



Entergy Nuclear Operations, Inc.  
Palisades Nuclear Plant  
27780 Blue Star Memorial Highway  
Covert, MI 49043

April 18, 2007

10 CFR 50.90

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Palisades Nuclear Plant  
Docket 50-255  
License No. DPR-20

License Amendment Request: Emergency Core Cooling System Surveillance Requirement

Pursuant to 10 CFR 50.90, Entergy Nuclear Operations, Inc. (ENO) requests Nuclear Regulatory Commission (NRC) review and approval of a proposed license amendment for the Palisades Nuclear Plant (PNP). ENO proposes to revise Technical Specification (TS) 3.5.2, "ECCS [Emergency Core Cooling Systems] – Operating," specifically, Surveillance Requirement (SR) 3.5.2.9.

The proposed change supports resolution of containment sump issues raised in NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors." The proposed change to TS SR 3.5.2.9 would make the surveillance consistent with the plant design following planned modifications to the containment sump.

Enclosure 1 provides a detailed description of the proposed changes, background and technical analysis, No Significant Hazards Consideration Determination, and Environmental Review Consideration. Enclosure 2 provides the revised TS pages reflecting the proposed changes. Enclosure 3 provides the annotated TS pages showing the proposed changes.

ENO requests approval of this proposed license amendment by September 1, 2007, with the amendment being implemented within 30 days, in order to support the modification schedule.

A copy of this request has been provided to the designated representative of the State of Michigan.

A002

Summary of Commitments

This letter contains no new commitments and no revisions to existing commitments.

I declare under penalty of perjury that the foregoing is true and correct. Executed on April 18, 2007.



Christopher J. Schwarz  
Site Vice President  
Palisades Nuclear Plant

Enclosures (3)

CC Regional Administrator, Region III, USNRC  
Project Manager, Palisades, USNRC  
NRC Resident Inspector, Palisades USNRC

# ENCLOSURE 1

## DESCRIPTION OF REQUESTED CHANGES

### 1.0 DESCRIPTION

Entergy Nuclear Operations, Inc. (ENO) requests to amend Renewed Facility Operating License DPR-20 for the Palisades Nuclear Plant (PNP).

ENO proposes to change Technical Specification (TS) Surveillance Requirement (SR) 3.5.2.9, to support resolution of containment sump issues raised in NRC Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors." The proposed change to TS SR 3.5.2.9 would make the surveillance consistent with the plant design following planned modifications to the containment sump.

### 2.0 PROPOSED CHANGES

Current TS SR 3.5.2.9 requires verification, by visual inspection, that each emergency core cooling system (ECCS) train containment sump suction inlet is not restricted by debris and the suction inlet screens show no evidence of structural distress or abnormal corrosion. ENO proposes to modify TS SR 3.5.2.9 to reflect the plant design following a planned modification to the containment sump.

The proposed change modifies TS SR 3.5.2.9 to require verification, by visual inspection, that the containment sump passive strainer assemblies are not restricted by debris, and the containment sump passive strainer assemblies and other containment sump entrance pathways show no evidence of structural distress or abnormal corrosion.

Enclosure 2 provides the revised TS page reflecting the proposed changes. Enclosure 3 provides the annotated TS page showing the proposed changes.

### 3.0 BACKGROUND

The containment sump at PNP is a chamber located under the reactor cavity floor at a lower elevation than the containment base slab (590 foot elevation) to permit floor drain collection of system leakage within containment during normal plant operation and following a loss-of-coolant accident (LOCA). The containment sump entrance pathways consist of containment sump downcomers, containment floor drains, containment sump vent lines and reactor cavity drains.

There are six containment sump downcomers, which are located 2 inches above the containment 590 foot elevation floor. The downcomers provide a connection between the containment sump and the containment 590 foot elevation. The containment floor drains collect and transport system leakage via embedded drain lines to the containment sump. The containment sump vent lines assist in the release of air, that may be collected at the top of the containment sump

during LOCA flood up. The reactor cavity drain lines contain reactor cavity corium plugs. The reactor cavity corium plugs are designed to inhibit the flow of core debris (corium) into the containment sump.

The containment sump exit pathways consist of two suction pipes that provide flow paths to the ECCS pumps. The ECCS pumps consist of low pressure safety injection (LPSI), high pressure safety injection (HPSI), and containment spray system (CSS). The LPSI pumps are not used during post-LOCA recirculation. Following an accident, during the recirculation mode of emergency core cooling, the sump provides a suction source of water to the ECCS and CSS pumps which provides adequate net positive suction head (NPSH) to the pumps. The ECCS suction inlet screens, located in the sump, protect the systems from debris entrainment during recirculation from the sump. Attachment 1 provides a figure that schematically reflects the containment sump entrance and exit pathways.

On September 13, 2004, NRC issued GL 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors." The GL concern is the potential loss of long term decay heat removal function due to blockage of containment sump screens, which would result in inadequate NPSH for pumps drawing from the sump.

As part of the resolution to GL 2004-02, ENO is planning to modify the containment sump suction inlet screens. By letter dated July 18, 2006, Nuclear Management Company, LLC (NMC), the former licensee for Palisades, advised the NRC of plans to have the final design of the passive strainer system complete by March 2007, and that, as the necessary 10 CFR 50.59 reviews are completed, a determination would be made on the need for license amendment requests. The modification was reviewed under 10 CFR 50.59. NMC determined that a change to TS SR 3.5.2.9 was needed because the current surveillance would not appropriately reflect the plant design after the installation of the modification. The proposed TS SR 3.5.2.9 change is needed to meet the December 31, 2007, schedule for corrective actions stated in GL 2004-02.

#### **4.0 TECHNICAL ANALYSIS**

The description of the planned modification, including design details, is provided only to assist the NRC in understanding the reason for the TS change and thus facilitate the NRC's review of the TS change.

ENO's planned modification removes the existing ECCS suction inlet screens. In lieu of the ECCS suction inlet screens, ENO is planning to install passive strainer assemblies on the 590 foot elevation of containment. The passive strainer assemblies would connect to the containment sump via two containment sump downcomer pipes. These two containment sump downcomer pipes would provide the post-LOCA credited flow pathway from the passive strainer

assemblies to the containment sump to provide a suction source of water to the ECCS and CSS pumps. Attachment 2 provides a figure that schematically reflects the containment sump entrance pathways after the planned modification.

The passive strainer assemblies are sized for an acceptable head loss based on the bounding case debris generation in containment. The design basis for the strainers includes providing sufficient flow area for the most limiting scenario. The proposed SR includes a requirement to ensure that the containment sump passive strainer assemblies are not restricted by debris and show no evidence of structural distress or abnormal corrosion. Including this requirement in the surveillance provides assurance that the design basis flow area is available upon initiation of a LOCA, which supports ECCS flow and head loss assumptions in the accident analysis. Therefore, the revised surveillance requirement is important to ensure the pump suction flow and pressure requirements for both trains of HPSI and CSS under post-LOCA design basis debris loading conditions are satisfied.

In addition to the passive strainer assemblies, debris screens are to be installed on the remaining open containment sump entrance pathways, which include the four remaining downcomer pipes, the seven containment floor drains, and the two containment sump vent lines. The debris screens are intended to intercept and segregate debris outside of the containment sump envelope. The reactor cavity corium plugs, located in the reactor cavity drain lines, contain pellets within the corium plug tube, tube end cap, and tube bottom cup support assembly which form a debris interceptor similar to the debris screens. These containment sump entrance pathways do not provide a credited post-LOCA flow path into the containment sump envelope. PNP housekeeping standards would be used to ensure that these containment sump entrance pathways are not restricted by debris. The proposed SR includes a requirement to ensure that these containment sump entrance pathways show no evidence of structural distress or abnormal corrosion. Including this requirement in the surveillance provides assurance that there are no barrier breaches that would allow debris to enter the containment sump and cause downstream equipment damage.

The proposed license amendment request to change TS SR 3.5.2.9 makes the surveillance consistent with the plant design following planned modifications to the containment sump. Based on the above, the revised TS surveillance ensures that the debris generated during a large break LOCA is prevented from entering the containment sump and that the sump continues to perform its specified safety function of providing a suction source of water to the ECCS and CSS pumps which provides adequate NPSH to the pumps during recirculation.

## 5.0 REGULATORY SAFETY ANALYSIS

### 5.1 No Significant Hazards Consideration

Pursuant to 10 CFR 50.90, Entergy Nuclear Operations, Inc. (ENO) requests to amend Renewed Facility Operating License DPR-20 for the Palisades Nuclear Plant. The proposed change would revise Appendix A, Technical Specifications (TS), Surveillance Requirement (SR) 3.5.2.9 to support resolution of containment sump issues raised in NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors." The proposed change to TS SR 3.5.2.9 would make the surveillance consistent with the plant design following planned modifications to the containment sump.

ENO has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of Amendment," as discussed below:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated. The proposed changes to TS SR 3.5.2.9 do not have any impact on the integrity of any plant system, structure, or component (SSC) that initiates an analyzed event. The proposed changes do not alter the operation of, or otherwise increase the failure probability of any plant equipment that initiates an analyzed accident. Thus, the probability of any accident previously evaluated is not significantly increased.

The proposed changes do not affect the ability to mitigate previously evaluated accidents, and do not affect radiological assumptions used in the evaluations. The proposed changes to TS SR 3.5.2.9 do not change or alter the design criteria for the systems or components used to mitigate the consequences of any design basis accident. The proposed amendment does not involve operation of the required structures, systems, or components in a manner or configuration different from those previously recognized or evaluated. The proposed changes to TS SR 3.5.2.9 provide assurance that the sump flowpath is unrestricted and stays in proper operating condition. Thus, the radiological consequences of any accident previously evaluated are not increased.

Therefore, operation of the facility in accordance with the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated. The proposed amendment to modify TS SR 5.2.9 does not involve a physical alteration of any SSC or a change in the way any SSC is operated. The proposed amendment does not involve operation of any required SSCs in a manner or configuration different from those previously recognized or evaluated. No new failure mechanisms will be introduced by the changes being requested.

Therefore, the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

The proposed amendment does not involve a significant reduction in a margin of safety. The proposed changes do not adversely affect any plant safety limits, set points, or design parameters. The proposed changes do not adversely affect the fuel, fuel cladding, primary coolant system (PCS), or containment integrity. The proposed TS SR 3.5.2.9 changes ensure that the containment sump is unrestricted and stays in proper operating condition. The proposed changes would make the surveillance consistent with the plant design following planned modifications to the containment sump.

Therefore, the proposed amendment would not involve a significant reduction in a margin of safety.

Based on the evaluation above, ENO concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c).

## 5.2 Applicable Regulatory Requirements/Criteria

10 CFR 50.36(c)(3) defines Technical Specifications Surveillance requirements as "requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation

will be met." With the changes proposed in this license amendment request, the requirements of 10 CFR 50.36 continue to be met.

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.

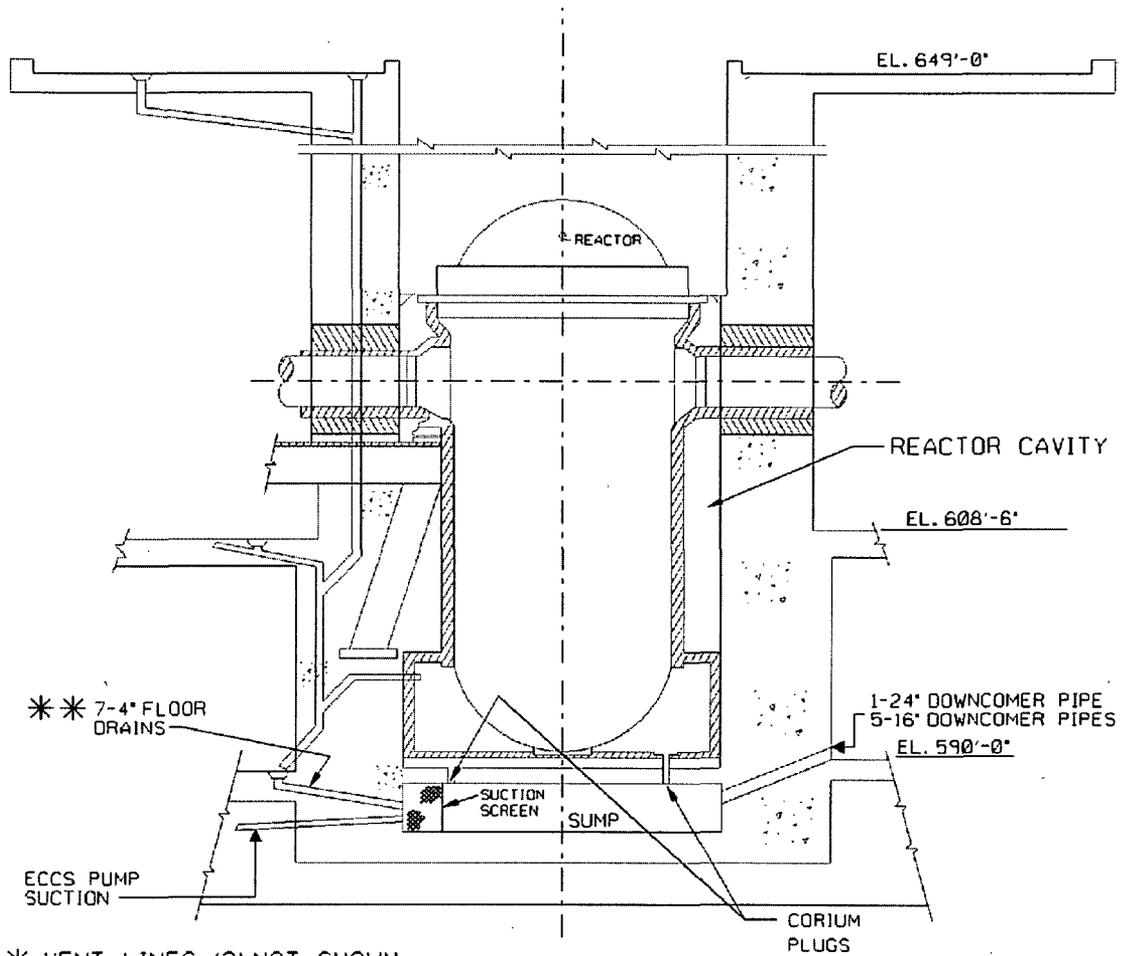
## **6.0 ENVIRONMENTAL CONSIDERATION**

ENO has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

## **7.0 PRECEDENT**

By letter dated August 18, 2005 (ADAMS Accession #ML052370326), as supplemented by letter dated September 15, 2005 (ADAMS Accession #ML052910430), Duke Energy Corporation (Duke) submitted a license amendment request (LAR) for Oconee Nuclear Station (ONS). The LAR requested changes to the ONS TS, specifically, TS 3.5.2, "ECCS - Operating." Duke's LAR consisted of changes to a SR to reflect the plant design following modification to the containment sump. Duke replaced trash racks and screens with strainers. By letter dated November 1, 2005 (ADAMS Accession #ML052800170), the NRC approved the LAR for ONS. Similar to this submittal, ENO is requesting approval to change TS SR 3.5.2.9 to reflect the plant design following modification to the containment sump. ENO's submittal differs from Duke's submittal in that the proposed TS SRs reflect plant-specific modifications.

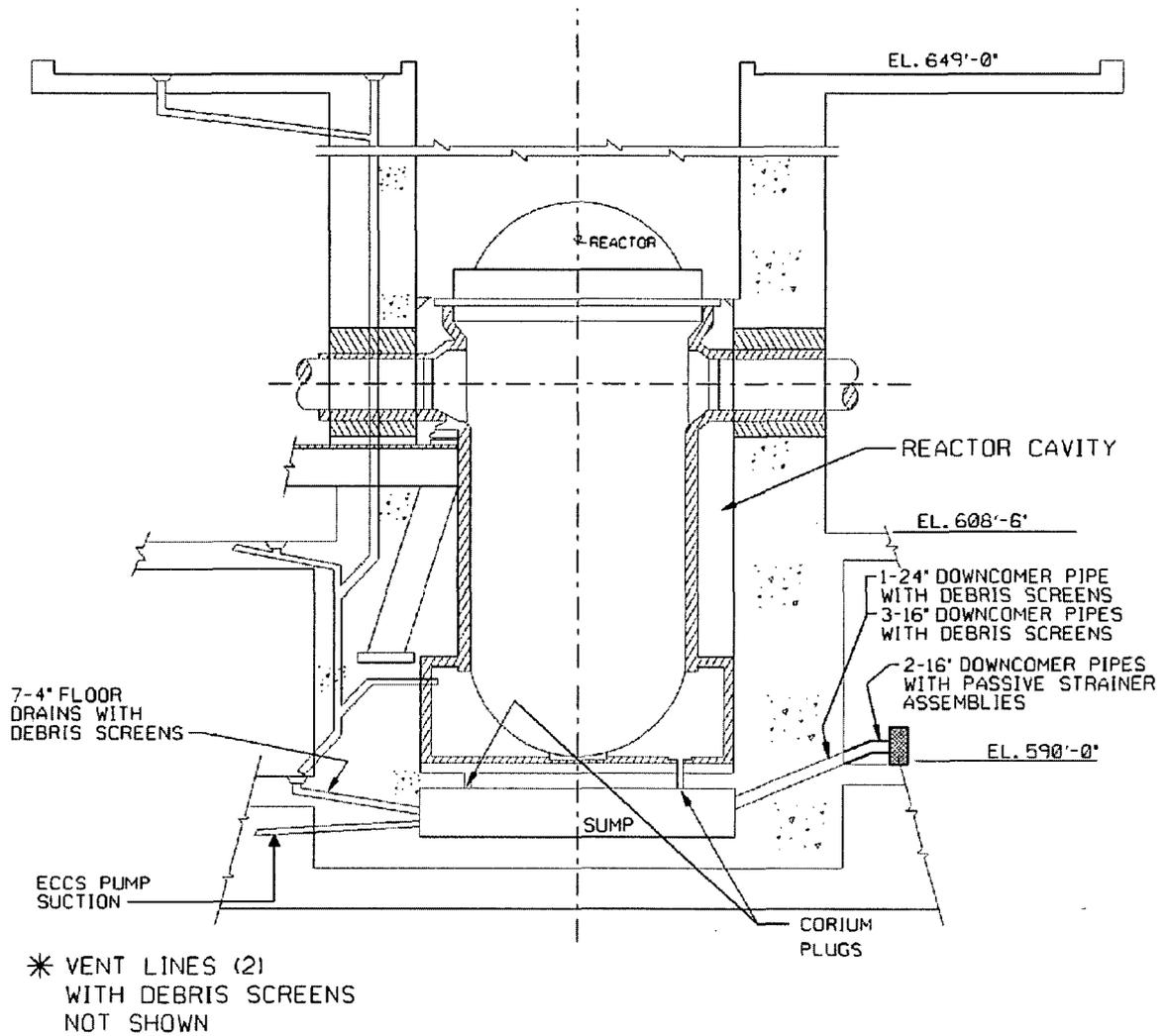
# ATTACHMENT 1



- \* VENT LINES (2) NOT SHOWN
- \*\* FLOOR DRAINS DISCHARGE INTO SUMP OUTSIDE THE SUCTION SCREEN AREAS

SCHEMATIC OF CONTAINMENT  
SUMP ENTRANCE PATHWAYS  
(NOT TO SCALE)

## ATTACHMENT 2



SCHEMATIC OF CONTAINMENT  
SUMP ENTRANCE PATHWAYS  
AFTER PLANNED MODIFICATION  
(NOT TO SCALE)

**ENCLOSURE 2**

**LICENSE AMENDMENT REQUEST: EMERGENCY CORE COOLING  
SURVEILLANCE REQUIREMENT**

REVISED TECHNICAL SPECIFICATION PAGE 3.5.2-3  
AND  
OPERATING LICENSE PAGE CHANGE INSTRUCTIONS

2 Pages Follow

**ATTACHMENT TO LICENSE AMENDMENT NO.**

**FACILITY OPERATING LICENSE NO. DPR-20**

**DOCKET NO. 50-255**

Remove the following pages of Appendix A Technical Specifications and replace with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

3.5.2-3

INSERT

3.5.2-3

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY														
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	Verify each LPSI pump stops on an actual or simulated actuation signal.	18 months														
SR 3.5.2.8	<p>Verify, for each ECCS throttle valve listed below, each position stop is in the correct position.</p> <table border="0"> <thead> <tr> <th><u>Valve Number</u></th> <th><u>Function</u></th> </tr> </thead> <tbody> <tr> <td>MO-3008</td> <td>LPSI to Cold leg 1A</td> </tr> <tr> <td>MO-3010</td> <td>LPSI to Cold leg 1B</td> </tr> <tr> <td>MO-3012</td> <td>LPSI to Cold leg 2A</td> </tr> <tr> <td>MO-3014</td> <td>LPSI to Cold leg 2B</td> </tr> <tr> <td>MO-3082</td> <td>HPSI to Hot leg 1</td> </tr> <tr> <td>MO-3083</td> <td>HPSI to Hot leg 1</td> </tr> </tbody> </table>	<u>Valve Number</u>	<u>Function</u>	MO-3008	LPSI to Cold leg 1A	MO-3010	LPSI to Cold leg 1B	MO-3012	LPSI to Cold leg 2A	MO-3014	LPSI to Cold leg 2B	MO-3082	HPSI to Hot leg 1	MO-3083	HPSI to Hot leg 1	18 months
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SR 3.5.2.9	Verify, by visual inspection, the containment sump passive strainer assemblies are not restricted by debris, and the containment sump passive strainer assemblies and other containment sump entrance pathways show no evidence of structural distress or abnormal corrosion.	18 months														

**ENCLOSURE 3**

**LICENSE AMENDMENT REQUEST: EMERGENCY CORE COOLING  
SURVEILLANCE REQUIREMENT**

MARK-UP OF TECHNICAL SPECIFICATION PAGE 3.5.2-3  
(showing proposed changes)  
(additions are highlighted; deletions are strikethrough)

1 Page Follows

SURVEILLANCE REQUIREMENTS

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