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FLORIDA POWER & LIGHT COMPANY

TURKEY POINT UNITS 3 AND 4

BORIC ACID CONCENTRATION REDUCTION PROJECT

TECHNICAL SPECIFICATIONS SUBMITTAL REVISION 0

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Attachment 1

NOVEMBER, 1990

I. INTRODUCTION AND BACKGROUND

The General Design Criteria contained in the Code of Federal Regulations specifies that concentrated sources of borated water are to be available for charging to the Reactor Coolant System (RCS) of pressurized water reactor (PWR) plants as needed for reactivity control. Although these borated sources are required to be available, the concentration of the solutions contained in them is determined by FPL. The basis for determining the boric acid concentration is the ability to safely control reactivity at any time during core life. Boric acid is used to offset slow reactivity changes caused by normal changes in reactor power level, or to establish hot shutdown, cold shutdown or refueling conditions.

In the original plant design process for PWRs, two sources of borated water were typically provided, each having different boron concentrations. In the case of Turkey Point Units 3 & 4, a refueling water storage tank (RWST) is available which has a specified minimum concentration of approximately 1950 ppm. In addition to the refueling water storage tank, three concentrated boric acid tanks (BATs) are available. Each boric acid tank has a specified minimum level of 3,080 gallons with a specified concentration of 20,000 - 22,500 ppm boric acid. In order to keep the boric acid in solution at these high boron concentrations, extensive heating networks are required. These heating networks maintain the temperature of the tanks and associated pipes, pumps, and valves greater than 145°F in order to prevent boric acid precipitation.

The requirement to maintain a highly concentrated boric acid solution in the boric acid tanks can place an undue burden on plant maintenance and operational personnel. Significant problems can be encountered in keeping the boric acid makeup system operable as required in the plant technical specifications. These problems include heat tracing failures, plugging problems due to crystalline boric acid deposits,

and various corrosion problems which can cause seal failures, fitting leaks, and valve failures. In addition, the presence of crystalline boric acid deposits on the exterior of piping, valves, etc. can present a cleanliness problem. One solution to these problems would be to reduce the concentration requirements in the boric acid tanks by a factor of three or more below the present value. At low enough concentration levels the system would no longer have to be heat traced since boric acid would remain in solution at temperatures below the normally anticipated ambient temperatures in the auxiliary building. Additionally, problems with corrosion and cleanliness associated with concentrated boric acid could be greatly improved.

The boric acid tank level and boron concentration minimum values specified in the current Turkey Point Revised Technical Specifications are based on the ability to borate the RCS to the required cold shutdown boron concentration through a feed and bleed process. The current method is to borate the RCS to the boron concentration required to provide the required shutdown margin of 1% $\Delta k/k$ at 200°F prior to commencing the plant cooldown. The boration subsystem is then required to provide sufficient boric acid to first achieve this shutdown margin and second, to provide blended makeup to compensate for the contraction of the coolant throughout the cooldown. Since boron concentration typically has to be increased by 600 to 800 ppm prior to commencing cooldown, highly concentrated boric acid solutions are required to achieve this in a reasonable period of time with limited storage volume capability.

The required boron concentration in the boric acid tanks can be reduced with a change in the methodology of accomplishing plant boration and cooldown. Reference 1 describes a number of plant cooldown scenarios where boration is accomplished concurrently with cooldown as part of the normal inventory makeup required as a result of coolant contraction during the cooldown. By identifying the exact RCS boron concentration required to maintain proper shutdown margin at each temperature during

a plant cooldown and applying the makeup capacity limitations of the system, the exact volume of boric acid required from the boric acid tank can be identified. By eliminating the boric acid loss associated with the feed and bleed process and by utilizing boric acid available from the refueling water storage tank (in addition to the boric acid tank), the concentration of boric acid required for the boric acid tanks can be reduced. Effectively, the concentration required for the boric acid tanks to perform a cooldown to cold shutdown conditions can be decreased to the range of 3.0 to 3.5 weight percent where heat tracing of the boric acid system is no longer required. At or below a concentration of 3.5 weight percent boric acid, the ambient temperature that normally exists in the auxiliary building will be sufficient to prevent precipitation within the boric acid makeup system.

In order to operate at a lower boric acid concentration, several improvements will be implemented. These improvements not only allow for plant operations at a lower boric acid concentration but enhance the reliability and safety of the plant. At a reduced boric acid concentration, more reliable and durable mechanical seals can be installed in the boric acid transfer pumps. Likewise, maintenance and operational problems related to the heat tracing system are eliminated. This translates into improved availability of the boration sytem, improved plant safety, and lower occupational exposures. Continuous temperature monitoring of the rooms containing boration paths and components will be provided with an alarm in the control room. This enhances plant safety by ensuring that the rooms are kept above the temperature limits specified in the Technical Specifications.

The boric acid concentration reduction - related Technical Specification changes justified by this No Significant Hazards Evaluation are consistent with the analysis presented in Reference 1.

II. EVALUATION

A. TECHNICAL SPECIFICATIONS CHANGES

1. TECHNICAL SPECIFICATION 3/4.1 - REACTIVITY CONTROL SYSTEM

Specification 3.1.1.1 - Action Statement

Substitute "16 gpm" for "4 gpm" and "3.0 wt % (5245 ppm) boron" for "20,000 ppm boron."

Evaluation: The required flow rate is increased by a factor of four to conservatively accommodate the decrease in the boric acid tank minimum concentration by a factor of approximately four (20,000 ppm, or 11.4 weight percent (wt %), down to 3.0 weight percent). This adjustment ensures equal boration capability for shutdown margin recovery. The 16 gpm will be available via the emergency boration path or the manual boration path following the modification of FCV-113A. The required boron concentration is adjusted to reflect the minimum concentration of 3.0 wt % to be available from the boric acid tank.

Specification 3.1.1.2 - Action Statement

Substitute "16 gpm" for "4 gpm" and "3.0 wt % (5245 ppm)" for "20,000 ppm."

Evaluation: Same as Specification 3.1.1.1.

Specification 4.1.2.1 - Surveillance Requirement

Change Surveillance Requirement 4.1.2.1.a :

"... by verifying that the temperature of the heat traced portion of the flow path is greater than or equal to 145°F when a flow path from the boric acid tank is used"

to read,

"... by verifying that the temperature of the rooms containing flow path components is greater than or equal to 55°F when a flow path from the boric acid tanks is used"

Evaluation: The boration system flow path surveillance requirement is modified to reflect the reduced boric acid solubility temperature. The maximum boric acid concentration to be specified is 3.5 weight percent with a solubility temperature limit of 50°F. A margin of 5°F is added to this to make 55°F the critical temperature for boric acid solubility. The 7 day surveillance interval is justified because the temperature of the rooms containing boration system flow paths, and components will be provided with an alarm in the control room. The actions required in the event that temperature decreases below the critical temperature are identical to the current specification (i.e., if temperature is less than 55°F, the flow path in question becomes inoperable and the appropriate actions carried out).

Specification 3.1.2.2 - Limiting Condition for Operation

Add the following words to the footnote:

"from the boric acid transfer pump discharge to the charging pump suction."

Evaluation: The footnote regarding flow path separation is modified

to reflect the recommended boric acid tank lineup where all three tanks are interconnected via the transfer pump suction lines. This lineup maximizes the available volume from the boric acid tanks with no valve manipulations required to access the entire inventory. Boric acid tank inventory control in accordance with Technical Specification 3.1.2.5 will ensure that the tanks shared between the two units will have the total minimum required volume necessary to support both units. Maintaining the separation criteria for the remaining flow path from the boric acid transfer pumps to the charging pumps assures the appropriate level of active component redundancy for each unit.

Specification 4.1.2.2 - Surveillance Requirement

Change Surveillance Requirements 4.1.2.2.a :

"... by verifying that the temperature of the heat traced portion of the flow path from the boric acid tanks is greater than or equal to 145°F when it is a required water source;"

to read,

"... by verifying that the temperature of the rooms containing flow path components are greater than or equal to 55°F when a flow path from the boric acid tanks is used"

Substitute "16 gpm" for "4 gpm" in Surveillance Requirement 4.1.2.2.c

Evaluation: Same as Specification 4.1.2.1. This change also makes Surveillance Requirement 4.1.2.2.c consistent with Limiting Conditions for Operation 3.1.1.1 and 3.1.1.2.

Specification 3.1.2.4 - Limiting Condition for Operation

For the Boric Acid Storage System (3.1.2.4.a) change:

1. "A minimum indicated borated water volume of 500 gallons,"

to read,

1. "A minimum indicated borated water volume of 2,900 gallons per unit,"

change:

2. "A boron concentration between 20,000 ppm and 22,500 ppm, and"

to read,

2. "A boron concentration between 3.0 wt % (5245 ppm) and 3.5 wt % (6119 ppm), and"

change:

3. "A minimum solution temperature of 145°F."

to read,

3. "A minimum boric acid tanks room temperature of 55°F."

Evaluation: The boric acid tank operability requirements are revised to reflect the analysis of Reference 1. A minimum volume of 2,900 gallons per unit is specified, and includes an instrument accuracy of 2.5% of full range for the tank level instrument. Unusable volume is not accounted for here since the tank level instrumentation will have its indicated range calibrated to account for unusable volumes at the bottom of the tank. The concentration is limited to the recommended band of 3.0 weight percent to 3.5 weight percent. The temperature limit corresponds to the solubility limit for 3.5 weight percent boric acid (50°F) with 5°F added margin.

The minimum refueling water storage tank volume is not changed since this is known to be conservative from the analysis of Reference 1.

<u>Specification 4.1.2.4 - Surveillance Requirement</u>

Change Surveillance Requirement 4.1.2.4.a.3) :

"Verifying the boric acid storage tank solution temperature when it is the source of borated water."

to read,

"Verifying that the temperature of the boric acid tanks room is greater than or equal to 55°F, when it is the source of borated water."

Evaluation: The borated water source surveillance requirement is modified to reflect the reduced boric acid solubility temperature. The maximum boric acid concentration to be specified is 3.5 weight percent with a solubility temperature limit of 50°F. A margin of 5°F is added to this to make 55°F the critical temperature for boric acid solubility. The 7 day surveillance interval is justified because the temperature of the room containing the boric acid tanks will be provided with an alarm in the control room. Action statement requirements for temperatures below 55°F remain identical to the current required actions for temperatures below the current limit of 145°F. In this respect, the required actions remain as limiting as the current Technical Specifications.

Specification 3.1.2.5 - Limiting Condition for Operation

For the Boric Acid Storage System (3.1.2.5.a) change:

1. "A minimum indicated borated water volume of 3080 gallons."

to read,

1. "A minimum indicated borated water volume in accordance with Figure 3.1.2.5,"

change:

2. "A boron concentration between 20,000 ppm and 22,500 ppm, and"

to read,

2. "A boron concentration in accordance with Figure 3.1.2.5, and"

change:

3. "A minimum solution temperature of 145°F."

to read,

3. "A minimum boric acid tanks room temperature of 55°F."

Action Statement

Add an asterisk (*) to ACTION 'a' to reference a note at the bottom of the page.

Add note at the bottom of the page:

"* If this action applies to both units simultaneously, be in at least HOT STANDBY within the next 12 hours."

Add the following:

c. With the boric acid tank inventory concentration greater than 3.5 wt %, verify that the boric acid solution temperature for boration sources and flow paths is greater than the solubility limit for the concentration.

Add Figure 3.1.2.5 as provided

Evaluation: The boric acid tank operability requirements regarding volume and concentration will consist of a concentration vs. volume curve. Note that the volumes represent the combined volumes in all

three tanks with allowance for the minimum required volume for two operating units (Modes 1-4) and for one operating and one shutdown unit (Mode 5 or 6). The minimum temperature for boric acid tank operability coincides with the solubility limit for 3.5 weight percent boric acid (50°F) plus 5°F margin. ACTION times allow for an orderly sequential shutdown of both units when the inoperability of a component(s) affects both units with equal severity. When a single unit is affected, the time to be in HOT STANDBY is 6 hours. When an ACTION statement requires a dual unit shutdown, the time to be in HOT STANDBY is 12 hours.

Specification 4.1.2.5 - Surveillance Requirements

Change Surveillance Requirement 4.1.2.5.a.3) :

"Verifying the Boric Acid Storage System solution temperature when it is the source of borated water."

to read,

"Verifying that the temperature of the boric acid tanks room is greater than or equal to 55°F, when it is the source of borated water."

Evaluation: The borated water source surveillance requirement is modified to reflect the reduced boric acid solubility temperature. The maximum boric acid concentration to be specified is 3.5 weight percent with a solubility temperature limit of 50°F. A margin of 5°F is added to this to make 55°F the critical temperature for boric acid solubility. The 7 day surveillance interval is justified because the temperature of the room containing the boric acid tanks will be provided with an alarm in the control room. Action statement requirements for temperatures below 55°F remain identical to the current required actions for temperatures below the current limit of 145°F. In this respect, the required actions remain as limiting as

the current technical specifications.

Specification 3.1.2.6 - Limiting Condition for Operation

Add note at the bottom :

"This is no longer applicable once boric acid tanks inventory and boric acid source and flow path inventories have been diluted to less than or equal to 3.5 weight percent (wt %)."

Evaluation: This specification is retained to allow the concentration transition (from 12 weight percent boric acid to 3.5 weight percent boric acid) of the boric acid tank inventory, and boric acid source and flow path inventories. The boric acid tank operability requirements regarding volume and concentration will remain in accordance with specification 3.1.2.5. Action statement requirements regarding temperature and heat tracing remain identical to the current Technical Specifications. As identified in reference 1, a reduction in the boric acid concentration corresponds to a reduction in the solubility limit. FPL remains conservative by maintaining the boric acid storage tank and flow path temperatures greater than the appropriate solubility limit.

2. TECHNICAL SPECIFICATION 3/4.9 - REFUELING OPERATIONS

Specification 3.9.1 - Action Statement

Substitute "16 gpm" for "4 gpm" and "3.0 wt % (5245 ppm)" for "20,000 ppm"

Evaluation: Same evaluation as provided for in Specification 3.1.1.1.

3. TECHNICAL SPECIFICATION 3/4.10 - SPECIAL TEST EXCEPTIONS

Specification 3.10.1 - Action Statement

Substitute "16 gpm" for "4 gpm" and "3.0 wt % (5245 ppm)" for "20,000 ppm"

Evaluation: Same evaluation as provided for in Specification 3.1.1.1.

B. TECHNICAL SPECIFICATIONS, BASES

1. TECHNICAL SPECIFICATION BASES 3/4.1 - REACTIVITY CONTROL SYSTEMS

Specification Bases 3/4.1.1 - Boration Control

Substitute "16 gpm" for "4 gpm" and "3.0 wt % (5245 ppm)" for "20,000 ppm"

Evaluation: The increase in the required flow rate by a factor of four (4 gpm to 16 gpm) conservatively accommodates the decrease in the minimum boric acid tank concentration by a factor of approximately four (20,000 ppm, or 11.4 weight percent, down to 3.0 weight percent). This adjustment assures equal minimum boration capability for shutdown margin recovery as compared to the current capability at 11.4 weight percent. The capability to restore the shutdown margin with one OPERABLE charging pump is consistent with the current Technical Specifications.

Specification Bases 3/4.1.2 - Boration Systems

- o Delete the wording:

  " (5) associated Heat Tracing Systems, and (6) an emergency power supply from OPERABLE diesel generators."

Evaluation: Wording revised to reflect the basis of this program and the Emergency Power System (EPS) Enhancement Project submittal.

- o Insert the wording:

  "ACTION times allow for an orderly sequential shutdown of both units when the inoperability of a component(s) affects both units with equal severity. When a single unit is affected, the time to

be in HOT STANDBY is 6 hours. When an ACTION statement requires a dual unit shutdown, the time to be in HOT STANDBY is 12 hours."

Evaluation: Wording inserted to reflect the basis of the previous Emergency Power System (EPS) Enhancement Project submittal.

o Delete the wording:

"with independent power supplies", and

"However, the ACTION Statement restrictions allow 7 days to restore an inoperable pump provided that two charging pumps are available. This restriction is acceptable based on the low probability of losing the power source common to both charging pumps."

o Substitute the words "Each bus" for "The bus" and the words "a startup transformer." for "the startup transformer."

Evaluation: Wording revised to reflect the basis of the previous Emergency Power System (EPS) Enhancement Project submittal.

o Delete the wording:

"...BOL from full power equilibrium xenon conditions and require 3080 gallons of 20,000 PPM borated water from the boric acid storage tanks or 320,000 gallons of 1950 PPM borated water from the refueling water storage tank (RWST)."

and replace with the wording:

"...EOL peak xenon conditions without letdown such that boration occurs only during the makeup provided for coolant contraction. This requirement can be met for a range of boric acid concentrations in the boric acid tank and the refueling water

storage tank. The range of boric acid tank requirement is defined by Technical Specification 3.1.2.5."

- o Substitute "2,900 gallons of at least 3.0 wt % (5245 ppm) borated water per unit" for "500 gallons of 20,000 ppm borated water"

- o Substitute the wording "... requirement of 55°F and corresponding surveillance intervals..." for the wording "... of the redundant heat tracing channels..."

- o Insert the wording - "The temperature limit of 55°F includes a 5°F margin over the 50°F solubility limit of 3.5 wt % boric acid. Portable instrumentation may be used to measure the temperature of the rooms containing boric acid sources and flow paths."

- o Add the footnote - "This is no longer applicable once boric acid tanks inventory, and boric acid source and flow path inventories have been diluted to less than or equal to 3.5 weight percent."

Evaluation: The basis for the boric acid tank minimum volume required for modes 1 through 4 is modified to reflect the analyses of Reference 1. Specifically, the worst case expected plant boration requirement occurs at EOL peak xenon conditions without letdown such that boration occurs only during the makeup provided for coolant contraction. This requirement can be met for a range of boric acid concentrations in the boric acid tank and the refueling water storage tank. This range is bounded by Figure 3.1.2.5.

Below 200°F, the boric acid tank minimum volume requirement is based on the minimum volume of 3.0 weight percent boric acid required to maintain a 1.0% $\Delta k/k$ shutdown margin during a cooldown from 200°F to 140°F. (The analysis of Reference 1 conservatively assumed 135°F as

the cooldown endpoint.) The refueling water storage tank minimum volume with RCS temperature less than 200°F remains unchanged since it is conservative with respect to the cooldown analysis. Reference to heat tracing in this section is deleted since it is anticipated that all heat tracing will be removed. The basis of the 55°F temperature limit is established as the 50°F solubility limit for 3.5 weight percent boric acid plus 5°F margin. Continuous surveillance of the temperature of the rooms containing boration system flow paths and components is provided and verified by an alarm in the control room. A footnote is added to the heat tracing discussion. This identifies the heat tracing as not being applicable once boric acid tanks inventory and source and flow path inventories have been diluted to less than 3.5 weight percent.

2. TECHNICAL SPECIFICATION BASES 3/4.9 - REFUELING OPERATIONS

Specification 3/4.9.1 - Boron Concentration Bases

Substitute the wording "16 gpm of 3.0 wt % (5245 ppm)" for "4 gpm of 20,000 ppm".

Evaluation: Same as Specification Bases 3/4.1.1

III. NO SIGNIFICANT HAZARDS EVALUATION

The proposed changes have been deemed not to involve a significant hazards consideration focusing on the three standards set forth in 10 CFR 50.92(c) as quoted below:

The Commission may make a final determination, pursuant to the procedures in 50.91, that a proposed amendment to an operating license for a facility licensed under 50.21(b) or 50.22 or for a testing facility involves no significant hazards considerations, if operation of the facility in accordance with the proposed amendment would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated; or

2. Create the possibility of a new or different kind of accident from any accident previously evaluated; or

3. Involve a significant reduction in a margin of safety.

It has been determined that the activities associated with this amendment request do not meet any of the significant hazards consideration standards of 10 CFR 50.92(c) and, accordingly, a no significant hazards consideration finding is justified. A discussion of each of the above three significant hazards consideration standards is provided below.

Introduction

The current Turkey Point Chemical and Volume Control System (CVCS) design employs three boric acid tanks, containing 12 weight percent (wt %) boric acid, for the two units. One tank is dedicated to each

unit and the third is available as a backup for either dedicated tank. Each dedicated tank has adequate volume to store the cold shutdown boric acid volume required for one unit. The boric acid tanks provide a source of concentrated boric acid to the reactor to offset slow reactivity changes caused by normal changes in power level, or to establish hot shutdown, cold shutdown or refueling shutdown conditions. The safety function of the boric acid tanks is to maintain adequate boric acid volume and concentration to borate the Reactor Coolant System to a cold shutdown concentration at any time during the core cycle, with a shutdown margin consistent with the Technical Specifications.

A reduction in the boric acid concentration to 3.0 to 3.5 weight percent provides the opportunity to delete the system heat tracing presently required for 12 weight percent boric acid. The basis for deletion is the corresponding reduction in the solubility temperature from 135°F for 12 weight percent boric acid to 50°F for 3.5 weight percent boric acid. At this lower solubility temperature, the normally occurring ambient room temperatures are adequate to maintain fluid temperatures above the solubility limit rather than relying on tank heaters or heat tracing. Reference 1 provides the technical basis for this proposed amendment.

This proposed amendment improves the availability of the boration system, and therefore improves plant safety. It also reduces routine maintenance requirements by eliminating the need for boric acid tank internal heaters and boration flow path heat tracing channels. Furthermore, potential problems associated with boric acid crystalization, flow path blockage, and component corrosion are significantly reduced.

Evaluation

The following evaluation demonstrates that the proposed amendment involves no significant hazards considerations.

1. <u>Involve a significant increase in the probability or consequences of an accident previously evaluated.</u>

The operation of the facility in accordance with the proposed changes does not involve a significant increase in the probability or consequences of any accident previously evaluated. Deleting the requirement for a heat tracing circuit by reducing the boron concentration in the boric acid tank is accounted for by increasing the volume of boric acid solution that must be contained in the tanks and also by crediting borated water from the refueling water storage tank. Since the components (or their function) necessary to perform a safe shutdown have not been changed or modified, this change does not significantly increase the probability or consequences of any accident previously evaluated. In addition, technical specification controls on the boric acid tank temperature and boron concentration ensure that the lack of heat tracing does not result in precipitation of the boron.

Credit is not taken for boron addition to the RCS from the boric acid tanks for the purpose of reactivity control in the accidents analyzed in Chapter 14 of the Final Safety Analysis Report. Response to such events as steam line break, overcooling, boron dilution, etc. will not be affected by a reduction in the boric acid tank concentration.

The action statements associated with Technical Specification 3.1.1.1 currently require that boration be commenced at greater than 4 gallons per minute using a solution of at least 20,000 ppm boron in the event that shutdown margin is lost. This Specification has been changed to 16 gpm at 3.0 weight percent (5245 ppm) to accomplish the same minimum boration rate. A plant modification to flow control valve FCV-113A will increase blended makeup capacity and assure this system's capability to deliver this flow rate. Boration via the emergency boration flow path already exits at a rate of 60 gpm (nominal).

The operation of the facility in accordance with the proposed changes does not create the possibility of a new or different kind of accident from any accident previously evaluated. This is because such operation will not increase the likelihood of boric acid source or flow path failure nor will such failures initiate any new or different kind of accident from any previously evaluated. The boron dilution analysis performed for Turkey Point Units 3 and 4 is not impacted by a reduction from a nominal 12 weight percent boric acid to 3.0 to 3.5 weight percent. The boron concentration in the boric acid tanks is greater than any anticipated Reactor Coolant System boron concentration, thus, an inadvertent RCS boron dilution due to the addition of boric acid from the boric acid tanks is precluded.

The reason for requiring a heat tracing circuit was to ensure that the dissolved boric acid was in solution and, hence, available for injection into the RCS to adjust core reactivity throughout core life. By lowering the boron concentration to a maximum of 3.5 weight percent, chemical analyses have shown there is no possibility of the boron precipitating out of solution as long as the temperature of the boric acid solution remains above 50°F. Normal ambient temperatures in the vicinity of these components remain above this temperature. Therefore, there is no longer a need for heat tracing. Since the boron will be in solution when the boric acid tank flow paths are credited for reactivity control during a cooldown to cold shutdown scenario, heat tracing is no longer required to maintain the Boric Acid Storage system operable. In conclusion, this change does not create the possibility of a new or different kind of accident from those previously evaluated.

3. <u>Involve a significant reduction in a margin of safety.</u>

The operation of the facility in accordance with the proposed Technical Specification changes does not involve a significant reduction in the margin of safety. The intent of these Technical Specifications is to ensure that there are two independent flow paths from the two independent borated water sources (boric acid tanks and refueling water storage tank) to the RCS to allow control of core reactivity throughout core life. This requires that sufficient quantities of boron be stored in the tanks, and that this borated water can be delivered to the RCS when required. Reducing the maximum boric acid concentration to less than or equal to 3.5 weight percent has been compensated for by increasing the required volumes of borated water. Elimination of the separation criteria for the flow paths for the two units between the three shared boric acid tanks and the boric acid transfer pumps has been compensated for by technical specification volume control that accounts for the needs of both units.

In addition to the boric acid transfer pumps delivering the boric acid tank contents to the charging pumps, the charging pumps can take alternate suction from the Refueling Water Storage Tank. Since these independent boration capabilities control the Reactor Coolant System boron inventory, the original licensing basis of the plant does not require the boric acid tanks to meet single failure criteria.

In addition, reducing the maximum boron concentration allows a deletion of the requirement to heat trace the Boric Acid Storage system since chemical analyses have shown that a 3.5 weight percent solution of boric acid will remain in solution at temperatures above 50°F. An operability requirement of 55°F minimum temperature for the rooms containing boration sources and flow paths includes a 5°F margin above the solubility limit of 50°F. Technical Specification controls on the boric acid tank and boration flow path room temperatures and boron concentration ensure that a lack of heat

tracing does not result in precipitation of the boron.

In conclusion, the reduction of boric acid concentration and the deletion of heat tracing in the Boric Acid Makeup system does not cause a significant reduction in the margin of safety for this plant.

Summary

In summation, it has been shown that the proposed modifications and proposed Technical Specifications do not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated; or

2. Create the possibility of a new or different kind of accident from any accident previously evaluated; or

3. Involve a significant reduction in a margin of safety.

Therefore, it is determined that the proposed amendment involves no significant hazards considerations.

REFERENCES

1. ABB Combustion Engineering Report No. 849963-MPS-5MISC-003, "Boric Acid Concentration Reduction Technical Basis and Operational Analysis," November 1990.