



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

TOLEDO EDISON COMPANY

CENTERIOR SERVICE COMPANY

AND

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

DOCKET NO. 50-346

DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 207  
License No. NPF-3

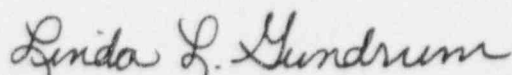
1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by the Toledo Edison Company, Centerior Service Company, and the Cleveland Electric Illuminating Company (the licensees) dated September 29, 1995, complies with the standards and requirements of 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, 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 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.
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-3 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 207, are hereby incorporated in the license. The Toledo Edison Company shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented not later than 90 days after issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Linda L. Gundrum, Project Manager  
Project Directorate III-3  
Division of Reactor Projects III/IV  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of issuance: February 27, 1996

ATTACHMENT TO LICENSE AMENDMENT NO. 207

FACILITY OPERATING LICENSE NO. NPF-3

DOCKET NO. 50-346

Replace the following pages of the Appendix "A" Technical Specifications with the attached pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change.

Remove

3/4 1-14  
3/4 1-16  
3/4 1-17  
3/4 5-1  
3/4 5-5  
3/4 5-7  
3/4 9-1  
B 3/4 1-2  
B 3/4 1-3  
B 3/4 5-2  
B 3/4 5-2a  
B 3/4 9-1

Insert

3/4 1-14  
3/4 1-16  
3/4 1-17  
3/4 5-1  
3/4 5-5  
3/4 5-7  
3/4 9-1  
B 3/4 1-2  
B 3/4 1-3  
B 3/4 5-2  
B 3/4 5-2a  
B 3/4 9-1

REACTIVITY CONTROL SYSTEMS

BORATED WATER SOURCES - SHUTDOWN

LIMITING CONDITION FOR OPERATION

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3.1.2.8 As a minimum, one of the following borated water sources shall be OPERABLE:

- a. A boric acid addition system with:
  - 1. A minimum available borated water volume of 900 gallons,
  - 2.  $\geq 7875$  and  $\leq 13,125$  ppm of boron, and
  - 3. A minimum solution temperature of 105°F.
- b. The borated water storage tank (BWST) with:
  - 1. A minimum available borated water volume of 3,000 gallons,
  - 2. A minimum boron concentration of 2600 ppm, and
  - 3. A minimum solution temperature of 35°F.

APPLICABILITY: MODES 5 and 6

ACTION:

With no borated water sources OPERABLE, suspend all operations involving CORE ALTERATION or positive reactivity changes until at least one borated water source is restored to OPERABLE status.

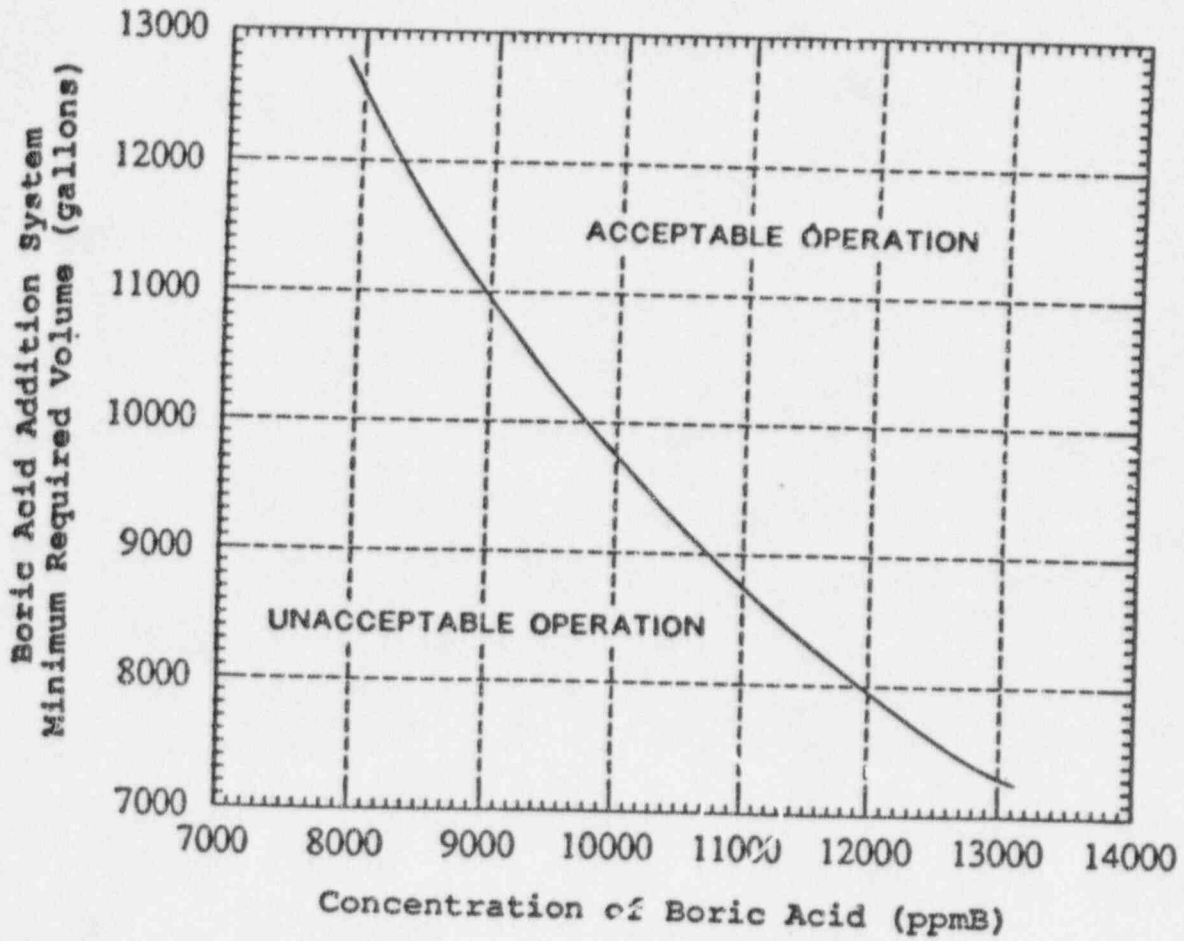
SURVEILLANCE REQUIREMENTS

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4.1.2.8 The above required borated water source shall be demonstrated OPERABLE:

- a. At least once per 7 days by:
  - 1. Verifying the available borated water volume of the source,
  - 2. Verifying the boron concentration of the water, and

Figure 3.1-1 Boric Acid Addition System  
 Minimum Required Volume as  
 a Function of Boric Acid  
 Concentration Required in  
 Modes 1-4



REACTIVITY CONTROL SYSTEMS

BORATED WATER SOURCES - OPERATING

LIMITING CONDITION FOR OPERATION

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3.1.2.9 Each of the following borated water sources shall be OPERABLE:

- a. The boric acid addition system (BAAS) with:
  1. A minimum available borated water volume in accordance with Figure 3.1-1,
  2.  $\geq 7875$  and  $\leq 13,125$  ppm of boron, and
  3. A minimum solution temperature of  $105^{\circ}\text{F}$ .
- b. The borated water storage tank (BWST) with:
  1. An available borated water volume of between 482,778 and 550,000 gallons,
  2.  $\geq 2600$  and  $\leq 2800$  ppm of boron, and
  3. A minimum solution temperature of  $35^{\circ}\text{F}$ .

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a. With the boric acid addition system (BAAS) inoperable, restore the BAAS to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN equivalent to  $1\% \Delta k/k$  at  $200^{\circ}\text{F}$  within the next 6 hours; restore the BAAS to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.
- b. With the BWST inoperable because of boron concentration or temperature not within limits, restore the BWST to OPERABLE status within 8 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- c. With the BWST inoperable for reasons other than boron concentration or temperature not within limits, restore the BWST to OPERABLE status within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

### 3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

#### CORE FLOODING TANKS

#### LIMITING CONDITION FOR OPERATION

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3.5.1 Each reactor coolant system core flooding tank (CFT) shall be OPERABLE with:

- a. The isolation valve open,
- b. A contained borated water volume between 7555 and 8004 gallons of borated water,
- c.  $\geq 2600$  and  $\leq 3500$  ppm of boron, and
- d. A nitrogen cover-pressure of between 575 and 625 psig.

APPLICABILITY: MODES 1, 2 and 3\*.

#### ACTION:

- a. With one CFT inoperable because of boron concentration not within limits, restore the inoperable CFT to OPERABLE status within 72 hours or be in HOT STANDBY within the next 6 hours and reduce the RCS pressure to less than 800 psig within the following 12 hours.
- b. With any CFT inoperable for reasons other than boron concentration not within limits, restore the CFT to OPERABLE status within one hour or be in HOT STANDBY within the next 6 hours and reduce the RCS pressure to less than 800 psig within the following 12 hours.

#### SURVEILLANCE REQUIREMENTS

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4.5.1 Each core flooding tank shall be demonstrated OPERABLE:

- a. At least once per 12 hours by:
  1. Verifying the contained borated water volume and nitrogen cover-pressure in the tanks, and
  2. Verifying that each tank isolation valve is open.

\*With Reactor Coolant pressure  $> 800$  psig.



## EMERGENCY CORE COOLING SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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4. Verifying that a minimum of 290 cubic feet of trisodium phosphate dodecahydrate (TSP) is contained within the TSP storage baskets. |
5. Deleted |
6. Deleted |
- e. At least once per 18 months, during shutdown, by
  1. Verifying that each automatic valve in the flow path actuates to its correct position on a safety injection test signal.
  2. Verifying that each HPI and LPI pump starts automatically upon receipt of a SFAS test signal.
- f. By performing a vacuum leakage rate test of the watertight enclosure for valves DH-11 and DH-12 that assures the motor operators on valves DH-11 and DH-12 will not be flooded for at least 7 days following a LOCA:
  1. At least once per 18 months.
  2. After each opening of the watertight enclosure.
  3. After any maintenance on or modification to the watertight enclosure which could affect its integrity.
- g. By verifying the correct position of each mechanical position stop for valves DH-14A and DH-14B.
  1. Within 4 hours following completion of the opening of the valves to their mechanical position stop or following completion of maintenance on the valve when the LPI system is required to be OPERABLE.
  2. At least once per 18 months.



## EMERGENCY CORE COOLING SYSTEMS

### BORATED WATER STORAGE TANK

#### LIMITING CONDITION FOR OPERATION

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3.5.4 The borated water storage tank (BWST) shall be OPERABLE with:

- a. An available borated water volume of between 482,778 and 550,000 gallons,
- b.  $\geq 2600$  and  $\leq 2800$  ppm of boron, and
- c. A minimum water temperature of  $35^{\circ}\text{F}$ .

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

#### ACTION:

- a. With the BWST inoperable because of boron concentration or temperature not within limits, restore the BWST to OPERABLE status within 8 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With the BWST inoperable for reasons other than boron concentration or temperature not within limits, restore the BWST to OPERABLE status within one 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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4.5.4 The BWST shall be demonstrated OPERABLE:

- a. At least once per 7 days by:
  1. Verifying the available borated water volume in the tank,
  2. Verifying the boron concentration of the water.
- b. At least once per 24 hours by verifying the water temperature when outside air temperature  $<35^{\circ}\text{F}$ .

### 3/4.9 REFUELING OPERATIONS

#### BORON CONCENTRATION

##### LIMITING CONDITION FOR OPERATION

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3.9.1 The boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained uniform and sufficient to ensure a  $K_{eff}$  of 0.95 or less, which includes a 1%  $\Delta k/k$  conservative allowance for uncertainties.

APPLICABILITY: MODE 6.

##### ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes and initiate and continue boration of  $\geq 12$  gpm of 7875 ppm boric acid solution or its equivalent until  $K_{eff}$  is reduced to  $\leq 0.95$ . The provisions of Specification 3.0.3 are not applicable.

##### SURVEILLANCE REQUIREMENTS

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4.9.1.1 The above condition shall be determined prior to:

- a. Removing or unbolting the reactor vessel head, and
- b. Withdrawal of any safety or regulating rod in excess of 3 feet from its fully inserted position within the reactor pressure vessel.

4.9.1.2 The boron concentration of the reactor pressure vessel and the refueling canal shall be determined by chemical analysis at least once each 72 hours.

## REACTIVITY CONTROL SYSTEMS

### BASES

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#### 3/4.1.1.4 MINIMUM TEMPERATURE FOR CRITICALITY

This specification ensures that the reactor will not be made critical with the reactor coolant system average temperature less than 525°F. This limitation is required to ensure (1) the moderator temperature coefficient is within its analyzed temperature range, (2) the protective instrumentation is within its normal operating range, (3) the pressurizer is capable of being in an OPERABLE status with a steam bubble, and (4) the reactor pressure vessel is above its minimum  $RT_{\text{NOT}}$  temperature.

#### 3/4.1.2. BORATION SYSTEMS

The boron injection system ensures that negative reactivity control is available during each mode of facility operation. The components required to perform this function include (1) borated water sources, (2) makeup or DHR pumps, (3) separate flow paths, (4) boric acid pumps, (5) associated heat tracing systems, and (6) an emergency power supply from operable emergency busses.

With the RCS average temperature above 200°F, a minimum of two separate and redundant boron injection systems are provided to ensure single functional capability in the event an assumed failure renders one of the systems inoperable. Allowable out-of-service periods ensure that minor component repair or corrective action may be completed without undue risk to overall facility safety from injection system failures during the repair period. With either the borated water storage tank (BWST) boron concentration or BWST borated water temperature not within limits, the condition must be corrected in eight hours. The eight hour limit to restore the temperature or boron concentration to within limits was developed considering the time required to change boron concentration or temperature and assuming that the contents of the BWST are still available for injection.

The boration capability of either system is sufficient to provide a SHUTDOWN MARGIN from all operating conditions of 1.0%  $\Delta k/k$  after xenon decay and cooldown to 200°F. The maximum boration capability requirement occurs from full power equilibrium xenon conditions and requires the equivalent of either 12,200 gallons of 7875 ppm borated water from the boric acid addition system (BAAS) or 86,700 gallons of 2600 ppm borated water from the BWST. The minimum value for the BAAS of 12,200 gallons at a concentration of 7875 ppm boron is a lower value than that shown in TS Figure 3.1-1 because the Bases value is the minimum required actual value, whereas TS Figure 3.1-1 shows the minimum indicated value, which was conservatively increased to account for instrument and chemical analysis tolerances.

## REACTIVITY CONTROL SYSTEMS

### BASES

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#### 3/4.1.2 BORATION SYSTEMS (Continued)

The requirement for a minimum available volume of 482,778 gallons of borated water in the BWST ensures the capability for borating the RCS to the desired level. The specified quantity of borated water is consistent with the ECCS requirements of Specification 3.5.4; therefore, the larger volume of borated water is specified.

With the RCS temperature below 200°F, one injection system is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity changes in the event the single injection system becomes inoperable.

The boron capability required below 200°F is sufficient to provide a SHUTDOWN MARGIN of 1%  $\Delta k/k$  after xenon decay and cooldown from 200°F to 70°F. This condition requires either 900 gallons of 7875 ppm borated water from the BAAS or 3,000 gallons of 2600 ppm borated water from the BWST.

The bottom 4 inches of the BWST are not available, and the instrumentation is calibrated to reflect the available volume. All of the boric acid addition tank volume is available. The limits on water volume, and boron concentration ensure a pH value of between 7.0 and 11.0 of the solution recirculated within containment after a design basis accident. The pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion cracking on mechanical systems and components.

The OPERABILITY of one boron injection system during REFUELING ensures that this system is available for reactivity control while in MODE 6.

#### 3/4.1.3 MOVABLE CONTROL ASSEMBLIES

The specifications of this section (1) ensure that acceptable power distribution limits are maintained, (2) ensure that the minimum SHUTDOWN MARGIN is maintained, and (3) limit the potential effects of a rod ejection accident. OPERABILITY of the control rod position indicators is required to determine control rod positions and thereby ensure compliance with the control rod alignment and insertion limits.

The ACTION statements which permit limited variations from the basic requirements are accompanied by additional restrictions which ensure that the original criteria are met. For example, misalignment of a safety or regulating rod requires a restriction in THERMAL POWER. The reactivity worth of a misaligned rod is limited for the remainder of the fuel cycle to prevent exceeding the assumptions used in the safety analysis.

The position of a rod declared inoperable due to misalignment should not be included in computing the average group position for determining the OPERABILITY of rods with lesser misalignments.

## EMERGENCY CORE COOLING SYSTEMS

### BASES

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With the RCS temperature below 280°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.

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.

The function of the trisodium phosphate dodecahydrate (TSP) contained in baskets located in the containment normal sump or on the 565' elevation of containment adjacent to the normal sump, is to neutralize the acidity of the post-LOCA borated water mixture during containment emergency sump recirculation. The borated water storage tank (BWST) borated water has a nominal pH value of approximately 5. Raising the borated water mixture to a pH value of 7 will ensure that chloride stress corrosion does not occur in austenitic stainless steels in the event that chloride levels increase as a result of contamination on the surfaces of the reactor containment building. Also, a pH of 7 is assumed for the containment emergency sump for iodine retention and removal post-LOCA by the containment spray system.

The Surveillance Requirement (SR) associated with TSP ensures that the minimum required volume of TSP is stored in the baskets. The minimum required volume of TSP is the volume that will achieve a post-LOCA borated water mixture pH of  $\geq 7.0$ , conservatively considering the maximum possible sump water volume and the maximum possible boron concentration. The amount of TSP required is based on the mass of TSP needed to achieve the required pH. However, a required volume is verified by the SR, rather than the mass, since it is not feasible to weigh the entire amount of TSP in containment. The minimum required volume is based on the manufactured density of TSP (53 lb/ft<sup>3</sup>). Since TSP can have a tendency to agglomerate from high humidity in the containment, the density may increase and the volume decrease during normal plant operation, however, solubility characteristics are not expected to change. Therefore, considering possible agglomeration and increase in density, verifying the minimum volume of TSP in containment is conservative with respect to ensuring the capability to achieve the minimum required pH. The minimum required volume of TSP to meet all analytical requirements is 250 ft<sup>3</sup>. The surveillance requirement of 290 ft<sup>3</sup> includes 40 ft<sup>3</sup> of spare TSP as margin. Total basket capacity is 325 ft<sup>3</sup>.

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.



## EMERGENCY CORE COOLING SYSTEMS

### BASES (Continued)

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Containment Emergency Sump Recirculation Valves DH-9A and DH-9B are de-energized during MODES 1, 2, 3 and 4 to preclude postulated inadvertent opening of the valves in the event of a Control Room fire, which could result in draining the Borated Water Storage Tank to the Containment Emergency Sump and the loss of this water source for normal plant shutdown. Re-energization of DH-9A and DH-9B is permitted on an intermittent basis during MODES 1, 2, 3 and 4 under administrative controls. Station procedures identify the precautions which must be taken when re-energizing these valves under such controls.

Borated Water Storage Tank (BWST) outlet isolation valves DH-7A and DH-7B are de-energized during MODES 1, 2, 3, and 4 to preclude postulated inadvertent closure of the valves in the event of a fire, which could result in a loss of the availability of the BWST. Re-energization of valves DH-7A and DH-7B is permitted on an intermittent basis during MODES 1, 2, 3, and 4 under administrative controls. Station procedures identify the precautions which must be taken when re-energizing these valves under such controls.

#### 3/4.5.4 BORATED WATER STORAGE TANK

The OPERABILITY of the borated water storage tank (BWST) 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 the BWST minimum volume and boron concentration ensure that:

- 1) sufficient water is available within containment to permit recirculation cooling flow to the core following manual switchover to the recirculation mode, and
- 2) The reactor will remain at least 1%  $\Delta k/k$  subcritical in the cold condition at 70°F, xenon free, while only crediting 50% of the control rods' worth following mixing of the BWST and the RCS water volumes.

These assumptions ensure that the reactor remains subcritical in the cold condition following mixing of the BWST and the RCS water volumes.

With either the BWST boron concentration or BWST borated water temperature not within limits, the condition must be corrected in eight hours. The eight hour limit to restore the temperature or boron concentration to within limits was developed considering the time required to change boron concentration or temperature and assuming that the contents of the BWST are still available for injection.

The bottom 4 inches of the BWST are not available, and the instrumentation is calibrated to reflect the available volume. The limits on water volume, and boron concentration ensure a pH value of between 7.0 and 11.0 of the solution sprayed within the containment after a design basis accident. The pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion cracking on mechanical systems and components.

## 3/4.9 REFUELING OPERATIONS

### BASES

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#### 3/4.9.1 BORON CONCENTRATION

The limitation on reactivity during REFUELING ensures that:  
1) the reactor will remain subcritical during CORE ALTERATIONS, and 2) a uniform boron concentration is maintained for reactivity control in the water volumes having direct access to the reactor vessel. This limitation is consistent with the initial conditions assumed for the boron dilution incident in the accident analysis.

The ACTION statement's minimum boration flow rate of 12 gpm is less than the minimum boration flow rate of 25 gpm specified in TS 3/4.1.1.1, Reactivity Control - Shutdown Margin because the lower flow rate is based on only boration of the reactor vessel.

#### 3/4.9.2 INSTRUMENTATION

The OPERABILITY of 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 pressure 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 PENETRATIONS

During CORE ALTERATIONS or movement of irradiated fuel within the containment, release of fission product radioactivity to the environment as a result of a fuel element rupture must be minimized. During MODES 1, 2, 3, and 4, this is accomplished by maintaining CONTAINMENT INTEGRITY as described in LCO 3.6.1.1. In other situations, the potential for containment pressurization as a result of an accident is not present, and therefore less stringent requirements are needed to isolate the containment from the atmosphere outside containment. Both containment personnel air lock doors may be open during CORE ALTERATIONS or during movement of irradiated fuel within the containment provided the conditions specified in LCO 3.9.4.b are met. The individual designated to be continuously available to close the air lock door must be stationed at the auxiliary building side of the air lock. A containment personnel air lock door is considered capable of being closed if the door is unblocked and there are no cables or hoses being run through the air lock. The LCO 3.9.10 requirement to maintain a minimum of 23 feet of water over the top of irradiated fuel assemblies seated within the reactor pressure vessel during movement of fuel assemblies within the reactor pressure vessel while in MODE 6 ensures that sufficient water depth is available to remove 99% of the assumed iodine gas activity released from the rupture of an irradiated fuel assembly. Further, sufficient time is available to close the personnel air lock following a loss of shutdown cooling before boiling occurs.