5.4 ECCS SUBSYSTEMS

The OPERABILITY of two independent ECCS subsystems ensures that sufficient emergency core cooling capability will be available in the event of a LOCA assuming the loss of one subsystem through any single failure consideration. Either subsystem operating in conjunction with the accumulators is capable of supplying sufficient core cooling to limit the peak cladding temperatures within acceptable limits for all postulated break sizes ranging from the double ended break of the largest RCS cold leg pipe downward. In addition, each ECCS subsystem provides long-term core cooling capability in the recirculation mode during the accident recovery period.

With the RCS temperature below 350°F, one OPERABLE ECCS subsystem is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the limited core cooling requirements.

## EMERGENCY CORE COOLING SYSTEMS

### BASES

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#### ECCS SUBSYSTEMS (Continued)

The limitation for a maximum of one centrifugal charging pump to be OPERABLE and the Surveillance Requirements to verify all charging pumps except the required OPERABLE charging pump to be inoperable in MODES 4 and 5 and in MODE 6 with the reactor vessel head on, provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV or RHR suction relief valve. In addition, the requirement to verify all Safety Injection pumps to be inoperable in MODE 4, in MODE 5 with the water level above the top of the reactor vessel flange, and in MODE 6 with the reactor vessel head on and with water level above the top of the reactor vessel flange, provides assurance that the mass addition can be relieved by a single PORV or RHR suction relief valve.

With the water level not above the top of the reactor vessel flange and with the vessel head on, Safety Injection pumps may be available to mitigate the affects of a loss of decay heat removal during a reduced RCS inventory condition.

The Surveillance Requirements provided to ensure OPERABILITY of each component ensures that at a minimum, the assumptions used in the safety analyses are met and that subsystem OPERABILITY is maintained. Surveillance Requirements for throttle valve position stops and flow balance testing provide assurance that proper ECCS flows will be maintained in the event of a LOCA. Maintenance of proper flow resistance and pressure drop in the piping system to each injection point is necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the proper flow split between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses. The Surveillance Requirements for leakage testing of ECCS check valves ensures that a failure of one valve will not cause an intersystem LOCA. The Surveillance Requirements to vent the ECCS pump casings and accessible, i.e., can be reached without personnel hazard or high radiation dose, discharge piping ensures against inoperable pumps caused by gas binding or water hammer in ECCS piping.

#### 3/4.5.5 REFUELING WATER STORAGE TANK

The OPERABILITY of the refueling water storage tank (RWST) as part of the ECCS ensures that a sufficient supply of borated water is available for injection by the ECCS in the event of a LOCA. The limits on RWST minimum volume and boron concentration ensure that: (1) sufficient water is available within containment to permit recirculation cooling flow to the core, and (2) the reactor will remain subcritical in the cold condition following mixing of the RWST and the RCS water volumes assuming all the control rods are out of the core. These assumptions are consistent with the LOCA analyses.

EMERGENCY CORE COOLING SYSTEMS

BASES

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REFUELING WATER STORAGE TANK (Continued)

The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

The limits on contained water volume and boron concentration of the RWST also ensure a pH value of between 8.5 and 11.0 for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components.

## 3/4.9 REFUELING OPERATIONS

### BASES

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#### 3/4.9.1 BORON CONCENTRATION

The limitations on reactivity conditions during REFUELING ensure that: (1) the reactor will remain subcritical during CORE ALTERATIONS, and (2) a uniform boron concentration is maintained for reactivity control in the water volume having direct access to the reactor vessel. The limitation on  $K_{eff}$  of no greater than 0.95 is sufficient to prevent reactor criticality during refueling operations. The locking closed of the required valves during refueling operations precludes the possibility of uncontrolled boron dilution of the filled portions of the Reactor Coolant System. This action prevents flow to the RCS of unborated water by closing flow paths from sources of unborated water. These limitations are consistent with the initial conditions assumed for the boron dilution incident in the safety analyses.

#### 3/4.9.2 INSTRUMENTATION

The OPERABILITY of the Source Range Neutron Flux Monitors ensures that redundant monitoring capability is available to detect changes in the reactivity condition of the core.

#### 3/4.9.3 DECAY TIME

The minimum requirement for reactor subcriticality prior to movement of irradiated fuel assemblies in the reactor vessel ensures that sufficient time has elapsed to allow the radioactive decay of the short-lived fission products. This decay time is consistent with the assumptions used in the safety analyses.

#### 3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

The requirements on containment building penetration closure and OPERABILITY ensure that a release of radioactive material within containment will be restricted from leakage to the environment. The OPERABILITY and closure restrictions are sufficient to restrict radioactive material release from a fuel element rupture based upon the lack of containment pressurization potential while in the REFUELING MODE.

The OPERABILITY of this system ensures the containment purge penetrations will be automatically isolated upon detection of high radiation levels within containment. The OPERABILITY of this system is required to restrict the release of radioactive materials from the containment atmosphere to the environment.

#### 3/4.9.5 COMMUNICATIONS

The requirement for communications capability ensures that refueling station personnel can be promptly informed of significant changes in the facility status or core reactivity conditions during CORE ALTERATIONS.

## BASES

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### 3/4.9.6 REFUELING MACHINE

The OPERABILITY requirements for the refueling machine and auxiliary hoist ensure that: (1) manipulator cranes will be used for movement of drive rods and fuel assemblies, (2) each crane has sufficient load capacity to lift a drive rod or fuel assembly, and (3) the core internals and reactor vessel are protected from excessive lifting force in the event they are inadvertently engaged during lifting operations.

### 3/4.9.7 CRANE TRAVEL - SPENT FUEL STORAGE FACILITY

The restriction on movement of loads in excess of the nominal weight of a fuel and control rod assembly and associated handling tool over other fuel assemblies in the storage pool areas ensures that in the event this load is dropped: (1) the activity release will be limited to that contained in a single fuel assembly, and (2) any possible distortion of fuel in the storage racks will not result in a critical array. This assumption is consistent with the activity release assumed in the safety analyses.

### 3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

The requirement that at least one residual heat removal (RHR) loop be in operation ensures that: (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor vessel below 140°F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the core to minimize the effect of a boron dilution incident and prevent boron stratification. The minimum of 1000 gpm allows flow rates which provide additional margin against vortexing at the RHR pump suction while in a reduced RCS inventory condition.

The requirement to have two RHR loops OPERABLE when there is less than 23 feet of water above the reactor vessel flange ensures that a single failure of the operating RHR loop will not result in a complete loss of RHR capability. With the reactor vessel head removed and at least 23 feet of water above the reactor vessel flange, a large heat sink is available for core cooling. Thus, in the event of a failure of the operating RHR loop, adequate time is provided to initiate emergency procedures to cool the core.

### 3/4.9.9 CONTAINMENT VENTILATION SYSTEM

The OPERABILITY of this system ensures that the containment purge penetrations will be automatically isolated upon detection of high radiation levels within the containment. The OPERABILITY of this system is required to restrict the release of radioactive material from the containment atmosphere to the environment.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 35 TO FACILITY OPERATING LICENSE NO. NPF-42

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION

DOCKET NO. 50-482

INTRODUCTION

The NRC issued Generic Letter 88-17, "Loss of Decay Heat Removal," on October 17, 1988 because of the potential serious consequence of loss of shutdown cooling concurrent with significant core decay heat. Included in the Programmed Enhancements section of the generic letter was Item 5 that stated:

"Technical Specifications (TSs) that restrict or limit the safety benefit of the actions identified in this letter should be identified and appropriate changes should be submitted."

In their February 2, 1989 response to the above item of the generic letter, the licensee stated:

"WCNOC is evaluating a Technical Specification amendment request to reduce RHR minimum flow rate in Mode 6, while maintaining decay heat removal requirements. This reduction in minimum flow rate would avoid potential problems due to vortexing and subsequent loss of the RHR system. In addition WCNOC is reviewing a possible amendment request to eliminate the requirement for tagging the Safety Injection Pump breaker and handswitch out of service of cold overpressure protection in Modes 5 and 6 and elimination of the autoclosure interlock function.

WCNOC will submit applicable Technical Specification amendment requests by November 30, 1989."

By letter dated November 30, 1989, the licensee submitted proposed Technical Specification changes that included (a) a reduction in RHR minimum flow rate in Mode 6; (b) an additional requirement to maintain reactor vessel water level above the vessel flange before deenergizing the final operable RHR pump while in Mode 5; (c) an additional requirement to maintain reactor vessel water level above the vessel flange before deenergizing the safety injection pumps while in Modes 5 and 6; and (d) revisions to the supporting Bases. In their letter, the licensee deferred action on tagging out the safety injection pump breaker and handswitch.

EVALUATION

The Technical Specification changes proposed by the licensee are intended to enhance the overall decay heat removal capabilities during plant operations in Modes 5 and 6.

### Reduction In Required RHR Flowrate

Technical Specifications (TS) 4.9.8.1 and 4.9.8.2 refers to operation of the residual heat removal (RHR) system during refueling operations with high and low reactor coolant water levels respectively. The current TS requires that at least one train of RHR be operable with a minimum flow rate of 2800 gpm. The licensee has proposed revising the surveillance requirements of TS 4.9.8.1 and 4.9.8.2 by (a) reducing the required flow rate of the running RHR pump from greater than or equal to 2800 gpm to greater than or equal to 1000 gpm and (b) introducing a new requirement that the RHR flow be sufficient to maintain the reactor coolant system (RCS) temperature at less than or equal to 140°F.

Operation with the RCS partially drained in Modes 5 and 6 is necessary for required inspection and maintenance of RCS components such as reactor coolant pumps and steam generators. As indicated in NUREG-1269, "Loss of Residual Heat Removal at Diablo Canyon Unit 2," reduced RHR flowrate would provide a greater margin against vortexing and preclude an inadvertent loss of decay heat removal capability due to air entrainment and cavitation of the RHR pumps. As the time after plant shutdown increases, decay heat removal requirements from the RHR suction flow are reduced since decay heat decreases as a function of time after initial reactor shutdown. The change proposed by the licensee will provide sufficient flowrate to maintain RCS less than or equal to 140°F. In addition, a minimum RHR flowrate is required to prevent boron stratification to minimize the potential for localized variation in boron concentration in the RCS. For Wolf Creek, Westinghouse has recommended a minimum flowrate of 1000 gpm. Since the proposed Technical Specification will require that the RHR flowrate is maintained at least greater than 1000 gpm and sufficient to maintain RCS temperature less than 140°F, the staff finds the proposed Technical Specification modifications to be acceptable.

### Deenergizing RHR Pumps

TS 3.4.1.4.2 requires that while in Mode 5 with the reactor coolant loops partially drained, two RHR pumps remain operable with at least one RHR loop in operation. A footnote to the TS permits deenergizing the single operating RHR loop for up to one hour provided that (a) no operations are permitted that would cause dilution of the RCS boron concentration and (b) core outlet temperature is maintained at least 10°F below saturation temperature. The licensee has proposed a modification to this footnote that would also require the reactor vessel water level to be above the vessel flange before deenergizing the final operable RHR loop.

The additional requirement to the footnote prevents intentional deenergizing of the remaining operable RHR loop when the RCS level is low. Requiring the RCS water level to be above the flange increases the RCS inventory before allowing the remaining RHR loop to be deenergized. The increased inventory would delay the onset of core boiling if difficulties were encountered in restarting the RHR system. Since the proposed modification is conservative with respect to loss of decay heat removal, we find it acceptable.

### Allowing Safety Injection Pumps to be Energized in Modes 5 and 6

TS 3.5.4 currently requires that when in Modes 5 or 6 with the reactor vessel head on, all safety injection pumps must be deenergized with the motor circuit breakers secured in the open position. This provides low temperature over-pressure protection to the primary coolant system and helps to assure that a mass addition transient (via a charging pump) can be relieved by the operation of a single PORV or RHR suction relief valve.

The licensee has pointed out that should RHR cooling be lost while in this configuration, it would require 15 to 20 minutes for plant operators to restore a safety injection (SI) pump. In addition, the licensee stated that with the reactor coolant water level below the vessel flange, there would be a minimum empty volume of 17,000 gallons in the primary system. Accordingly, the licensee has proposed a modification to TS 3.5.4 that will permit operability of the SI pumps provided the level of the reactor coolant water is below the vessel flange. Due to this minimum empty space, this will permit the reactor operators to either (1) recover from an inadvertent actuation of the SI pumps without going solid or (2) immediately inject water into the primary system via the SI pumps upon loss of RHR.

This modification was proposed by the staff in Generic Letter 88-17 and is acceptable.

### Modifications to the TS Bases

The licensee has proposed modifications to TS Bases "3/4.5.2, 3/4.5.3, 3/4.5.4 ECCS Subsystems" and "3/4.9.8 Residual Heat Removal and Coolant Circulation." These modifications simply reflect the previously discussed TS changes and are acceptable.

### ENVIRONMENTAL CONSIDERATION

The amendment involves a change in a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes in surveillance requirements. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposures. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR Section 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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