Docket No. 50-213
B14901

Attachment 1

Haddam Neck Plant

Proposed Revision to Technical Specifications
Shutdown Margin
Marked Up Pages to Technical Specifications

September 1994

OCT 27 1993

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

REACTIVITY CONTROL SYSTEMS

SHUTDOWN MARGIN

LIMITING CONDITION FOR OPERATION

3.1.1.3 The SHUTDOWN MARGIN shall be greater than or equal to ~~3400~~ 4200 pcm.

APPLICABILITY: MODES 4 ~~and 5~~.

ACTION:

With the SHUTDOWN MARGIN less than ~~3400~~ 4200 pcm, immediately initiate and continue boration at greater than or equal to 30 gpm of a solution containing greater than or equal to 14,000 ppm boron or its equivalent until the required SHUTDOWN MARGIN is restored.

SURVEILLANCE REQUIREMENTS

4.1.1.3 The SHUTDOWN MARGIN shall be determined to be greater or equal to ~~3400~~ 4200 pcm:

a. Within 1 hour after detection of an inoperable control rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable. If the inoperable control rod is immovable or untrippable, the SHUTDOWN MARGIN shall be verified acceptable with an increased allowance for the withdrawn worth of the immovable or untrippable control rod(s); and

b. At least once per 24 hours by consideration of the following factors:

1) Reactor Coolant System boron concentration,

2) Control Rod position,

3) Reactor Coolant System average temperature,

4) Fuel burnup based on gross thermal energy generation,

5) Xenon concentration, and

6) Samarium concentration.

OCT 27 1993

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REACTIVITY CONTROL SYSTEMS

SHUTDOWN MARGIN

LIMITING CONDITION FOR OPERATION

3.1.1.~~3~~4 The SHUTDOWN MARGIN shall be greater than or equal to ~~3400~~ 4500 pcm.

APPLICABILITY: MODE~~S~~ ~~1, 2 and~~ 5.

ACTION:

With the SHUTDOWN MARGIN less than ~~3400~~ 4500 pcm, immediately initiate and continue boration at greater than or equal to 30 gpm of a solution containing greater than or equal to 14,000 ppm boron or its equivalent until the required SHUTDOWN MARGIN is restored.

SURVEILLANCE REQUIREMENTS

4.1.1.~~3~~4 The SHUTDOWN MARGIN shall be determined to be greater or equal to ~~3400~~ 4500 pcm:

a. Within 1 hour after detection of an inoperable control rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable. If the inoperable control rod is immovable or untrippable, the SHUTDOWN MARGIN shall be verified acceptable with an increased allowance for the withdrawn worth of the immovable or untrippable control rod(s); and

b. At least once per 24 hours by consideration of the following factors:

1) Reactor Coolant System boron concentration,

2) Control Rod position,

3) Reactor Coolant System average temperature,

4) Fuel burnup based on gross thermal energy generation,

5) Xenon concentration, and

6) Samarium concentration.

REACTIVITY CONTROL SYSTEMS

FLOW PATHS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.2 At least two* of the following three boron injection flow paths shall be OPERABLE.

a. The flow path from the boric acid tank** via a gravity feed line and the metering pump to the Reactor Coolant System.

b. Two flow paths from the boric acid tank** via boric acid pumps and centrifugal charging pumps to the Reactor Coolant System.

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

ACTION:

With only one of the above required boron injection flow paths to the Reactor Coolant System OPERABLE, restore at least two flow paths to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN ~~equivalent to at least 3400 pcm at 200°F~~ required by Specification 3.1.1.3 at 200°F within the next 6 hours; restore at least two flow paths to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.2 The above required flow paths shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying that the temperature of the heat traced portion of the flow path from the boric acid tank is greater than or equal to 140°F.

b. At least once per 7 days by operating each boric acid pump on recirculation to the boric acid tank.

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* Only one boron injection flow path is required to be OPERABLE whenever the Overpressure Protection System of Specification 3.4.9.3a is required.

** Valve BA-V-399 shall be locked open and shall not be closed unless the RCS is borated to the boron concentration provided in Specification 3.9.1.

REACTIVITY CONTROL SYSTEMS

CHARGING PUMPS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.4 At least two* charging pumps (centrifugal or metering) in the boron injection flow paths required by Specification 3.1.2.2 shall be OPERABLE.

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

ACTION:

With only one charging pump OPERABLE, restore at least two charging pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to the SHUTDOWN MARGIN ~~equivalent to at least 3400 pcm at 200°F~~ required by Specification 3.1.1.3 at 200°F within the next 6 hours; restore at least two charging pumps to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.4.1 The above required charging pumps (centrifugal) shall be demonstrated OPERABLE as required by Specification 4.5.1.c.3.

4.1.2.4.2 The above required charging pump (metering) shall be demonstrated OPERABLE at least once every 31 days by running the pump at its maximum speed.

* A maximum of one charging pump and one metering pump shall be OPERABLE whenever the Overpressure Protection System of Specification 3.4.9.3a is required.

REACTIVITY CONTROL SYSTEMS

BORATED WATER SOURCES - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.6 The following borated water source* shall be OPERABLE:

a. The boric acid mix tank and at least one associated Heat Tracing System shall be OPERABLE with:

1) A minimum contained borated water volume of 12,000 gallons,

2) Between 14,000 and 22,500 ppm of boron, and

3) A minimum solution temperature of 140°F.

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

ACTION: required by Specification 3.1.1.3 at 200°F

a. With the boric acid mix tank inoperable, restore the tank to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and borated to the SHUTDOWN MARGIN ~~equivalent to at least 3400 pcm at 200°F~~; restore the boric acid mix tank to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the following 30 hours.

* Maintenance which requires draining of the boric acid mix tank shall be allowed only when the Reactor Coolant System is borated to the boron concentration provided in Specification 3.9.1.

INSTRUMENTATION

BORON DILUTION ALARM

LIMITING CONDITION FOR OPERATION

3.3.3.9 Two Shutdown Monitors will be operable with the Alarm setpoints set at or below ~~2.00~~ 1.80 times the steady state level.

APPLICABILITY Modes 3, 4, 5, and 6

ACTION:

With the Boron Dilution Alarm system inoperable, except for surveillance testing:

a. Initiate continuous monitoring of the Source Range Channels or

b. Realign the Chemical and Volume Control System (CVCS) to preclude the possibility of an inadvertent Boron Dilution event.

SURVEILLANCE REQUIREMENTS

4.3.3.9.1 The operability of the Shutdown Monitors shall be demonstrated once per Month when the Reactor is in Modes 3, 4, 5, or 6.

3/4.1 REACTIVITY CONTROL SYSTEMS

BASES

3/4.1.1 BORATION CONTROL

3/4.1.1.1, 3/4.1.1.2, 3/4.1.1.3, and 3/4.1.1.4 SHUTDOWN MARGIN

A sufficient SHUTDOWN MARGIN ensures that: (1) the reactor can be made subcritical from all operating conditions, (2) the reactivity transients associated with postulated accident conditions are controllable within acceptable limits, and (3) the reactor will be maintained sufficiently subcritical to preclude inadvertent criticality in the shutdown condition.

SHUTDOWN MARGIN requirements vary throughout core life as a function of fuel depletion, RCS boron concentration, and RCS T_{avg}. The most restrictive condition during MODE 3 is associated with the boron dilution accident. In the analysis of this accident, a minimum SHUTDOWN MARGIN of 2000 pcm is required to control the reactivity transient. The MODE 1 and 2 SHUTDOWN MARGIN requirements are limited by the steamline break accident and are bounded by the boron dilution requirements. However, since the SHUTDOWN MARGIN in MODES 1 and 2 must be consistent with the MODE 3 requirement, the higher 2000 pcm requirement for the boron dilution accident is used. For MODE 3 two loop operation, a minimum SHUTDOWN MARGIN of 2800 pcm is required to control the reactivity transient during the boron dilution accident. The most restrictive condition in MODES 4 and 5 is associated with the boron dilution accident. In the analysis of this accident, a minimum SHUTDOWN MARGIN of ~~3400~~ 4200 pcm in MODE~~S~~ 4 and ~~5~~ 4500 pcm in MODE 5 is required to control the reactivity transient. Accordingly, the SHUTDOWN MARGIN requirements are based upon this limiting condition and are consistent with current design basis assumptions.

3/4.1.1.5 MODERATOR TEMPERATURE COEFFICIENT

The limits on the moderator temperature coefficient (MTC) are provided to ensure that the value of this coefficient remains within the limiting condition assumed in the accident and transient analysis.

The MTC values of this specification are associated with a specific set of plant conditions; measurement of MTC values at conditions other than those explicitly stated with extrapolation to the specified conditions is acceptable. Correction factors shall account for fuel and moderator temperature and boron concentration.

MODERATOR TEMPERATURE COEFFICIENT (Continued)

The Surveillance Requirement for measurement of the MTC at the beginning of the fuel cycle is adequate to confirm that the MTC remains within its limits since this coefficient changes slowly due principally to the reduction in RCS boron concentration associated with fuel burnup.

3/4.1.1.6 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 it analyzed temperature range, (2) the trip 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 vessel is above its minimum RT_{NDT} temperature.

3/4.1.2 BORATION SYSTEMS

The boration systems ensure 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) charging pumps, (3) separate flow paths, (4) boric acid transfer 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 boron injection flow paths are required to ensure single functional capability in the event an assumed failure renders one of the flow paths inoperable. The boration capability of either flow path is sufficient to provide the required SHUTDOWN MARGIN of ~~3400~~ 4200 pcm from expected operating conditions after xenon decay and cooldown to 200°F. The maximum expected boration capability requirement occurs at EOL from full power equilibrium xenon conditions, and the minimum required volume of 12,000 gallons of 14,000-ppm borated water from the boric acid tank meets this requirement.

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

BORATION SYSTEMS (Continued)

The requirement for one charging pump (centrifugal or metering) to be OPERABLE and the Surveillance Requirement to verify one centrifugal charging pump to be inoperable below 315°F provides assurance that a mass addition pressure transient can be relieved by the operation of a single overpressure protection relief train.

The boron capability required below 200°F is sufficient to provide the required SHUTDOWN MARGIN of ~~3400~~ 4500 pcm after xenon decay and cooldown from 200°F to 140°F. This requirement is met by either 5,000 gallons of 14,000-ppm borated water from the boric acid tank or 50,000 gallons of 2,200-ppm borated water from the refueling water storage tank.

The contained water volume limits include allowance for water not available because of discharge line location and other physical characteristics.

The OPERABILITY of one boration 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, (3) the potential effects of rod misalignment on associated accident analyses are limited. 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. Verification that the Group Rod Position Indicators agree with the bank average Individual Rod Position Indicators within ± 16 steps provides assurance that the Group and Individual Rod Position Indicator Systems are operating correctly over the full range of indication.

The ACTION statements which permit limited variations from the basic requirements are accompanied by additional restrictions which ensure that the original design criteria are met. Continued operation with an inoperable rod requires measurement of peaking factors and a restriction in THERMAL POWER. These restrictions provide assurance of fuel rod integrity during continued operation. In addition, those safety analyses affected by an inoperable rod are reevaluated to confirm that the results remain valid during future operation.

Docket No. 50-213
B14901

Attachment 2

Haddam Neck Plant

Proposed Revision to Technical Specifications
Shutdown Margin
Retyped Pages to Technical Specifications

September 1994

INDEX

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

REACTIVITY CONTROL SYSTEMS

SHUTDOWN MARGIN

LIMITING CONDITION FOR OPERATION

3.1.1.3 The SHUTDOWN MARGIN shall be greater than or equal to 4200 pcm.

APPLICABILITY: MODE 4.

ACTION:

With the SHUTDOWN MARGIN less than 4200 pcm, immediately initiate and continue boration at greater than or equal to 30 gpm of a solution containing greater than or equal to 14,000 ppm boron or its equivalent until the required SHUTDOWN MARGIN is restored.

SURVEILLANCE REQUIREMENTS

4.1.1.3 The SHUTDOWN MARGIN shall be determined to be greater or equal to 4200 pcm:

a. Within 1 hour after detection of an inoperable control rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable. If the inoperable control rod is immovable or untrippable, the SHUTDOWN MARGIN shall be verified acceptable with an increased allowance for the withdrawn worth of the immovable or untrippable control rod(s); and

b. At least once per 24 hours by consideration of the following factors:

1) Reactor Coolant System boron concentration,

2) Control Rod position,

3) Reactor Coolant System average temperature,

4) Fuel burnup based on gross thermal energy generation,

5) Xenon concentration, and

6) Samarium concentration.

SHUTDOWN MARGIN

LIMITING CONDITION FOR OPERATION

3.1.1.4 The SHUTDOWN MARGIN shall be greater than or equal to 4500 pcm.

APPLICABILITY: MODE 5.

ACTION:

With the SHUTDOWN MARGIN less than 4500 pcm, immediately initiate and continue boration at greater than or equal to 30 gpm of a solution containing greater than or equal to 14,000 ppm boron or its equivalent until the required SHUTDOWN MARGIN is restored.

SURVEILLANCE REQUIREMENTS

4.1.1.4 The SHUTDOWN MARGIN shall be determined to be greater or equal to 4500 pcm:

a. Within 1 hour after detection of an inoperable control rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable. If the inoperable control rod is immovable or untrippable, the SHUTDOWN MARGIN shall be verified acceptable with an increased allowance for the withdrawn worth of the immovable or untrippable control rod(s); and

b. At least once per 24 hours by consideration of the following factors:

1) Reactor Coolant System boron concentration,

2) Control Rod position,

3) Reactor Coolant System average temperature,

4) Fuel burnup based on gross thermal energy generation,

5) Xenon concentration, and

6) Samarium concentration.

FLOW PATHS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.2 At least two* of the following three boron injection flow paths shall be OPERABLE.

a. The flow path from the boric acid tank** via a gravity feed line and the metering pump to the Reactor Coolant System.

b. Two flow paths from the boric acid tank** via boric acid pumps and centrifugal charging pumps to the Reactor Coolant System.

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

ACTION:

With only one of the above required boron injection flow paths to the Reactor Coolant System OPERABLE, restore at least two flow paths to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN required by Specification 3.1.1.3 at 200°F within the next 6 hours; restore at least two flow paths to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.2 The above required flow paths shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying that the temperature of the heat traced portion of the flow path from the boric acid tank is greater than or equal to 140°F.

b. At least once per 7 days by operating each boric acid pump on recirculation to the boric acid tank.

* Only one boron injection flow path is required to be OPERABLE whenever the Overpressure Protection System of Specification 3.4.9.3a is required.

** Valve BA-V-399 shall be locked open and shall not be closed unless the RCS is borated to the boron concentration provided in Specification 3.9.1.

REACTIVITY CONTROL SYSTEMS

CHARGING PUMPS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.4 At least two* charging pumps (centrifugal or metering) in the boron injection flow paths required by Specification 3.1.2.2 shall be OPERABLE.

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

ACTION:

With only one charging pump OPERABLE, restore at least two charging pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to the SHUTDOWN MARGIN required by Specification 3.1.1.3 at 200°F within the next 6 hours; restore at least two charging pumps to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENT

4.1.2.4.1 The above required charging pumps (centrifugal) shall be demonstrated OPERABLE as required by Specification 4.5.1.c.3.

4.1.2.4.2 The above required charging pump (metering) shall be demonstrated OPERABLE at least once every 31 days by running the pump at its maximum speed.

* A maximum of one charging pump and one metering pump shall be OPERABLE whenever the Overpressure Protection System of Specification 3.4.9.3a is required.

BORATED WATER SOURCES - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.6 The following borated water source* shall be OPERABLE:

a. The boric acid mix tank and at least one associated Heat Tracing System shall be OPERABLE with:

1) A minimum contained borated water volume of 12,000 gallons,

2) Between 14,000 and 22,500 ppm of boron, and

3) A minimum solution temperature of 140°F.

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

ACTION:

a. With the boric acid mix tank inoperable, restore the tank to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and borated to the SHUTDOWN MARGIN required by Specification 3.1.1.3 at 200°F; restore the boric acid mix tank to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the following 30 hours.

* Maintenance which requires draining of the boric acid mix tank shall be allowed only when the Reactor Coolant System is borated to the boron concentration provided in Specification 3.9.1.

INSTRUMENTATION

BORON DILUTION ALARM

LIMITING CONDITION FOR OPERATION

3.3.3.9 Two Shutdown Monitors will be operable with the Alarm setpoints set at or below 1.80 times the steady state level.

APPLICABILITY Modes 3, 4, 5, and 6.

ACTION:

With the Boron Dilution Alarm system inoperable, except for surveillance testing:

a. Initiate continuous monitoring of the Source Range Channels or

b. Realign the Chemical and Volume Control System (CVCS) to preclude the possibility of an inadvertent Boron Dilution event.

SURVEILLANCE REQUIREMENTS

4.3.3.9.1 The operability of the Shutdown Monitors shall be demonstrated once per Month when the Reactor is in Modes 3, 4, 5, or 6.

3/4.1.1 BORATION CONTROL

3/4.1.1.1, 3/4.1.1.2, 3/4.1.1.3, and 3/4.1.1.4 SHUTDOWN MARGIN

A sufficient SHUTDOWN MARGIN ensures that: (1) the reactor can be made subcritical from all operating conditions, (2) the reactivity transients associated with postulated accident conditions are controllable within acceptable limits, and (3) the reactor will be maintained sufficiently subcritical to preclude inadvertent criticality in the shutdown condition.

SHUTDOWN MARGIN requirements vary throughout core life as a function of fuel depletion, RCS boron concentration, and RCS T_{avg}. The most restrictive condition during MODE 3 is associated with the boron dilution accident. In the analysis of this accident, a minimum SHUTDOWN MARGIN of 2000 pcm is required to control the reactivity transient. The MODE 1 and 2 SHUTDOWN MARGIN requirements are limited by the steamline break accident and are bounded by the boron dilution requirements. However, since the SHUTDOWN MARGIN in MODES 1 and 2 must be consistent with the MODE 3 requirement, the higher 2000 pcm requirement for the boron dilution accident is used. For MODE 3 two loop operation, a minimum SHUTDOWN MARGIN of 2800 pcm is required to control the reactivity transient during the boron dilution accident. The most restrictive condition in MODES 4 and 5 is associated with the boron dilution accident. In the analysis of this accident, a minimum SHUTDOWN MARGIN of 4200 pcm in MODE 4 and 4500 pcm in MODE 5 is required to control the reactivity transient. Accordingly, the SHUTDOWN MARGIN requirements are based upon this limiting condition and are consistent with current design basis assumptions.

3/4.1.1.5 MODERATOR TEMPERATURE COEFFICIENT

The limits on the moderator temperature coefficient (MTC) are provided to ensure that the value of this coefficient remains within the limiting condition assumed in the accident and transient analysis.

The MTC values of this specification are associated with a specific set of plant conditions; measurement of MTC values at conditions other than those explicitly stated with extrapolation to the specified conditions is acceptable. Correction factors shall account for fuel and moderator temperature and boron concentration.

MODERATOR TEMPERATURE COEFFICIENT (Continued)

The Surveillance Requirement for measurement of the MTC at the beginning of the fuel cycle is adequate to confirm that the MTC remains within its limits since this coefficient changes slowly due principally to the reduction in RCS boron concentration associated with fuel burnup.

3/4.1.1.6 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 it analyzed temperature range, (2) the trip 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 vessel is above its minimum RT_{NDT} temperature.

3/4.1.2 BORATION SYSTEMS

The boration systems ensure 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) charging pumps, (3) separate flow paths, (4) boric acid transfer 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 boron injection flow paths are required to ensure single functional capability in the event an assumed failure renders one of the flow paths inoperable. The boration capability of either flow path is sufficient to provide the required SHUTDOWN MARGIN of 4200 pcm from expected operating conditions after xenon decay and cooldown to 200°F. The maximum expected boration capability requirement occurs at EOL from full power equilibrium xenon conditions, and the minimum required volume of 12,000 gallons of 14,000-ppm borated water from the boric acid tank meets this requirement.

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

BORATION SYSTEMS (Continued)

The requirement for one charging pump (centrifugal or metering) to be OPERABLE and the Surveillance Requirement to verify one centrifugal charging pump to be inoperable below 315°F provides assurance that a mass addition pressure transient can be relieved by the operation of a single overpressure protection relief train.

The boron capability required below 200°F is sufficient to provide the required SHUTDOWN MARGIN of 4500 pcm after xenon decay and cooldown from 200°F to 140°F. This requirement is met by either 5,000 gallons of 14,000-ppm borated water from the boric acid tank or 50,000 gallons of 2,200-ppm borated water from the refueling water storage tank.

The contained water volume limits include allowance for water not available because of discharge line location and other physical characteristics.

The OPERABILITY of one boration 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, (3) the potential effects of rod misalignment on associated accident analyses are limited. 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. Verification that the Group Rod Position Indicators agree with the bank average Individual Rod Position Indicators within $\pm$ 16 steps provides assurance that the Group and Individual Rod Position Indicator Systems are operating correctly over the full range of indication.

The ACTION statements which permit limited variations from the basic requirements are accompanied by additional restrictions which ensure that the original design criteria are met. Continued operation with an inoperable rod requires measurement of peaking factors and a restriction in THERMAL POWER. These restrictions provide assurance of fuel rod integrity during continued operation. In addition, those safety analyses affected by an inoperable rod are reevaluated to confirm that the results remain valid during future operation.

Docket No. 50-213
B14901

Attachment 3

Haddam Neck Plant

Revised and Marked Up Technical Specifications
Pages 3/4 1-13 and 3/4 1-14

September 1994

REACTIVITY CONTROL SYSTEMS

CHARGING PUMP - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.3 One charging pump (centrifugal or metering) in the boron injection flow path required by Specification 3.1.2.1 shall be OPERABLE and capable of being powered from an OPERABLE emergency power source.

APPLICABILITY: MODES 5 and 6.

ACTION:

With no charging pump (centrifugal or metering) OPERABLE or capable of being powered from an OPERABLE emergency power source, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

SURVEILLANCE REQUIREMENTS

4.1.2.3.1 The above required charging pump (centrifugal only) shall be demonstrated OPERABLE as required by Specification 4.5.1.c.3.b.

4.1.2.3.2 The above required charging pump (metering) shall be demonstrated OPERABLE at least once every 31 days by running the pump at its maximum speed.

4.1.2.3.3 One centrifugal charging pump shall be demonstrated inoperable by verifying that the control switch is in the trip pullout position at least once per 12 hours whenever the Overpressure Protection System of Specification 3.4.9.3a is required.

REACTIVITY CONTROL SYSTEMS

CHARGING PUMPS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.4 At least two* charging pumps (centrifugal or metering) in the boron injection flow paths required by Specification 3.1.2.2 shall be OPERABLE.

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

ACTION:

With only one charging pump OPERABLE, restore at least two charging pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to the SHUTDOWN MARGIN equivalent to at least 3400 pcm at 200°F within the next 6 hours; restore at least two charging pumps to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.4.1 The above required charging pumps (centrifugal) shall be demonstrated OPERABLE as required by Specification 4.5.1.b.3.

4.1.2.4.2 The above required charging pump (metering) shall be demonstrated OPERABLE at least once every 31 days by running the pump at its maximum speed.

* A maximum of one charging pump and one metering pump shall be OPERABLE whenever the Overpressure Protection System of Specification 3.4.9.3a is required.

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CHARGING PUMP - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.3 One charging pump (centrifugal or metering) in the boron injection flow path required by Specification 3.1.2.1 shall be OPERABLE and capable of being powered from an OPERABLE emergency power source.

APPLICABILITY: MODES 5 and 6.

ACTION:

With no charging pump (centrifugal or metering) OPERABLE or capable of being powered from an OPERABLE emergency power source, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

SURVEILLANCE REQUIREMENTS

4.1.2.3.1 The above required charging pump (centrifugal only) shall be demonstrated OPERABLE as required by Specification 4.5.1.b.3.

4.1.2.3.2 The above required charging pump (metering) shall be demonstrated OPERABLE at least once every 31 days by running the pump at its maximum speed.

4.1.2.3.3 One centrifugal charging pump shall be demonstrated inoperable by verifying that the control switch is in the trip pullout position at least once per 12 hours whenever the Overpressure Protection System of Specification 3.4.9.3a is required.

REACTIVITY CONTROL SYSTEMS

CHARGING PUMPS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.4 At least two* charging pumps (centrifugal or metering) in the boron injection flow paths required by Specification 3.1.2.2 shall be OPERABLE.

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

ACTION:

With only one charging pump OPERABLE, restore at least two charging pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to the SHUTDOWN MARGIN equivalent to at least 3400 pcm at 200°F within the next 6 hours; restore at least two charging pumps to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.4.1 The above required charging pumps (centrifugal) shall be demonstrated OPERABLE as required by Specification 4.5.1.b.3.

4.1.2.4.2 The above required charging pump (metering) shall be demonstrated OPERABLE at least once every 31 days by running the pump at its maximum speed.

* The maximum of one charging pump and one metering pump shall be OPERABLE whenever the Overpressure Protection System of Specification 3.4.9.3.a is required.