ATTACHMENT (2)

TECHNICAL SPECIFICATION PAGES

UNIT 1

3/4 1-17

3/4 1-20

3/4 1-21

3/4 1-22

B 3/4 1-2

B 3/4 1-3

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

Boric Acid Pumps - Operating

LIMITING CONDITION FOR OPERATION

3.1.2.6 ~~At least~~ The boric acid pump(s) in the boron injection flow path(s) required **OPERABLE** pursuant to Specification 3.1.2.2a shall be **OPERABLE** and capable of being powered from an **OPERABLE** emergency bus, ~~if the flow path through the boric acid pump(s) in Specification 3.1.2.2a is **OPERABLE**~~.

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

ACTION: With one boric acid pump required for the boron injection flow path(s) pursuant to Specification 3.1.2.2a inoperable, restore the boric acid pump to **OPERABLE** status within 72 hours or be in at least **HOT STANDBY** within the next 6 hours and borated to a **SHUTDOWN MARGIN** equivalent to at least 3% Δk/k at 200°F; restore the above required boric acid pump(s) to **OPERABLE** status within the next 7 days or be in **COLD SHUTDOWN** within the next 30 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.6 No additional Surveillance Requirements other than those required by Specifications 4.0.5 and 4.1.2.2.

INSERT A

AND,

When in **MODE** 1 > 80% of **RATED THERMAL POWER**

b. The boric acid pump(s) in the boron injection flow path(s) required to be **OPERABLE** pursuant to Specification 3.1.2.8.a shall be **OPERABLE** and capable of being powered from an **OPERABLE** emergency bus.

Replace with new 3.1.2.8 (Insert B)

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

Borated Water Sources - Operating

LIMITING CONDITION FOR OPERATION

3.1.2.8 At least one of the following two combinations of borated water sources shall be **OPERABLE**:

a. Two boric acid storage tank(s) and one associated heat tracing circuit per tank with the contents of the tanks in accordance with Figure 3.1.2-1 and the boron concentration limited to ≤ 8%, or

b. Boric Acid Storage Tank 12 **OPERABLE** per Specification 3.1.2.8.a and the refueling water tank with

1. A minimum contained borated water volume of 400,000 gallons,

2. A boron concentration of between 2300 and 2700 ppm,

3. A minimum solution temperature of 40°F, and

4. A maximum solution temperature of 100°F in **MODE** 1.

APPLICABILITY: **MODE** 1 > 80% of **RATED THERMAL POWER**.

ACTION:

a. With neither combination of borated water sources **OPERABLE** but at least two of the individual borated water sources **OPERABLE**, restore at least one of the combinations defined in Specification 3.1.2.8 to **OPERABLE** status within 72 hours or reduce power to less than 80% of **RATED THERMAL POWER** within the next 6 hours.

b. With only one borated water source **OPERABLE**, within 1 hour either restore at least two of the individual borated water sources to **OPERABLE** status or reduce power below 80% of **RATED THERMAL POWER** and comply with Specification 3.1.2.9.

SURVEILLANCE REQUIREMENTS

4.1.2.8 At least two borated water sources shall be demonstrated OPERABLE:

a. At least once per 7 days by:

1. Verifying the boron concentration in each water source,

2. Verifying the contained borated water volume in each water source, and

3. Verifying the boric acid storage tank solution temperature.

b. At least once per 24 hours by verifying the RWT temperature when the outside air temperature is < 40°F.

INSERT B

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

Charging Pump ECCS Subsystem

LIMITING CONDITION FOR OPERATION

3.1.2.8 As a minimum, the following equipment shall be **OPERABLE**:

a. Boric Acid Storage Tank 12 and its associated heat tracing circuit shall be **OPERABLE** per Specification 3.1.2.9.a and the boron injection flow path via Boric Acid Pump 12 from Boric Acid Storage Tank 12 shall be **OPERABLE** per Specification 3.1.2.2.a and Specification 3.1.2.6.

AND,

One of the following:

b. The boron injection flow path from Boric Acid Storage Tank 12 via a gravity feed connection shall be **OPERABLE** per Specification 3.1.2.2.a, or,

Boric Acid Storage Tank 11 and its associated heat tracing circuit shall be **OPERABLE** per Specification 3.1.2.9.a and the boron injection flow path from Boric Acid Storage Tank 11 via a gravity feed connection shall be **OPERABLE** per Specification 3.1.2.2.a.

APPLICABILITY: **MODE 1 > 80% of RATED THERMAL POWER.**

ACTION: With only one of the required combinations of borated water sources and flow paths **OPERABLE**, restore two required combinations of borated water sources and flow paths to **OPERABLE** status within 72 hours or reduce power to less than 80% of **RATED THERMAL POWER** within the next 6 hours and comply with Specifications 3.1.2.2, 3.1.2.6 and 3.1.2.9 as applicable.

INSERT B

3/4.1 REACTIVITY CONTROL SYSTEMS

SURVEILLANCE REQUIREMENTS

4.1.2.8 No additional Surveillance Requirements other than those required by Specifications 4.0.5, 4.1.2.2, and 4.1.2.9.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

Borated Water Sources - Operating

LIMITING CONDITION FOR OPERATION

3.1.2.9 At least two of the following three borated water sources shall be **OPERABLE**:

a. Two boric acid storage tank(s) and one associated heat tracing circuit per tank with the contents of the tanks in accordance with Figure 3.1.2-1 and the boron concentration limited to $\leq$ 8%, and

b. The refueling water tank with:

1. A minimum contained borated water volume of 400,000 gallons,

2. A boron concentration of between 2300 and 2700 ppm,

3. A minimum solution temperature of 40°F, and

4. A maximum solution temperature of 100°F in **MODE** 1.

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

ACTION: With only one borated water source **OPERABLE**, restore at least two borated water sources to **OPERABLE** status within 72 hours or be in at least **HOT STANDBY** within the next 6 hours and borated to a **SHUTDOWN MARGIN** equivalent to at least 3% $\Delta k/k$ at 200°F; restore at least two borated water sources to **OPERABLE** status within the next 7 days or be in **COLD SHUTDOWN** within the next 30 hours.

* ~~At $\leq$ 80% of RATED THERMAL POWER.~~

flow rate of at least 3000 GPM will circulate an equivalent Reactor Coolant System volume of 9,601 cubic feet in approximately 24 minutes. The reactivity change rate associated with boron concentration reductions will therefore be within the capability of operator recognition and control.

3/4.1.1.4 Moderator Temperature Coefficient (MTC)

The limitations on MTC are provided to ensure that the assumptions used in the accident and transient analyses remain valid through each fuel cycle. The surveillance requirements for measurement of the MTC during each fuel cycle are adequate to confirm the MTC value since this coefficient changes slowly due principally to the reduction in RCS boron concentration associated with fuel burnup. The confirmation that the measured MTC value is within its limit provides assurances that the coefficient will be maintained within acceptable values throughout each fuel cycle.

3/4.1.1.5 Minimum Temperature For Criticality

This specification ensures that the reactor will not be made critical with the Reactor Coolant System average temperature less than 515°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_{NDT} temperature.

3/4.1.2 BORATION SYSTEMS

see Insert C

The Boron Injection System ensures that negative reactivity control is available during each **MODE** of facility operation. The system also provides coolant flow following an SIAS (e.g., during a Small Break LOCA) to supplement flow from the Safety Injection System. The Small Break LOCA analyses assume flow from a single charging pump, accounting for measurement uncertainties and flow mal-distribution effects in calculating a conservative value of charging flow actually delivered to the RCS. The components required to perform this function include 1) borated water sources, 2) charging pumps, 3) separate flow paths, 4) boric acid pumps, 5) associated heat tracing systems, and 6) an emergency power supply from **OPERABLE** diesel generators.

With the RCS average temperature above 200°F, a minimum of two ~~separate~~ independent and redundant ~~Boron Injection~~ SDC 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.

The boration capability of either system is sufficient to provide a **SHUTDOWN MARGIN** from all operating conditions of 3.0% Δk/k after xenon decay and cooldown to 200°F. The maximum boration capability requirement occurs at EOL from full power equilibrium xenon conditions and requires boric acid solution from the boric acid tanks, the concentration and volume of which are met by the range of values given in Specifications 3.1.2.8 and 3.1.2.9, or 55,627 gallons of 2300 ppm borated water from the refueling water tank. However, to be consistent with the ECCS requirements, the RWT is required to have a minimum contained volume of 400,000 gallons during **MODES** 1, 2, 3 and 4. The maximum boron concentration of the refueling water tank shall be limited to 2700 ppm and the maximum boron concentration of the boric acid storage tanks shall be limited to 8% to preclude the possibility of boron precipitation in the core during long term ECCS cooling.

With the RCS temperature below 200°F, one boration ~~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 change in the event the single injection system becomes inoperable.

The boron capability required below 200°F is based upon providing a 3% Δk/k **SHUTDOWN MARGIN** after xenon decay and cooldown from 200°F to 140°F. This condition requires either boric acid solution from the boric acid tanks, the requirements of which are met by Specification 3.1.2.7, or 9,844 gallons of 2300 ppm borated water from the refueling water tank.

The **OPERABILITY** of one boration ~~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 ensure that (1) acceptable power distribution limits are maintained, (2) the minimum **SHUTDOWN MARGIN** is maintained, and (3) the potential effects of a CEA ejection accident are limited to acceptable levels.

The **ACTION** statements which permit limited variations from the basic requirements are accompanied by additional restrictions which ensure that the original criteria are met. A regulating or shutdown CEA is considered to be misaligned if it is more than 7.5 inches from any other CEA in its group, however, a shutdown CEA is also considered to be misaligned if it is withdrawn to less than 129 inches even if it is within 7.5 inches of all other CEAs in its group. For the purposes of the Technical Specifications, a dual assembly, connected to a single CEA drive mechanism, is considered to be a single CEA (e.g., dual shutdown CEAs connected to a single drive mechanism).

INSERT C

The Boration System is a subset of the Chemical Volume and Control System. The Boration System ensures that negative reactivity control is available during each **MODE** of facility operation. The system also provides coolant flow following a SIAS (e.g., during a Small Break LOCA) to supplement flow from the Safety Injection System. Above 80% of **RATED THERMAL POWER**, the Small Break LOCA analyses assume flow from a single charging pump, accounting for measurement uncertainties and flow mal-distribution effects in calculating a conservative value of charging flow actually delivered to the RCS. Credit is only taken for the water inventory, no credit is taken for the injected boron. Above 80% of **RATED THERMAL POWER**, two independent, redundant, and automatic boration systems are provided to ensure functional capability in the event an assumed failure renders one of the systems inoperable.

The components required to perform this function include 1) borated water sources, 2) charging pumps, 3) separate flow paths, 4) boric acid pumps, 5) associated heat tracing systems, and 6) an emergency power supply from **OPERABLE** diesel generators. At or below 80% of **RATED THERMAL POWER**, there is a corresponding decrease in decay heat which compensates for the loss of injection from one charging pump assumed in the Small Break LOCA analyses.

ATTACHMENT (3)

TECHNICAL SPECIFICATION PAGES

UNIT 2

3/4 1-17

3/4 1-20

3/4 1-21

3/4 1-22

B 3/4 1-2

B 3/4 1-3

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

Boric Acid Pumps - Operating

LIMITING CONDITION FOR OPERATION

3.1.2.6 ~~At least~~ The boric acid pump(s) in the boron injection flow path(s) required ~~,~~ **OPERABLE** pursuant to Specification 3.1.2.2a shall be **OPERABLE** and capable of being powered from an **OPERABLE** emergency bus if the flow path through the boric acid pump(s) in Specification 3.1.2.2a is **OPERABLE**.

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

ACTION: With one boric acid pump required for the boron injection flow path(s) pursuant to Specification 3.1.2.2a inoperable, restore the boric acid pump to **OPERABLE** status within 72 hours or be in at least **HOT STANDBY** within the next 6 hours and borated to a **SHUTDOWN MARGIN** equivalent to at least 3% $\Delta k/k$ at 200°F; restore the above required boric acid pump(s) to **OPERABLE** status within the next 7 days or be in **COLD SHUTDOWN** within the next 30 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.6 No additional Surveillance Requirements other than those required by Specifications 4.0.5 and 4.1.2.2.

INSERT A

AND,

When in **MODE** 1 > 80% of **RATED THERMAL POWER**

b. The boric acid pump(s) in the boron injection flow path(s) required to be **OPERABLE** pursuant to Specification 3.1.2.8.a shall be **OPERABLE** and capable of being powered from an **OPERABLE** emergency bus.

Replace with new 3.1.2.8 (Insert B)

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

Borated Water Sources - Operating

LIMITING CONDITION FOR OPERATION

3.1.2.8 At least one of the following two combinations of borated water sources shall be **OPERABLE**:

a. Two boric acid storage tank(s) and one associated heat tracing circuit per tank with the contents of the tanks in accordance with Figure 3.1.2-1 and the boron concentration limited to ≤ 8%, or

b. Boric Acid Storage Tank 22 **OPERABLE** per Specification 3.1.2.8.a and the refueling water tank with

1. A minimum contained borated water volume of 400,000 gallons,

2. A boron concentration of between 2300 and 2700 ppm,

3. A minimum solution temperature of 40°F, and

4. A maximum solution temperature of 100°F in **MODE** 1.

APPLICABILITY: **MODE** 1 > 80% of **RATED THERMAL POWER**.

ACTION:

a. With neither combination of borated water sources **OPERABLE** but at least two of the individual borated water sources **OPERABLE**, restore at least one of the combinations defined in Specification 3.1.2.8 to **OPERABLE** status within 72 hours or reduce power to less than 80% of **RATED THERMAL POWER** within the next 6 hours.

b. With only one borated water source **OPERABLE**, within 1 hour either restore at least two of the individual borated water sources to **OPERABLE** status or reduce power below 80% of **RATED THERMAL POWER** and comply with Specification 3.1.2.9.

SURVEILLANCE REQUIREMENTS

4.1.2.8 At least two borated water sources shall be demonstrated OPERABLE:

a. At least once per 7 days by:

1. Verifying the boron concentration in each water source,

2. Verifying the contained borated water volume in each water source, and

3. Verifying the boric acid storage tank solution temperature.

b. At least once per 24 hours by verifying the RWT temperature when the outside air temperature is < 40°F.

INSERT B

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

Charging Pump ECCS Subsystem

LIMITING CONDITION FOR OPERATION

3.1.2.8 As a minimum, the following equipment shall be **OPERABLE**:

a. Boric Acid Storage Tank 12 and its associated heat tracing circuit shall be **OPERABLE** per Specification 3.1.2.9.a and the boron injection flow path via Boric Acid Pump 12 from Boric Acid Storage Tank 12 shall be **OPERABLE** per Specification 3.1.2.2.a and Specification 3.1.2.6.

AND,

One of the following:

b. The boron injection flow path from Boric Acid Storage Tank 12 via a gravity feed connection shall be **OPERABLE** per Specification 3.1.2.2.a, or,

Boric Acid Storage Tank 11 and its associated heat tracing circuit shall be **OPERABLE** per Specification 3.1.2.9.a and the boron injection flow path from Boric Acid Storage Tank 11 via a gravity feed connection shall be **OPERABLE** per Specification 3.1.2.2.a.

APPLICABILITY: **MODE 1 > 80% of RATED THERMAL POWER.**

ACTION: With only one of the required combinations of borated water sources and flow paths **OPERABLE**, restore two required combinations of borated water sources and flow paths to **OPERABLE** status within 72 hours or reduce power to less than 80% of **RATED THERMAL POWER** within the next 6 hours and comply with Specifications 3.1.2.2, 3.1.2.6 and 3.1.2.9 as applicable.

INSERT B

3/4.1 REACTIVITY CONTROL SYSTEMS

SURVEILLANCE REQUIREMENTS

4.1.2.8 No additional Surveillance Requirements other than those required by Specifications 4.0.5, 4.1.2.2, and 4.1.2.9.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

Borated Water Sources - Operating

LIMITING CONDITION FOR OPERATION

3.1.2.9 At least two of the following three borated water sources shall be **OPERABLE**:

a. Two boric acid storage tank(s) and one associated heat tracing circuit per tank with the contents of the tanks in accordance with Figure 3.1.2-1 and the boron concentration limited to ≤ 8%, and

b. The refueling water tank with:

1. A minimum contained borated water volume of 400,000 gallons,

2. A boron concentration of between 2300 and 2700 ppm,

3. A minimum solution temperature of 40°F, and

4. A maximum solution temperature of 100°F in **MODE** 1.

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

ACTION: With only one borated water source **OPERABLE**, restore at least two borated water sources to **OPERABLE** status within 72 hours or be in at least **HOT STANDBY** within the next 6 hours and borated to a **SHUTDOWN MARGIN** equivalent to at least 3% Δk/k at 200°F; restore at least two borated water sources to **OPERABLE** status within the next 7 days or be in **COLD SHUTDOWN** within the next 30 hours.

* ~~At ≤ 80% of RATED THERMAL POWER.~~

3/4.1.1.3 Boron Dilution

A minimum flow rate of at least 3000 GPM provides adequate mixing, prevents stratification and ensures that reactivity changes will be gradual during boron concentration reductions in the Reactor Coolant System. A flow rate of at least 3000 GPM will circulate an equivalent Reactor Coolant System volume of 9,601 cubic feet in approximately 24 minutes. The reactivity change rate associated with boron concentration reductions will therefore be within the capability of operator recognition and control.

3/4.1.1.4 Moderator Temperature Coefficient (MTC)

The limitation on MTC are provided to ensure that the assumptions used in the accident and transient analyses remain valid through each fuel cycle. The surveillance requirements for measurement of the MTC during each fuel cycle are adequate to confirm the MTC value since this coefficient changes slowly due principally to the reduction in RCS boron concentration associated with fuel burnup. The confirmation that the measured MTC value is within its limit provides assurances that the coefficient will be maintained within acceptable values throughout each fuel cycle.

3/4.1.1.5 Minimum Temperature for Criticality

This specification ensures that the reactor will not be made critical with the Reactor Coolant System average temperature less than 515°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_{NDT} temperature.

3/4.1.2 BORATION SYSTEMS

See Insert C

The Boron Injection System ensures that negative reactivity control is available during each **MODE** of facility operation. The system also provides coolant flow following a SIAS (e.g., during a Small Break LOCA) to supplement flow from the Safety Injection System. The Small Break LOCA analyses assume flow from a single charging pump, accounting for measurement uncertainties and flow mal-distribution effects in calculating a conservative value of charging flow actually delivered to the RCS. The components required to perform this function include 1) borated water sources, 2) charging pumps, 3) separate flow paths, 4) boric acid pumps, 5) associated heat tracing systems, and 6) an emergency power supply from **OPERABLE** diesel generators.

3/4.1 REACTIVITY CONTROL SYSTEMS

BASES

With the RCS average temperature above 200°F, a minimum of two ~~separate~~ independent and redundant ~~Boron Injection~~ boration 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.

The boration capability of either system is sufficient to provide a **SHUTDOWN MARGIN** from all operating conditions of 3.0% $\Delta k/k$ after xenon decay and cooldown to 200°F. The maximum boration capability requirement occurs at EOL from full power equilibrium xenon conditions and requires boric acid solution from the boric acid tanks, the concentration and volume of which are met by the range of values given in Specifications 3.1.2.8 and 3.1.2.9, or 55,627 gallons of 2300 ppm borated water from the refueling water tank. However, to be consistent with the ECCS requirements, the RWT is required to have a minimum contained volume of 400,000 gallons during **MODES** 1, 2, 3 and 4. The maximum boron concentration of the refueling water tank shall be limited to 2700 ppm and the maximum boron concentration of the boric acid storage tanks shall be limited to 8% to preclude the possibility of boron precipitation in the core during long term ECCS cooling.

With the RCS temperature below 200°F, one ~~injection~~ boration 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 change in the event the single injection system becomes inoperable.

The boron capability required below 200°F is based upon providing a 3% $\Delta k/k$ **SHUTDOWN MARGIN** after xenon decay and cooldown from 200°F to 140°F. This condition requires either boric acid solution from the boric acid tanks, the requirements of which are met by Specification 3.1.2.7, or 9,844 gallons of 2300 ppm borated water from the refueling water tank.

The **OPERABILITY** of one ~~Boron Injection System~~ boration 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 ensure that (1) acceptable power distribution limits are maintained, (2) the minimum **SHUTDOWN MARGIN** is maintained, and (3) the potential effects of a CEA ejection accident are limited to acceptable levels.

INSERT C

The Boration System is a subset of the Chemical Volume and Control System. The Boration System ensures that negative reactivity control is available during each **MODE** of facility operation. The system also provides coolant flow following a SIAS (e.g., during a Small Break LOCA) to supplement flow from the Safety Injection System. Above 80% of **RATED THERMAL POWER**, the Small Break LOCA analyses assume flow from a single charging pump, accounting for measurement uncertainties and flow mal-distribution effects in calculating a conservative value of charging flow actually delivered to the RCS. Credit is only taken for the water inventory, no credit is taken for the injected boron. Above 80% of **RATED THERMAL POWER**, two independent, redundant, and automatic boration systems are provided to ensure functional capability in the event an assumed failure renders one of the systems inoperable.

The components required to perform this function include 1) borated water sources, 2) charging pumps, 3) separate flow paths, 4) boric acid pumps, 5) associated heat tracing systems, and 6) an emergency power supply from **OPERABLE** diesel generators. At or below 80% of **RATED THERMAL POWER**, there is a corresponding decrease in decay heat which compensates for the loss of injection from one charging pump assumed in the Small Break LOCA analyses.