

May 30, 2006

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Mail Stop P1-137  
Washington, DC 20555-0001

ULNRC-05293



Ladies and Gentlemen:

**DOCKET NUMBER 50-483  
CALLAWAY PLANT UNIT 1  
UNION ELECTRIC CO.  
FACILITY OPERATING LICENSE NPF-30  
REVISION TO TECHNICAL SPECIFICATION  
3.5.2, "ECCS - OPERATING," AND 3.6.7,  
"RECIRCULATION FLUID pH CONTROL SYSTEM"**

Union Electric Company (AmerenUE) herewith transmits an application for amendment to Facility Operating License No. NPF-30 for the Callaway Plant. The proposed changes will revise Technical Specification (TS) 3.5.2, "ECCS – Operating and TS 3.6.7, "Recirculation Fluid pH Control System" to support replacement of the containment recirculation sumps inlet trash racks and screens with strainers in response to Generic Letter 2004-02. The change to TS 3.5.2 is required to reflect the change from trash racks and screens to strainers with significantly larger effective surface area. The change to TS 3.6.7 is required to relocate the Recirculation Fluid pH Control System from the current location above the containment sump pits to alternate locations on the containment floor to allow installation of the new strainer design. In addition, this proposed amendment would remove a one time use note in TS 3.5.2 that is no longer applicable.

The Callaway Plant Onsite Review Committee and a subcommittee of the Nuclear Safety Review Board have reviewed this amendment application. Attachments 1 through 4 provide the evaluation, Markup of Technical Specifications, Retyped Technical Specifications, and Proposed Technical Specification (TS) Bases Changes, respectively, in support of this amendment request. Attachment 4 is provided for information only. Final TS Bases changes will be processed under our program for

updates per TS 5.5.14, "Technical Specification Bases Control Program," at the time this amendment is implemented. No other commitments are contained in this amendment application.

AmerenUE requests approval of this proposed License Amendment by February 2007 to support final Refuel 15 outage preparations. The amendment will be implemented prior to MODE 4 entry ascending during startup from the Refuel 15 outage when the new containment recirculation sump strainers will be installed.

It has been determined that this amendment application does not involve a significant hazard consideration as determined per 10 CFR 50.92. Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment. In accordance with 10 CFR 50.91, a copy of this amendment application is being provided to the designated Missouri State official. If you have any questions on this amendment application, please contact Mr. David Shafer at (314) 554-3104.

I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,



Keith D. Young  
Manager - Regulatory Affairs

Executed on: May 30, 2006

BFH/

Attachments: 1 – Evaluation  
2 – Markup of Technical Specifications  
3 – Retype Technical Specifications  
4 – Proposed Technical Specification Bases Changes (for information only)

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**ATTACHMENT 1**

**EVALUATION**

**1.0 Description**

**2.0 Proposed Change**

**3.0 Background**

**4.0 Technical Analysis**

**5.0 Regulatory Safety Analysis**

**5.1. No Significant Hazards Consideration**

**5.2. Applicable Regulatory Requirement/Criteria**

**6.0 No Significant Hazards Consideration**

**7.0 Applicable Regulatory Requirements/Criteria**

**8.0 Environmental Consideration**

**9.0 References**

## **EVALUATION**

### **1.0 DESCRIPTION**

The proposed amendment would revise Surveillance Requirement (SR) in Technical Specifications (TS) 3.5.2, "ECCS—Operating," and 3.6.7, "Recirculation Fluid pH Control System" to reflect the replacement of Containment recirculation sump suction inlet trash racks and screens with strainers. In addition, this amendment request proposes an administrative change to remove the one time usage note for TS 3.5.2 which is no longer applicable.

The proposed amendment would change TS to reflect the replacement of Containment recirculation sump suction inlet trash racks and screens with strainers with significantly larger effective surface area in response to Generic Letter 2004-02. Due to this modification, the existing Recirculation Fluid pH Control System would be relocated from the existing location above the containment sump pits to alternate locations on the containment floor.

### **2.0 PROPOSED CHANGE**

The proposed change would revise TS 3.5.2, to change the wording in SR 3.5.2.8 from "trash racks and screens" to "strainers," and revise Technical Specification 3.6.7 to split SR 3.6.7.1 into two surveillances to verify integrity of the system and a new surveillance (SR 3.6.7.2) to ensure equilibrium sump pH  $\geq 7.1$ .

In addition, this amendment request would remove the one time usage note for TS 3.5.2 which is no longer applicable.

Attachment 2 and 3 provide the TS markups and the retyped TS pages with the changes incorporated. Attachment 4 provides an information only copy of the associated TS Bases changes.

### **3.0 BACKGROUND**

Generic Safety Issue 191 (GSI-191), "Assessment of Debris Accumulation on PWR Sump Performance," deals with the possibility that debris could accumulate on the Emergency Core Cooling System (ECCS) sump screen resulting in a loss of net positive suction head (NPSH) margin. The loss of NPSH margin to ECCS pumps drawing suction from the sump may impede or prevent the flow of water needed to meet the criteria of Title 10, Section 50.46 of the Code of Federal Regulations (10 CFR 50.46), "Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Power Reactors." 10CFR50.46 requires that licensees design their ECCS systems to meet five criteria, one of which is to provide the capability for long-term cooling. Following a successful system initiation, the ECCS must be able to provide cooling for a sufficient duration that the core temperature is maintained at an

acceptably low value. In addition, the ECCS must be able to continue decay heat removal for the extended period of time required by the long-lived radioactivity remaining in the core.

Bulletin 2003-01 (Reference 7.1) requested information to verify compliance with NRC regulations and to ensure that any interim risks associated with post-accident debris blockage are minimized while evaluations of the latest sump knowledge proceed. NRC Generic Letter 2004-02 (Reference 7.2) is the follow-on generic communication to Bulletin 2003-01 and requested information on the results of the evaluations referenced in the bulletin.

AmerenUE has evaluated the emergency recirculation sumps for adverse effects due to debris blockage of flow paths necessary for ECCS and Containment Spray System (CSS) recirculation and containment drainage. That evaluation concluded that larger sump strainers of a different design are necessary. In addition, to allow installation of the new strainer design, the Recirculation Fluid pH Control System currently located inside the containment sump trash rack enclosures will be relocated to alternate locations on the containment floor. Both of these modifications are constrained by current Technical Specifications. Consequently, this license amendment request is to change the Callaway Plant Technical Specifications to allow plant modifications required to meet the requested schedule in NRC Generic Letter 2004-02.

#### 4.0 TECHNICAL ANALYSIS

##### Strainer Modification

AmerenUE plans to install new sump strainers to increase the available (i.e., submerged) strainer area from approximately 400 square feet currently available to an area of approximately 6400 square feet. The existing sump design (Reference 7.3) uses three screens located above the sump area. The three screens consist of: (1) an outer trash rack which is constructed of grating material, (2) coarse industrial wire mesh with nominal 1/2-inch openings, and (3) a fine inner screen of fine industrial wire mesh with nominal 1/8-inch openings. In addition, a 6-inch concrete curb is provided on which the screen is supported to prevent high density particles from entering the sump.

The new design will remove the existing screen hardware described above and replace it with new fabricated strainer assemblies utilizing the Sure-Flow™ strainer system. Inside each sump, sixteen stacks (72 total modules) of the strainer assemblies will be installed and will extend approximately 1 foot above the containment building floor. This strainer design was chosen based on the largest available sump strainer area that would fit within the bounds of the current containment sump area and to be compatible with anticipated water level. The new strainer is designed to reduce both head loss and the ingestion of debris which could affect downstream components.

The screens used in the containment recirculation sump strainers are sized to preclude passage of debris large enough to damage downstream containment spray and emergency core cooling system components or block flow passages such as flow channels in the fuel and the CSS nozzles. This function is required to support operation of the supported systems during postulated accidents which credit recirculation flow from the containment recirculation sump.

#### Relocation of the Recirculation Fluid pH Control System

With the installation of the new strainers inside the containment recirculation sump, the two existing storage baskets for trisodium phosphate crystalline (TSP-C) will be removed. The TSP-C baskets will be redesigned and relocated to the containment floor. The baskets will be located at an elevation and location that will ensure dissolution of TSP-C by the sump fluids.

Each storage basket will be designed to contain a sufficient weight of TSP-C to ensure an equilibrium sump pH of  $\geq 7.1$  based on the total weight contained in all storage baskets. Each storage basket is designed to maintain its structural integrity considering the maximum allowed TSP-C level. The required quantity of TSP-C in each storage baskets will still be verified visually by assuring a minimum and maximum level in the baskets.

The calculation of the minimum and maximum depths of TSP-C includes conservative allowances for compaction, density variations, and the limited transformation of TSP-C into disodium triphosphate which is a weaker base (expected to have a small impact in the outer surface layer).

#### Need for the Amendment

Activities are currently underway to ensure that the containment recirculation sump functions under debris loading conditions at Callaway will be in full compliance with the regulatory requirements listed in the Applicable Regulatory Requirements section of Generic Letter 2004-02 (Ref. 7.3) by December 31, 2007. Full compliance will be achieved through analysis, testing, modifications to increase the available sump screen area, other changes to the plant to reduce the potential debris loading on the installed containment recirculation sump strainers, and programmatic and process changes to ensure continued compliance.

This proposed amendment to the Technical Specification Surveillance Requirements is necessary to reflect the new strainer design and the relocation of the Recirculation Fluid pH Control System from inside the containment recirculation sump enclosure.

Although the configurations of the existing trash rack and sump screens and the replacement strainer assemblies are different, they serve the same fundamental purpose of passively removing debris from the suction of the supported system

pumps. The descriptive terminology of trash racks and screens is not descriptive of the new sump debris strainers. The proposed replacement of "trash racks and screens" with "strainers" is a descriptive change and SR 3.5.2.8 will continue to ensure the containment recirculation sump suction inlet straining elements are not restricted by debris and suction inlet strainers show no evidence of structural distress or abnormal corrosion.

With the installation of the new strainers inside the containment recirculation sump, the existing storage baskets for trisodium phosphate crystalline (TSP-C) will be removed. The storage baskets will be redesigned and relocated on the containment floor. This is a like kind replacement since the redesign and relocation of the storage baskets to the containment floor will serve the same purpose as the existing storage baskets located within the containment recirculation sump. The location of the storage baskets will not change the fundamental purpose of this system to provide passive recirculation fluid pH control. The existing SR 3.6.7.1 will be split into two new SRs. The new SR 3.6.7.1 will verify the integrity of the recirculation fluid pH control system and the new SR 3.6.7.2 will verify that the recirculation fluid pH control system can ensure an equilibrium sump pH  $\geq 7.1$ . The specific details for these surveillances will be contained in the TS Bases.

In addition, this amendment request would remove the one time usage note for TS 3.5.2 which is no longer applicable. This change is considered an administrative.

## **5.0 REGULATORY ANALYSIS**

### **5.1 No Significant Hazards Consideration**

AmerenUE is replacing the containment recirculation sump trash racks and screens with strainers in support of the response to Generic Letter 2004-02. With the installation of the new strainers inside the containment recirculation sump, the existing storage baskets for trisodium phosphate crystalline (TSP-C) will be removed. The storage baskets will be redesign and relocated on the containment floor. A change to Technical Specification (TS) Surveillance Requirements (SRs) 3.5.2.8, 3.6.7.1, and 3.6.7.2 is needed to reflect this change.

AmerenUE has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10CFR50.92, as discussed below:

- 1. Do the proposed changes involve a significant increase in the probability or consequences of an accident previously evaluated?**

Response: No



None of the changes impact the initiation or probability of occurrence of any accident.

The consequences of accidents evaluated in the FSAR that could be affected by this proposed change are those involving the pressurization of the containment and associated flooding of the containment and recirculation of this fluid within the Emergency Core Cooling System (ECCS) or the Containment Spray System (CSS) (e.g., LOCAs).

Although the configurations of the existing sump screen and the replacement strainer assemblies are different, they serve the same fundamental purpose of passively removing debris from the suction of the supported system pumps. Removal of trash racks does not impact the adequacy of the pump NPSH assumed in the safety analyses. Likewise, the change does not reduce the reliability of any supported systems or introduce any new system interactions. The greatly increased surface area of the new strainer is designed to reduce head loss and reduce the approach velocity at the strainer face significantly, decreasing the risk of impact from large debris entrained in the sump flow stream.

The recirculation fluid pH control system storage baskets serve a passive function to provide a buffering agent to neutralize the sump solution. The redesign and relocation of the storage baskets is considered a like kind replacement. The baskets will be located within the flood plain and will continue to ensure that the buffering agent is dissolved in the sump fluid to ensure an equilibrium sump pH  $\geq 7.1$ . Failure of a basket would not initiate an accident. The ECCS and CSS will continue to function in a manner consistent with the plant design basis.

As such, the proposed change to the Technical Specification Surveillance Requirements does not involve a significant increase in the probability or consequences of an accident previously evaluated. The installed quantity of trisodium phosphate Crystalline will provide a minimum equilibrium sump pH of 7.1 following dissolution and mixing. Therefore, there is not a significant increase in the probability or consequences of an accident previously evaluated.

**2. Do the proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated?**

Response: No

The containment recirculation sump strainers and recirculation fluid pH control system are passive systems used for accident mitigation. As such, they cannot be accident initiators. Therefore, there is no possibility that this change could create any accident of any kind.

No new accident scenarios, transient precursors, or limiting single failures are introduced as a result of these changes. There will be no adverse effect or challenges imposed on any safety-related system as a result of these changes. The quantity of trisodium phosphate crystalline will provide a minimum equilibrium sump pH of  $\geq 7.1$  following dissolution and mixing. Therefore, the possibility of a new or different type of accident is not created.

There are no changes which would cause the malfunction of safety-related equipment, assumed to be operable in the accident analyses, as a result of the proposed Technical Specification changes. No new equipment performance burdens are imposed. The possibility of a malfunction of safety-related equipment with a different result is not created. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

**3. Do the proposed changes involve a significant reduction in a margin of safety?**

Response: No

The proposed changes do not adversely affect any plant safety limits, set points, or design parameters. The changes also do not adversely affect the fuel, fuel cladding, Reactor Coolant System (RCS), or containment integrity. Therefore, the proposed TS change does not involve a significant reduction in the margin of safety.

Based on the above evaluations, AmerenUE concludes that the proposed amendment presents no significant hazards under the standards set forth in 10CFR50.92(c) and, accordingly, a finding of "no significant hazards consideration" is justified.

**5.2 Applicable Regulatory Requirements/Criteria**

The Containment Spray system is designed to meet the requirements of 10 CFR 50, Appendix A, GDC 38, "Containment Heat Removal," GDC 39, "Inspection of Containment Heat Removal Systems," GDC 40, "Testing of Containment Heat Removal Systems," GDC 41, "Containment Atmosphere Cleanup," GDC 42, "Inspection of Containment Atmosphere Cleanup Systems," and GDC 43, "Testing of Containment Atmosphere Cleanup Systems".

NRC regulations in Title 10, of the Code of Federal Regulations Section 50.46, 10CFR50.46, require that the ECCS have the capability to provide long-term cooling of the reactor core following a LOCA. That is, the ECCS must be able to remove decay heat, so that the core temperature is maintained at an acceptably low value for the extended period of time required by the long-lived radioactivity remaining in the core. The change to the Technical Specifications will not affect the ECCS from performing the long term cooling of the reactor core following an accident.

AmerenUE credits, in part, a Containment Spray System with performing the safety functions to satisfy the above requirements. In addition, AmerenUE also credits the Containment Spray System with reducing the accident source term to meet the limits of 10CFR Part 100 or 10CFR 50.67. The Technical Specification changes described herein will not affect the Containment Spray system from continuing to provide reduction of containment pressure, and the iodine removal capability of the spray reduces the release of fission product radioactivity from containment to the environment, in the event of a Design Basis Accident (DBA), to within limits.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

## **6.0 ENVIRONMENTAL CONSIDERATION**

AmerenUE has determined that the proposed amendment would change requirements with respect to the installation or use of a facility component located within the restricted area, as defined in 10CFR20, or would change an inspection or surveillance requirement. However, AmerenUE has evaluated the proposed amendment and has determined that the amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amount of effluent that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10CFR51.22 (c)(9). Therefore, pursuant to 10CFR51.22 (b), an environmental assessment of the proposed amendment is not required.

## **7.0 REFERENCES**

- 7.1 NRC Bulletin 2003-01, "POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY SUMP RECIRCULATION AT PRESSURIZED-WATER-REACTORS"
- 7.2 Generic Letter 2004-02, "POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY RECIRCULATION DURING DESIGN BASIS ACCIDENTS AT PRESSURIZED-WATER REACTORS"
- 7.3 Callaway Plant Final Safety Analysis Report Section 6.2.2 and Table 6.2.2-1

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**ATTACHMENT 2**

**MARKUP OF TECHNICAL SPECIFICATIONS**

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY												
SR 3.5.2.5	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months												
SR 3.5.2.6	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	18 months												
SR 3.5.2.7	<p>Verify, for each ECCS throttle valve listed below, each mechanical position stop is in the correct position.</p> <p style="text-align: center;">Valve Number</p> <table> <tr> <td>EMV0095</td><td>EMV0107</td><td>EMV0089</td></tr> <tr> <td>EMV0096</td><td>EMV0108</td><td>EMV0090</td></tr> <tr> <td>EMV0097</td><td>EMV0109</td><td>EMV0091</td></tr> <tr> <td>EMV0098</td><td>EMV0110</td><td>EMV0092</td></tr> </table>	EMV0095	EMV0107	EMV0089	EMV0096	EMV0108	EMV0090	EMV0097	EMV0109	EMV0091	EMV0098	EMV0110	EMV0092	18 months
EMV0095	EMV0107	EMV0089												
EMV0096	EMV0108	EMV0090												
EMV0097	EMV0109	EMV0091												
EMV0098	EMV0110	EMV0092												
SR 3.5.2.8	<p>Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet <del>trash racks and screens</del> show no evidence of structural distress or abnormal corrosion.</p>	18 months												

\* ~~Verification of the automatic closure function of BNI-IV8812A shall be performed prior to startup from the first shutdown to MODE 5 occurring after September 8, 2000, but no later than June 1, 2001.~~

### 3.6 CONTAINMENT SYSTEMS

#### 3.6.7 Recirculation Fluid pH Control (RFPC) System

LCO 3.6.7 The RFPC System shall be OPERABLE.

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

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RFPC System inoperable.	A.1 Restore RFPC System to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	84 hours

#### SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<del>SR-3.6.7.1</del> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Insert SR 3.6.7.1</div> <del>Verify one TSP-C storage basket is in place in the confines of each containment recirculation sump, each basket shows no evidence of structural distress or abnormal corrosion, and each basket contains between 30" and 36.8" (uniform depth) of granular TSP-C.</del>	<del>48 months</del>

Insert SR 3.6.7.1

SR 3.6.7.1	Verify the integrity RFPC System.	18 months
SR 3.6.7.2	Verify the RFPC System ensures an equilibrium sump pH $\geq$ 7.1.	18 months

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**ATTACHMENT 3**

**RETYPE TECHNICAL SPECIFICATIONS**



**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE		FREQUENCY												
SR 3.5.2.5	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months												
SR 3.5.2.6	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	18 months												
SR 3.5.2.7	<p>Verify, for each ECCS throttle valve listed below, each mechanical position stop is in the correct position.</p> <p style="text-align: center;"><u>Valve Number</u></p> <table> <tr> <td>EMV0095</td><td>EMV0107</td><td>EMV0089</td></tr> <tr> <td>EMV0096</td><td>EMV0108</td><td>EMV0090</td></tr> <tr> <td>EMV0097</td><td>EMV0109</td><td>EMV0091</td></tr> <tr> <td>EMV0098</td><td>EMV0110</td><td>EMV0092</td></tr> </table>	EMV0095	EMV0107	EMV0089	EMV0096	EMV0108	EMV0090	EMV0097	EMV0109	EMV0091	EMV0098	EMV0110	EMV0092	18 months
EMV0095	EMV0107	EMV0089												
EMV0096	EMV0108	EMV0090												
EMV0097	EMV0109	EMV0091												
EMV0098	EMV0110	EMV0092												
SR 3.5.2.8	Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet strainers show no evidence of structural distress or abnormal corrosion.	18 months												

### 3.6 CONTAINMENT SYSTEMS

#### 3.6.7 Recirculation Fluid pH Control (RFPC) System

LCO 3.6.7            The RFPC System shall be OPERABLE.

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

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RFPC System inoperable.	A.1       Restore RFPC System to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1       Be in MODE 3.	6 hours
	<u>AND</u> B.2       Be in MODE 5.	84 hours

#### SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.7.1       Verify the integrity of the RFPC System.	18 months
SR 3.6.7.2       Verify the RFPC System ensures an equilibrium sump pH $\geq 7.1$ .	18 months

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**ATTACHMENT 4**

**MARKUP OF TECHNICAL SPECIFICATIONS BASES  
(Information Only)**

## B 3.6 CONTAINMENT SYSTEMS

### B 3.6.7 Recirculation Fluid pH Control System

#### BASES

##### BACKGROUND

The Recirculation Fluid pH Control System (RFPC) is a subsystem of the Containment Spray System that assists in reducing the iodine fission product inventory in the containment atmosphere resulting from a Design Basis Accident (DBA).

Radioiodine in its various forms is the fission product of primary concern in the evaluation of a DBA. It is absorbed by the spray from the containment atmosphere. To enhance the iodine absorption capacity of the recirculated spray and to maximize retention of volatile iodine species in the sumps, the sump solution is adjusted to a minimum equilibrium sump pH of 7.1. A pH of greater than 7.0 minimizes the evolution of volatile iodine species from the sump solution as well as the occurrence of chloride and caustic stress corrosion on mechanical systems and components.

Baskets are located within the recirculation paths of each containment recirculation sump.

The RFPC System includes stainless steel baskets containing trisodium phosphate crystalline (TSP-C). One such basket will be located within the confines of each containment recirculation sump. The baskets contain sufficient TSP-C to ensure a minimum equilibrium sump pH of 7.1. One seismically designed TSP-C basket is within the confines of each of the two containment recirculation sumps. Each basket is designed to contain a maximum of 6720 lbm of TSP-C (basis for the maximum depth of 36.8" in the Technical Specification) whereas a minimum depth of 30", corresponding to 4500 lbm, must be contained in each basket to ensure an equilibrium sump pH of at least 7.1. The baskets are located at an elevation that will ensure dissolution by the sump fluids. The baskets have a stainless steel frame with walls constructed of stainless steel stiffener grating and lined with #100 wire mesh stainless steel screening. Inside nominal dimensions of each basket is 80" x 56" x 38". The calculation of the minimum and maximum depths of TSP-C includes conservative allowances for compaction, spillage through the wire mesh, density variations, and the limited transformation of TSP-C into disodium triphosphate which is a weaker base (expected to have a small impact in the outer surface layer). The minimum equilibrium sump pH of 7.1 corresponds to a minimum of 9000 lbm of TSP-C in the baskets and a maximum sump boron concentration of 2500 ppm. If the maximum of 43,440 lbm of TSP-C were contained in the baskets at the end of cycle life such that a minimum sump boron concentration of 2007 ppm would occur, the maximum equilibrium sump pH would be less than 8.4.

[Later]

(continued)

BASES

ACTIONS

A.1 (continued)

atmosphere in the event of a DBA. The 72 hour Completion Time takes into account the redundant flow path capabilities and the low probability of the worst case DBA occurring during this period.

B.1 and B.2

If the RFPC System cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 84 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems. The extended interval to reach MODE 5 allows additional time for attempting restoration of the RFPC System and is reasonable when considering the driving force for the release of radioactive material from the Reactor Coolant System is reduced in MODE 3.

SURVEILLANCE  
REQUIREMENTS

SR 3.6.7.1

and

This SR verifies that the TSP-C baskets are in place in each containment recirculation pump, there is no evidence of structural distress or abnormal corrosion, and there is sufficient TSP-C available in the RFPC system.

Insert Blank Line

The 18 month Frequency is based on entry into the pumps for routine containment inspection and on the low probability of an undetected change in basket level occurring during the SR interval.

refueling outages

a reduction in TSP-C basket integrity during the SR interval

Insert Bases SR 3.6.7.2

REFERENCES

1. FSAR, Chapter 6.5, and 6.2.2.

## SR 3.6.7.2 Bases Insert

### SR 3.6.7.2

Periodic determination of the amount of TSP-C in containment must be performed due to the possibility of leaking valves and components in the containment building that could cause dissolution of the TSP-C during normal operation. This SR determines visually, by TSP-C level in each basket, that a minimum total amount of [later] pounds of TSP-C is contained in the storage baskets and that the maximum amount of TSP-C in each basket does not exceed the structural integrity. Meeting this SR ensures that there is an adequate amount of TSP-C to adjust the pH of the post LOCA sump solution to a value  $\geq 7.1$ .

The 18 month Frequency is based on entry into the containment for routine refueling outages and on the low probability of an undetected change in basket level. Operating experience has shown this surveillance frequency acceptable due to the margin in the volume of TSP placed in the containment building.